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Technical Specifications

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Note: The borelog and eCPT data attached are for indicative purpose only. The detailed Design Basis Report of GHAVP-3&4 will be shared with successful bidder, if required.

NUCLEAR POWER CORPORATION OF INDIA
LIMITED (A GOVT. OF INDIA ENTERPRISE)

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TECHNICAL SPECIFICATION ON TRIALS OF DEEP SOIL MIXING

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NUCLEAR POWER CORPORATION OF INDIA LIMITED

TECHNICAL SPECIFICATION ON TRIALS OF DEEP SOIL MIXING

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एनपीसीआईएल स्वामित्व

"इस दस्तावेज में गोपनीय व प्रतिबंधित सूचना है और ये सूचनाएं न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड (एनपीसीआईएल) की बौद्धिक संपदा है। इस दस्तावेज के किसी भाग, जिसमें प्रमुख रूप से इसके संपादकीय तत्वों, मौखिक व सांख्यिक व इसके अंतर्गत आने वाले आरेखों सहित चित्रात्मक अभिव्यक्तियां भी शामिल हैं, को, एनपीसीआईएल की लिखित पूर्वानुमति के बगैर, किसी व्यक्ति या एकक द्वारा, अभी तक ज्ञात किसी भी रूप में अथवा भविष्य में विकसित की गई इलेक्ट्रॉनिक, डिजिटल अथवा मैकेनिकल, जिसमें इनकी फोटोकॉपी करना, स्कैनिंग करना या किसी सूचना भंडारण विधि अथवा सूचना प्रापण विधि से रिकार्ड करना आदि शामिल हैं, जैसी किसी भी विधा के माध्यम से, पुनः प्रस्तुत अथवा संप्रेषित अथवा उपभोग अथवा प्रकाशित नहीं किया जाएगा। अनधिकृत उपभोग, प्रकटीकरण अथवा इसकी प्रति तैयार करना पूर्णतया वर्जित है और इसे गैरकानूनी कृत्य माना जायेगा तथा ऐसा करने पर कानूनी कार्रवाई की जा सकती है।"

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1. OBJECTIVE

To improve subsoil layers using Deep Soil Mixing (DSM) method by forming soil-cement columns for enhanced strength, increased stiffness and reduced permeability. This technique aims to serve as a substitute for deep foundation systems, to control groundwater ingress, settlement reduction and also to improve overall ground stability.

2. SCOPE

The scope of work covered under this specification is trial activities of Deep Soil Mixing for the nuclear Power Plant. Trial activities comprise of the following works:

- i. Laboratory mix design and performance trials to define optimal cement factor.
- ii. Execution of DSM columns up to required depth and diameter.
- iii. Full-scale test field trials of DSM columns up to required depth and diameter including various column overlaps and diameters.
- iv. Execution and demonstration of watertight DSM pits for verification through field testing.
- v. Field and laboratory testing to validate performance characteristics.

Contractor shall prepare and submit a detailed technical proposal, work methodology and QAP for the work and the entire scheme for approval of the Engineer before commencing the work.

The work consists of furnishing all plant, labor, equipment and materials for performing all operations including material/equipment handling and waste disposal as required for conducting the DSM trial as in-situ treatment.

3. GENERAL

Deep Soil Mixing is a soil improvement technique used to treat soils in-situ. This is accomplished with a series of overlapping stabilized soil columns. The stabilized soil columns are formed by a series of mixing shafts guided by DSM Rig.

Grout/cement slurry is pumped through the hollow stem of the shaft and injected into the soil at the tip as the mixing shafts are advanced/retracted (for ensuring uniform blending) into the soil during execution of DSM work. The auger flights and mixing blades on the shafts blend the soil with grout or slurry in pug mill fashion. The mixing shafts are positioned to overlap one another and form a continuously mixed overlapping column. When the design depth is reached, the augers are withdrawn and the mixing process is repeated on the way to the surface.

Stabilized DSM columns shall have the following properties:

- Low permeability
- Improved stiffness (in terms of deformation modulus (E-modulus)).
- Improved bearing capacity, strength (UCS) and shear strength,
- Able to withstand differential soil and hydrostatic loading.

DSM column shall be constructed to the lines, grades, spacing and cross sections as indicated in the drawings. The DSM column shall have essentially vertical columns, a minimum diameter as specified in drawing and shall extend through the overburden and a minimum specified depth.

4. REFERENCE STANDARDS

- i. EN 14679:2005 – Execution of special geotechnical works – Deep Mixing.
- ii. ASTM D2850 – Unconsolidated Undrained Triaxial Compression Test.
- iii. EN 12390-3 – Compressive strength of concrete specimens.
- iv. EN ISO 14689-1 – Geotechnical classification of rock.
- v. EN 197-1 – Cement composition and conformity.
- vi. IS 13047-1991- Method for determination of strength of rock materials in tri-axial compression.
- vii. ISO 22476-4:2021 Geotechnical investigation and testing — Field testing, Part 4: Prebored pressure meter test by Ménard procedure
- viii. ISO 17892-11:2019 Geotechnical investigation and testing — Laboratory testing of soil, Part 11: Permeability tests
- ix. IS 456:2000 Water Quality for Building Construction
- x. EN 12390-3:2009. Testing hardened concrete. Part 3: Compressive strength of test specimens.
- xi. IS 269:2013 Ordinary Portland Cement, 33 Grade – Specification

5. CONSTRUCTION MATERIALS

Approved construction materials shall be used, which comply with the Technical Specifications, the general and special conditions of the contract and applicable standards. The required testing of the material shall be carried out in NPCIL approved laboratories or at Site laboratory as per applicable standards.

5.1. Grout Mix Components

The completed DSM column shall be a homogeneous mixture of grout/slurry and the in-situ soils.

Grout shall have a stable colloidal mixture of water and cement. Additional materials such as bentonite may be added as approved by the Engineer to enhance the behavior of the Grout/ Slurry. The admixtures in cement-based grouts may be used to improve the grout flow characteristics. The slurry mix design should be confirmed by laboratory testing before the execution of field trials.

5.1.1. Cement

The cement shall conform to ordinary Portland cement (OPC) 43/53 Grade or Portland slag cement/ Portland pozzolana cement (PPC) grade based on laboratory trials. Cement shall conform to relevant Indian Standards (namely, Ordinary Portland Cement shall conform to IS 269). It shall be mixed with water to achieve required consistency for pumping. The cement shall be free of impurities (for example, metal pieces, wood particles, lumps of harden cement etc.). Cement shall be selected based on durability aspect as per applicable Indian Standards/ASTM/BS/Euro-code considering ground water/ in-situ soil condition.

5.1.2. Water

Water shall be meet the requirement of IS 456. It shall be clean and free from deleterious amounts of acids, alkalis, organic matter, and other substances that may impair the strength and durability of the

grout. It shall be from an approved source. Water obtained from natural sources should be tested (particularly for chlorides, sulphates, and organic matter) and approved. The water temperature shall be kept under 30°C before mixing.

To maintain and control the water temperature at site, the water will be stored in a shaded arrangement and/or a chilling system shall be placed.

5.1.3. Bentonite

Bentonite should be sodium type with a liquid limit (LL) $\geq 400\%$ and shall be in accordance with IS 2911. Normally, bentonite should be pre-hydrated for at least 6 hours before use. Bentonite suspension is generally used for improved sealing and flowability.

Note: Due to extreme hot weather conditions at site, before use in grout mix, bentonite slurry agitator should be used to maintain the homogeneity of bentonite. Additionally, the bentonite hydration tank shall be covered with tarpaulin sheet cover to protect it from effect of evaporation losses and ingress of rain water. Bentonite may be added based on lab trials requirement to finalized mix design as approved by the Engineer.

5.1.4. Chemical Additives

Chemical additives can be used to improve the workability and penetrability of the grout and shall be in accordance with IS 9103:

- Plasticizer or Super Plasticizer (reducing viscosity)
- Retarder (to extend the mortar setting time)
- Accelerator (if required, to reduce the mortar setting time)

Additives may be added, as per approved mix design, to enhance the behavior of the Grout/ Slurry as approved by the Engineer.

5.2. Storage and supply

A sufficient quantity of materials shall be stored at site to ensure that grouting operations will not be interrupted or delayed. Adequate storage facilities will be provided to protect cement, water, bentonite and admixtures from adverse weather and temperature conditions, in such a manner that the quality of the materials shall be maintained.

Material handling and storage facilities will be capable of delivering materials to the mixing plant in a manner that will not hinder or impede grouting operations.

6. GROUTING EQUIPMENT

For the selected construction technique, the drilling and grouting equipment consists mainly of the following items:

- DSM Rig: Capable of minimum 22 m depth from working platform level.

- Auger attachment for making diameter of 1.5m and 2m of DSM column
- Mixing plant
- Agitation tank
- Single grouting pump or containerized or similar
- Data recording and grouting control system
- Air compressor (if required)
- Service equipment, if any

Numbers and quantities of above equipment shall be selected to suit the contract program and available works areas.

The calibration of the equipment and respective datasheet shall be provided prior to use of the equipment at site.

6.1. Mixing/Batching Plant

The Mixing/batching plant shall consist of colloidal mixers, volumetric screw feeders and flow controllers. Dry materials shall be stored in silos and fed by screw feeders to the colloidal mixers for agitation and circulation. The resulting grout/slurry shall be transferred to a surge/agitation tank for additional mixing and to supply the deep soil-mixing rig.

The precise arrangement and sequence of mixing shall be based on the results of the design mix program. Bentonite may be premixed with water (hydrated) in a separate mixer and the slurry stored in a holding tank. The bentonite water slurry shall be transferred to a second mixer (only when premixing is required). In this mixer cement and/or other materials will be added and mixed into the grout.

Slurry/grout proportions shall be monitored and controlled to ensure proper proportioning. Density measurements shall be made to verify grout/slurry proportions. Slurry/grout flow rate, time and volume consumption shall be measured.

Dry ingredient proportions shall be batch mixed by weight to a predetermined final density. Maximum holding time of three hours will be enforced for the grout. Grout shall be mixed in mixing tank for minimum of 1 minute to prepare a homogenous grout.

Calibration of mixing components shall be done at the beginning of the project and monthly thereafter and after any major outage of the mixing plant component/s. The screw feeders shall be calibrated against time to deliver a predetermined weight. Water shall be controlled by flow meter and/or by volume level indicators in the colloidal mixer.

6.2. Deep Soil Mixing Equipment/ DSM rig

The DSM rig shall consist of a series of overlapping mixing shafts capable of creating a column of specified diameter (max. 2m) and depth (min. 22m). The shafts will have a bottom discharge capability for grout/ slurry. The mixing shafts and mixing blades shall be configured in such a manner to be capable of blending the in-situ soils and grout/slurry into a homogeneous mixture.

The power source for driving the mixing shafts shall be sufficient to maintain required RPM and penetration rate from a stopped position at the depth specified. The DSM rig shall have a Blade rotation number (BRN) of minimum 350.

Mixing is to be controlled by mixing shaft speed, penetration rate, retrieval rate, blade rotation number and grout/slurry intake. Further, verticality of the shaft and positioning of the rig should be automatically controlled and recorded allowing for preparation of 3D as build model considering the factual deviations over the drilling length and positioning of the rig ensuring the water tightness of the bottom or required corrective measures.

6.3. Single Grouting Pump or containerized or similar

Positive displacement pumps shall be used to transfer the grout from the mix plant to the DSM rig.

7. DEEP SOIL MIXING TRIAL WORKS (TRIAL/CONSTRUCTION SEQUENCE)**7.1. Objectives of trial**

- Finalize the cement factor by performing adequate laboratory trials.
- Feasibility of formation of DSM columns up to target depth and with the expected diameter.
- Finalizing the diameter and overlap feasible for the actual soil condition.
- Assess the strength and stiffness parameters of formed columns.
- Effectiveness of DSM columns in preventing/ minimizing the ground water ingress in the trial pit.

7.2. Trial campaign

DSM trial campaign shall be carried out in three phases

Phase 1: To finalize the cement factor and slurry mix design in the laboratory before physical test execution

Phase 2: Ensure the DSM column diameter and the overcut/overlap.

Phase 3: To demonstrate the ability to do perform large scale overcut/overlaps execution with dry drilling in the top layers.

Phase 4: To demonstrate the ability to create a watertight pit to enable construction.

The following trial campaign is proposed accordingly to achieve the above-mentioned objectives. The contractor has to prepare a work procedure/trial plan document in line with the trial campaign mentioned in this document. The contractor may change the plan to suit the machinery, however the target diameter, depth and other objectives like minimum strength, stiffness and water tightness shall be met.

Detailed matrix for trial blocks shall be prepared specifying trial diameter of DSM column, cement content, coring and wet grab sampling requirements, field and laboratory testing requirements before start of trial works.

Following geotechnical investigation shall be conducted at trial locations prior to taking up trial works:

Location	Geotechnical Investigation	
	Field	Laboratory
Phase-2	SPT, PMT- 3 boreholes eCPT 3 location and plate load test	Density, Index properties, Grain size analysis
Phase-3	SPT and PMT- 1 boreholes eCPT 1 location	Density, Index properties, Grain size analysis
Phase-4	Pit locations SPT and PMT- 2 boreholes eCPT 2 location	Density, Index properties, Grain size analysis

Plan for geotechnical investigations (at pre-trial stage) to be conducted at trial locations shall be prepared by the contractor.

Phase 1: To finalize the cement factory and slurry mix design in the laboratory, before physical test execution, testing shall be done on soil sample obtained from trial location.

Phase 2: Equipment testing, diameter and overcut trial:

This trial consists of drilling and forming around 25 number of DSM columns for 1.5m and 2m diameter with No overlapping/varying overlapping of 0.35m to 0.5 m.

- I. Three cement factors X1, X2 and X3 shall be finalized based on the laboratory testing of soil samples to achieve the target strength.
- II. The trial in this phase shall be executed in sets of 5 column. The columns to establish the diameter shall be with clearance (for example 0.1 m) and shall be executed for optimization purpose, equipment testing and feasibility of execution of DSM columns at site specific soil condition.
- III. This trial is proposed to be carried out for a diameter of 1.5m and 2m DSM columns. If the contractor proposes a diameter larger than 2 m, 5 number of columns shall be executed additionally over and above the proposed 1.5m and 2 m diameter columns. (For a tentative sketch refer Figure-1 and 2). The diameter to be used for further trials shall be decided after these columns are completed.
- IV. Once the diameter of the DSM columns is established, trial for different intersection/overlap shall be conducted. It proposed to conduct trials for 0.35m, 0.40m and 0.50m overlap for the finalized diameter. (For a tentative sketch refer Figure-3, 4 and 5).
- V. overlap trials for lesser diameters may be carried out in case desired overlap could not be achieved with higher diameter.
- VI. Extensive laboratory and field testing shall be carried out to establish the effectiveness of the constructed DSM columns (suggestive plan given in Table-1).
- VII. Detailed matrix for trial for phase-I shall be prepared specifying trial diameter of DSM column, trial cement content, coring and wet grab sampling requirements, field and laboratory testing requirements before start of trial works.
- VIII. Trial DSM columns shall be cast from the working platform as mentioned drawing/ suggested by the engineer. Test depth shall be minimum 22m from the working platform.
- IX. Few DSM columns may be excavated to certain depth (ensuring safety) to expose the formed column for direct measurement of diameter, as per the instruction of the engineer.

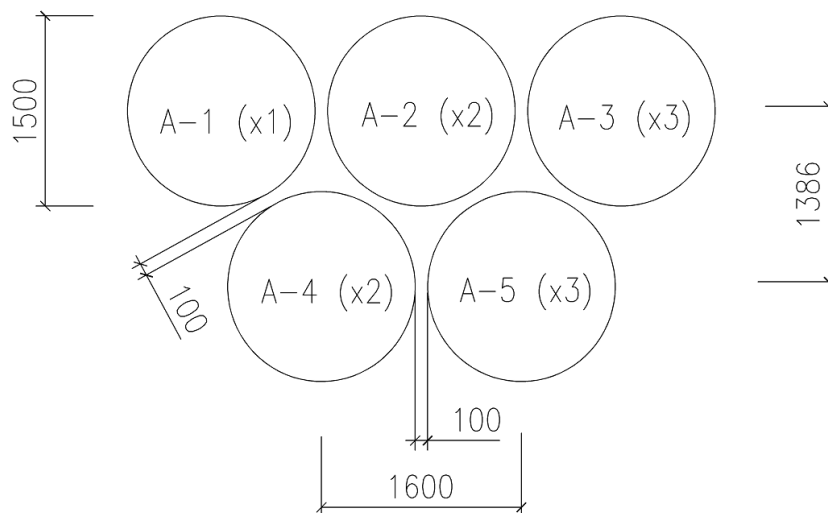


Figure-1: Tentative arrangement of block A DSM trial (with 1.5 diameter columns) with a inter column gap of 100mm

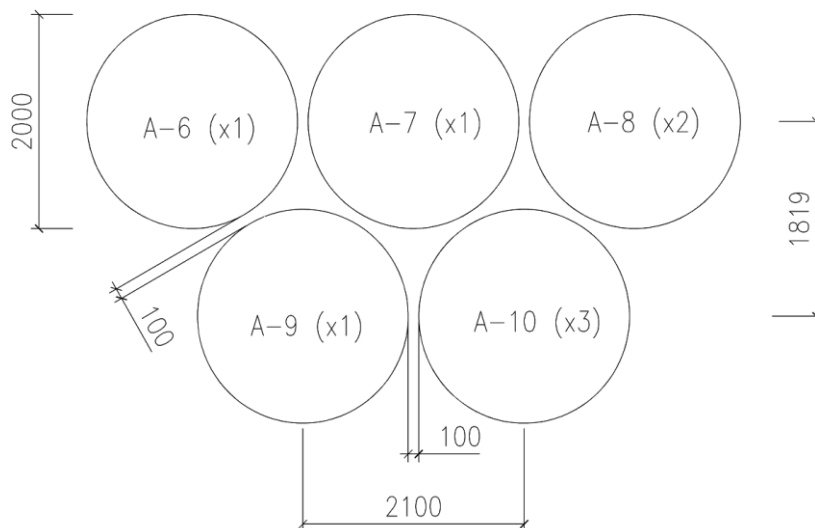


Figure-2: Tentative arrangement of block A DSM trial (with 2.0 diameter columns) with a inter column gap of 100 mm

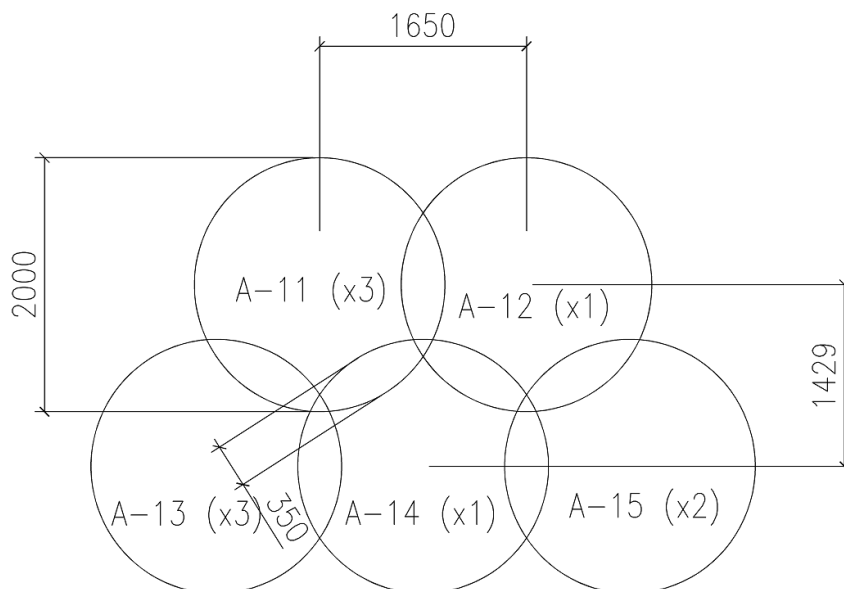


Figure-3: Tentative arrangement of block A DSM trial (with 2.0 diameter columns) with an overlap of 350 mm

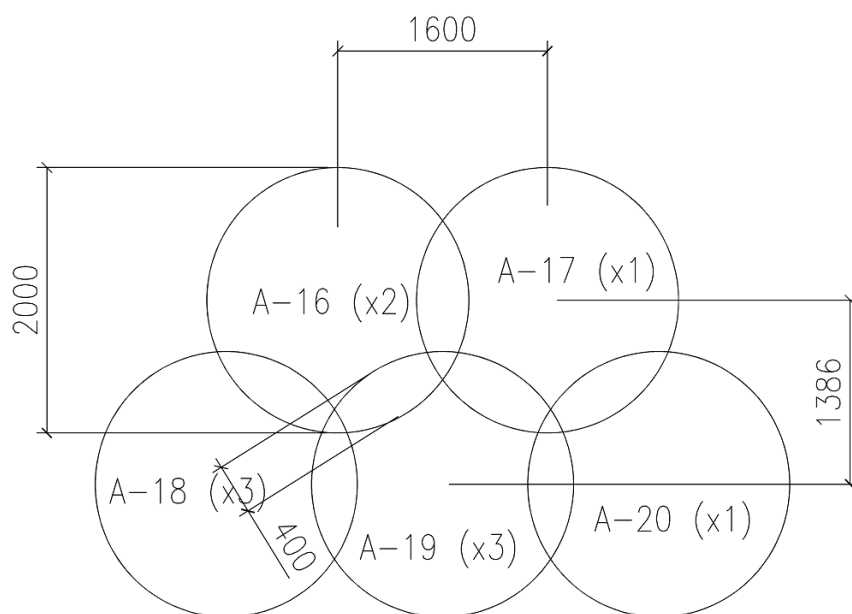


Figure-4: Tentative arrangement of block A DSM trial (with 2.0 diameter columns) with an overlap of 400 mm

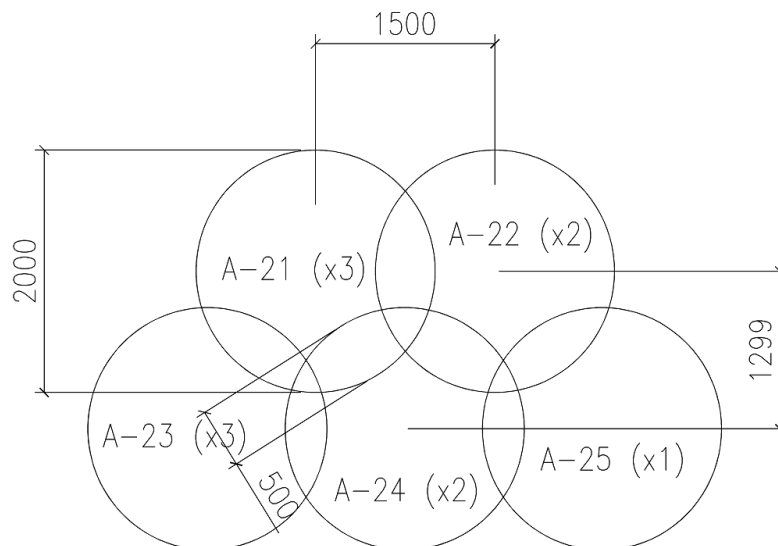


Figure-5: Tentative arrangement of block A DSM trial (with 2.0 diameter columns) with an overlap of 500 mm

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
A 1	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	1.5	X1	yes	yes	None	1 UCS on WGS and 3 UCS on cores
A 2	No overlapping Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	1.5	X2	yes	yes	PMT within the column and SPT at junction A2-A3-A5	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 3 static modulus of elasticity (E) from UCS
	No overlapping Length of empty drill – 0 m						1 UCS on WGS and 3 UCS on cores

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
A 3	Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	1.5	X3	yes	yes	None	
A 4	No overlapping Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	1.5	X2	yes	yes	None	1 UCS on WGS and 3 UCS on cores
A 5	No overlapping Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	1.5	X3	yes	yes	None	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days)
A 6	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	2.0	X1	yes	yes	None	1 UCS on WGS and 3 UCS on cores Tests for stability using alternate wetting and drying method on core
A 7	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	2.0	X1	yes	yes	Plate load Test at junction A7-A9-A10	1 UCS on WGS and 3 UCS on cores Tests for stability using alternate wetting and drying method on core

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
A 8	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	2.0	X2	yes	yes	PMT	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 3 static modulus of elasticity (E) from UCS
A 9	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	2.0	X1	yes	yes	PMT	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 3 Triaxial test on cores
A 10	No overlapping, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at EL 94.0 m	2.0	X3	yes	yes	PMT	1 UCS on WGS and 3 UCS on cores 3 Triaxial tests on cores Tests for stability using alternate wetting and drying method on core
A 11	Overlapping - 350 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	PMT	1 UCS on WGS and 3 UCS on cores 3 Triaxial tests on cores
A 12	Overlapping - 350 mm, Length of empty drill – 0 m Length of DSM column –21.8 m, Drilling platform at	2.0	X1	yes	yes	Lugeon test in the intersection with A14	1 UCS on WGS and 3 UCS on cores 1 Permeability test on cores 1 Odometer

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
	EL 91.0 m						
A 13	Overlapping - 350 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	None	1 UCS on WGS and 3 UCS on cores
A 14	Overlapping - 350 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X1	yes	yes	None	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 1 Permeability test on cores 1 Odometer
A 15	Overlapping - 350 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	yes	PMT	1 UCS on WGS and 3 UCS on cores 3 Triaxial tests on cores
A 16	Overlapping - 400 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	yes	None	1 UCS on WGS and 3 UCS on cores
A 17	Overlapping - 400 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X1	yes	yes	PLT on Junction of A-16, A-17 and A-19	1 UCS on WGS and 3 UCS on cores 3 Triaxial test on cores

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
A 18	Overlapping - 400 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	Lugeon test in the intersection with A19	1 UCS on WGS and 3 UCS on cores 1 Permeability test on cores
A 19	Overlapping - 400 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	None	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 1 Permeability test on cores
A 20	Overlapping - 400 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X1	yes	yes	PMT	1 UCS on WGS and 3 UCS on cores 3 Triaxial tests on cores
A 21	Overlapping - 500 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	PMT	1 UCS on WGS and 3 UCS on cores 3 Triaxial tests on cores
A 22	Overlapping - 500 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	yes	Lugeon test in the intersection with A24	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days) 1 Permeability test on core

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
A 23	Overlapping -500 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X3	yes	yes	None	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days)
A 24	Overlapping -500 mm, Length empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	yes	None	1 UCS on WGS and 3 UCS on cores
A 25	Overlapping -500 mm, Length of empty drill – 0 m Length of DSM column – 21.8 m, Drilling platform at EL 91.0 m	2.0	X1	yes	yes	None	1 UCS on WGS and 9 UCS on cores (28, 56 & 84 days)

Table-1: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Block A

Designation of DSM column	Type of DSM column	Dia.in m	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
Notes: <ul style="list-style-type: none"> Additional test, if required, shall be carried out based on instruction of the engineer. The coring, laboratory and field test requirements shown in the table are suggestive. Detailed table shall be prepared before start of actual trial works of BLOCK-A. For carrying out trial of DSM columns with overlap, a trial diameter of 2m has been assumed. The trial plan shall be suitably modified based on actual feasible diameter achieved at site. List of tests to be carried out: <ol style="list-style-type: none"> Wet grab sampling and UCT for them (WGS) Water pressure test in soil improvement (Lugeon test) Pressure meter test (PMT) – 4 number in each borehole Plate Load Test (PLT): As per IS 1888 (with plate size 750mmx750mm plate, acceptance criteria: minimum of 50mm settlement or bearing pressure of 200 ton/m²). Reaction system/kentledge shall be design for 1.25 times of the load corresponding to bearing pressure of 200 ton/m²) Uniaxial compressive strength test (UCS) and static modulus of elasticity (E) for cores, UCS shall be conducted at 28 days, if not mentioned. Triaxial test for cores for static modulus of elasticity (E), cohesion (c) and angel of shear friction (ϕ) Tests for stability using alternate wetting and drying method on core as per ASTM D559 Determination of permeability coefficient (Permeability test) for cores Falling head permeability test shall be carried out to obtain permeability Permeability tests shall also be performed using triaxial cell test and in accordance with ISO 17892-11 2019. 							

Phase-3: Enhancement of DSM technique under site specific conditions:

Execution of 15 number of overlapped columns (refer Figure-6) with chosen cement factor (from Phase-1 trials). Tentatively overcut of 0.4m with diameter of DSM column as 2.0 m are shown in the Figure, however this shall be as per the outcome of Phase-1 trials. The depth

of DSM column shall be at least 15m below the deepest foundation level (that is, EL 84 m for RB portion of Nuclear Building). This also includes approximately 7 m (tentatively EL 91m to EL 84m) of empty drilling from working platform level. Thus, total depth from working platform level shall be at least 22m. These trials shall be carried out:

- I. To ensure the effectiveness of the chosen overcut (based on trial results of Phase-1).
- II. To enhance the technique of DSM for successful implementation in Phase-3.
- III. Phase-2 shall allow the construction of DSM columns with a predefined penetration rate and slurry flow within a predictable time.
- IV. Phase-2 shall be designed to understand the performance, execution time, and repeatability of column construction with the chosen parameters.
- V. Extensive laboratory and field testing shall be carried out to establish the effectiveness of the constructed DSM columns (plan given in Table-2).

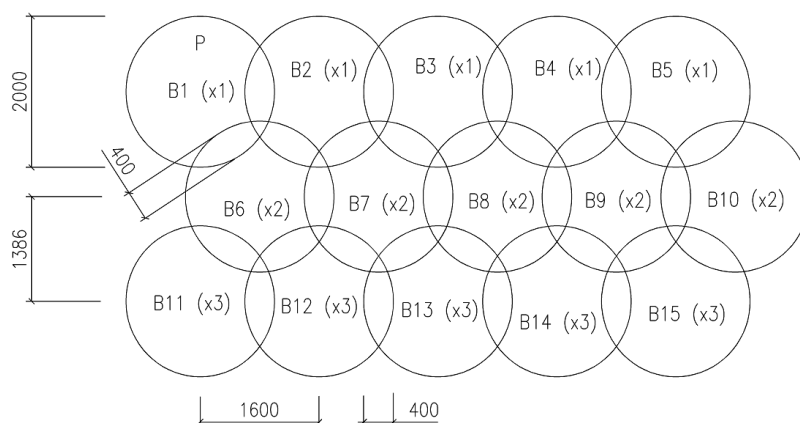


Figure-6: Tentative arrangement of block B DSM trial (with 2.0 diameter columns) with an assumed overlap of 400 mm¹

¹ In figure 6, an assumed diameter of 2 m and an overcut of 400mm has been considered. However, the same needs to be updated once achievable diameter and overcut of DSM columns are finalized based on trial results of Phase-1.

Table-2: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Phase-2

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
B 1	Overlapping - assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores
B 2	Overlapping - assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores
B 3	Overlapping - assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	PMT	3 UCS on cores 3 Triaxial tests on cores 1 test for stability using alternate wetting and drying method on core
B 4	Overlapping - assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores

Table-2: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Phase-2

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
B 5	Overlapping - assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores
B 6	Overlapping -assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores
B 7	Overlapping assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	PMT	3 UCS on cores 3 Triaxial tests on cores
B 8	Overlapping assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	Lugeon test in the intersection with B12 and B6	5 UCS on cores, Static modulus of elasticity(E) 3 Triaxial tests on cores 1 test for stability using alternate wetting and drying method on core

Table-2: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Phase-2

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
B 9	Overlapping -assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	PMT	3 UCS on cores 3 Triaxial tests on cores 1 Permeability test on core
B 10	Overlapping assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	5 UCS on cores 3 Triaxial tests on cores 1 Permeability test on core
B 11	Overlapping -assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	No	No	None	None
B 12	Overlapping -assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	PMT	3 UCS on cores 3 Triaxial tests on cores
B 13	Overlapping assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column –	2.0	X2	yes	No	None	3 UCS on cores

Table-2: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Phase-2

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
	14.8 m, Drilling platform at EL 91.0 m						
B 14	Overlapping assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores
B 15	Overlapping -assumed 400 mm, Length of empty drill – 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2.0	X2	yes	No	None	3 UCS on cores

Notes:

- Additional test, if required, shall be carried out based on instruction of the engineer.
- The coring, laboratory and field test requirements shown in the table are suggestive. Detailed table shall be prepared by contractor before start of actual trial works of BLOCK-B.
- For carrying out trial of DSM columns with overlap, a trial diameter of 2m has been assumed. The trial plan shall be suitably modified based on actual feasible diameter achieved at GHAVP-3&4 DSM trial location.
- List of tests to be carried out:
 - a. Water pressure test in soil improvement (Lugeon test)
 - b. Pressuremeter test (PMT) – 3 number in each borehole
 - c. Uniaxial compressive strength test (UCS) and static modulus of elasticity (E) for cores. UCS shall be conducted at 28 days, if not mentioned.
 - d. Triaxial test for cores for static modulus of elasticity (E), cohesion (c) and angle of shear friction (ϕ)

Table-2: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for Phase-2

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content	Coring	Wet grab sampling	Field tests	Laboratory tests
							<p>e. Tests for stability using alternate wetting and drying method on core as per ASTM D559</p> <p>f. Determination of permeability coefficient (Permeability test) for cores</p>

• **Phase-4: Block-C (pit bottom) + Block D (Outer wall):**

The required tentative configuration is shown in Figure-7. This trial shall be designed to demonstrate the water tightness of the DSM columns. The trial scheme shall include the following.

- I. A rectangular shaft with two outer rows (tentative) of overlapping (assumed 400 mm overlap) DSM columns (30 columns), starting from working platform (tentatively at EL 91.0 m) to EL69m (Block C) shall be executed to ensure water tight barrier. The two outer layers of DSM columns shall be checked for stability against all types of different construction load cases by the contractor. The number of columns required in the outer layer may be modified based on stability analysis, if required.
- II. DSM columns of Block D (bottom pit) shall be executed with the finalized cement factor (as per Phase-2). The bottom of the shaft (Block D) shall have an overall size of 15 m x 10 m and shall be executed utilizing overlapping columns (66 numbers) with 15m of soil improvement in the depth interval from EL 84m to 69m and 7 m of empty drilling from working platform (tentatively from EL 91m to EL 84m).
- III. After completion of block C and D, a combination of mechanical and manual methods shall be utilized to excavate the bottom pit D. Prior to excavation few SPT's shall be performed in the portion to be excavated to understand the effort required to excavate the same. Further, during excavation the effort involved shall be recorded appropriately and reported.

- IV. After excavation, water ingress in to the bottom pit shall be observed. In case any leakages are observed suitable measures shall be taken by the contractor to ensure leak tightness. The pit shall be observed for a period of minimum one month to see water ingress and shall be backfilled subsequently. A system with separate trenches and own pump to measure the inflow from each side of the pit should be provided, as per requirement.

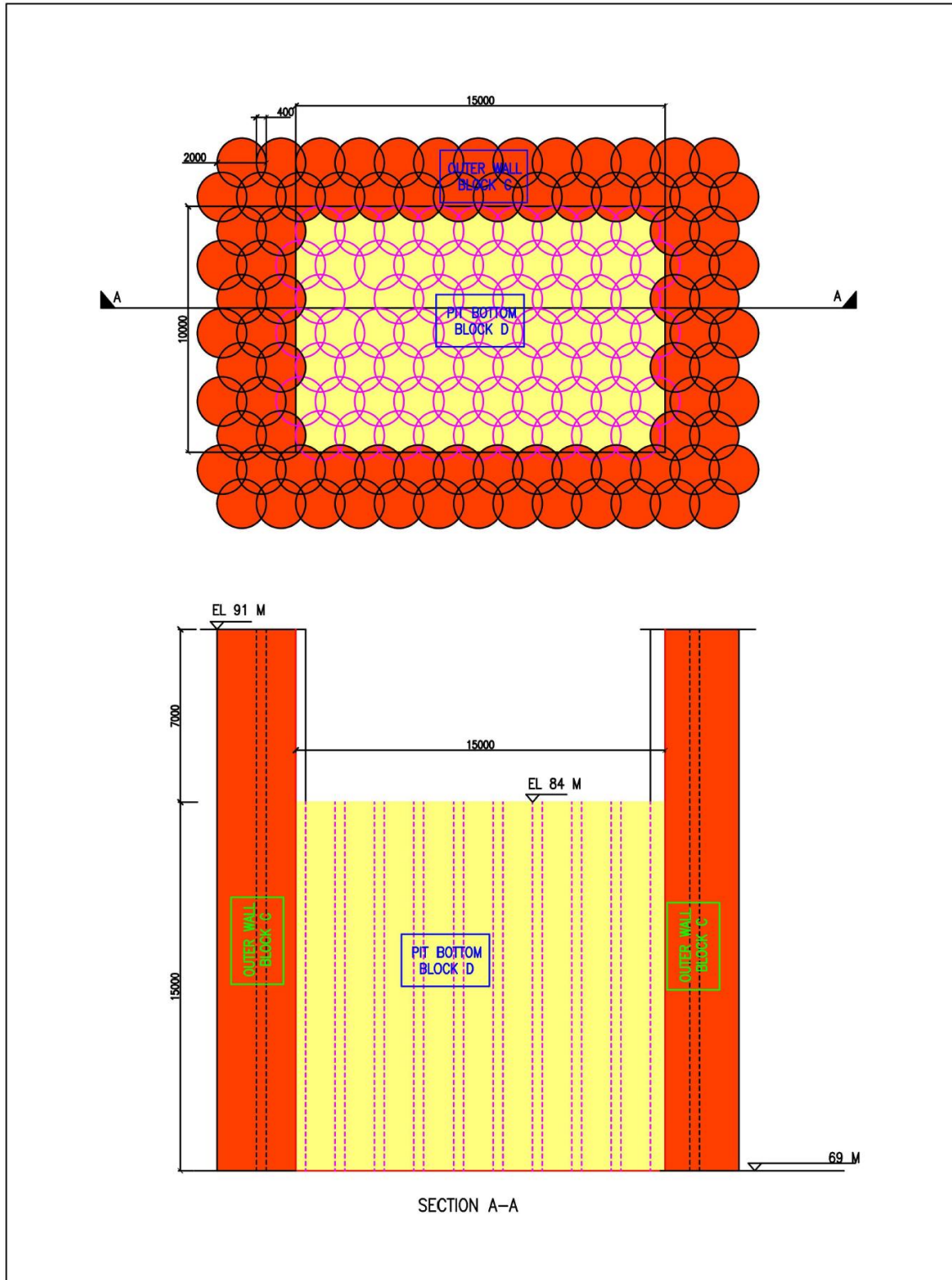


Figure-7: Tentative arrangement of block C (outer wall) and D (bottom pit) DSM trial (with 2.0 diameter columns) with an assumed overlap of 400 mm

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 1	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 2	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 3	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 4	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 5	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 6	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 7	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 8	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 9	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 10	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 11	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	PMT	None
D 12	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 13	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 14	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 15	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	Lugeon	5 UCS on cores 3 Triaxial tests on cores
D 16	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 17	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 18	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	PMT	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 19	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 20	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 21	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 22	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 23	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 24	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 25	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 26	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 27	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 28	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 29	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 30	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 31	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	5 UCS on cores 3 Triaxial tests on cores 1 Permeability test on core
D 32	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 33	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	PMT	None
D 34	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	None
D 35	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 36	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m,	2	X2	Yes	No	None	5 UCS on cores 3 Triaxial tests on cores

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
	Drilling platform at EL 91.0 m						
D 37	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 38	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 39	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 40	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 41	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 42	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 43	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 44	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	None
D 45	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 46	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 47	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 48	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 49	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	PMT	None
D 50	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 51	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 52	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	None
D 53	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	5 UCS on cores 3 Triaxial tests on cores

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 54	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 55	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 56	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	PMT	None
D 57	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 58	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	None
D 59	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 60	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 61	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 62	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	Yes	No	None	None
D 63	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 64	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None
D 65	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Table-3: Comprehensive summary showing details of DSM columns to be cast and suggestive testing requirements for block C and D

Designation of DSM column	Type of DSM column	Dia in m (assumed)	Cement content (assumed)	Coring	Wet grab sampling	Field tests	Laboratory tests
D 66	Overlapping assumed 400 mm, Empty drill - 7.0 m Length of DSM column – 14.8 m, Drilling platform at EL 91.0 m	2	X2	No	No	None	None

Notes:

- Standard testing as per QAP shall be carried out in DSM columns in block C.
- Additional test, if required, shall be carried out based on instruction of the engineer.
- Coring shall be done at the center of DSM column. Maximum depth for coring shall be restricted upto 3m (EL66m) from the bottom of DSM column to avoid ingress of water. The holes shall be plugged based on instruction of the engineer. Additional testing as per requirement shall be carried out in these core samples based on instruction of the engineer.
- Plan for conducting Cross hole seismic test (CHST) as per ASTM D 4428
- The coring, laboratory and field test requirements shown in the table are suggestive. Detailed table shall be prepared by contractor before start of actual trial works of BLOCK-C and D.
- Falling head permeability test and triaxial cell test shall be carried out to obtain permeability
- List of tests to be carried out:
 - a. Wet grab sampling and UCS for them (WGS)
 - b. Water pressure test in soil improvement (Lugeon test)
 - c. Cross-hole seismic test (CHST)
 - d. Pressuremeter test (PMT) – 3 number in each borehole
 - e. Uniaxial compressive strength test (UCS) and static modulus of elasticity (E) for cores
 - f. Triaxial test for cores for static modulus of elasticity (E), cohesion (c) and angle of internal friction (ϕ)
 - g. Tests for stability using alternate wetting and drying method on core as per ASTM D559
 - h. Determination of permeability coefficient (Permeability test) for cores

7.3. Preparatory Works

Prior to commencement of Deep soil mixing activities, necessary preparation works need to be established as listed below

7.3.1. Suitability Tests for Material

Material intended to be used on site might be subject for suitability testing to confirm that material complies with project requirements. The duration for the test cycle to obtain results shall be considered in the program planning.

7.3.2. Working Platform

The work areas shall consist of suitable granular / non-cohesive material, well compacted and constructed in a levelled manner. The design of the working platform, i.e., thickness, fill material type(s), shall allow safe movements of and safe working conditions for drilling rig(s) and associated service equipment during all weather conditions.

In general top of any working platform should be at least 1.5 m above ground water level and inclination must not exceed 1%. The inclination of access ramps shall not exceed 10 degrees. For safety reasons and to ensure an unimpeded sequence of work the entire working platform shall be finalized prior to the commencement of Deep soil mixing works.

7.3.3. Mobilization and Setup of Equipment, Temporary Facilities

Contractor shall mobilize all equipment once all necessary working area and platforms are completed. The temporary facilities shall be set-up in parallel with the mobilization of equipment in such a manner that the setup footprint will not be a hindrance to the Deep soil mixing works. The set-up may be done in several phases depending on the site requirements, column layout and area of the site.

Included in the setup of temporary facilities are but not limited to the installation of office and warehouse containers, utility containers, workshop area, tools area and the cement grout mixing plant. The Mixing plant shall be strategically positioned wherein the area is easily accessible to incoming equipment and materials delivery as well as the distribution hoses for cement grout is unobstructed.

7.3.4. Drilling & Grouting Sequence

A tentative grouting sequence shall be prepared by contractor and this sequence shall be updated weekly as per the look ahead program based on the site condition. The said program shall be shared to NPCIL after each update or revision.

7.4. Set out of DSM Column Locations

A sequence shall be determined in advance to the commencement of drilling to ensure that the completed DSM columns and succeeding column locations shall not be affected, nor disturbed by the current column position under construction.

The column location shall be set out accurately based on approved drawings for construction using suitable surveying techniques, such as total stations and automatic level. Once the correct location has been determined it shall be clearly marked using appropriate marker (steel / wood), which shall be hammered into the ground. Upon setting the location of the column, the surveyor shall record the existing ground elevation at each position. All data recorded by the surveyor

concerning the installed DSM column shall be forwarded to the engineer and shall be kept on file for as-built reference.

7.5. Grout Mixing Parameters

Mixed grout quality and quantity is a very essential factor for construction of column in compliance with specification. Volume & density should be monitored on each column.

7.5.1. Mixing

Based on Grout Mixing Parameter, mixing shall be carried out using charge mixers. Water shall be pumped into the mixing tank until the required volume is reached which shall be measured automatically by the mixing plant. Then the corresponding cement quantity (in silo) shall be placed successively while the water is rotated by pumping action.

The mixed water and cement shall continue until it forms a homogenous cement grout mixture. The mixing shall be done in batches until the required volume for a predetermined position is achieved. Each batch size/ volume shall be decided based on the diameter of the column. During the entire batching process all the data and fresh slurry testing results shall be noted on site forms by the plant operator.

7.5.2. Mixed Grout Volume / Density Measurement

The mixed grout shall then be transferred into an agitator tank for temporary storage. The tank is equipped with continuously rotating paddles to allow continuous grout mixing.

The total volume of the grout can then be checked with the pre-calibrated graduation on the inside of the tank. Additional agitator tanks may be added as necessary to compensate for the storage of the required grout volume

The mixed grout shall be pumped to DSM Rig for soil mixing at site after required parameters are measured and samples are collected for testing.

7.6. Execution of Deep Soil Mixing Column

- The DSM Column location shall be accurately marked prior to construction.
- Continuity between stabilized soil columns shall be accomplished by overlapping the auger flights and mixing blades between the shafts of the DSM rig. The rig should be equipped with the necessary tools to allow for creating 3D as build model to check the deviations and control the water tightness or to decide if correction measures are required.
- The column shall be advanced by overlapping primary and secondary strokes (vertical movement of mixing tool), so that no areas are left untreated.
- Vertical alignment of the auger stroke will be controlled by the DSM equipment operator. The operator will monitor the verticality of the leads and adjust the position of the equipment as necessary.

7.6.1. Mixing Shaft Speed and Mixing energy

The mixing shaft speed (RPMs) shall be adjusted to accommodate a constant rate of shaft penetration, which depends on the degree of drilling difficulty. The mixing shaft speed can be adjusted according to drilling difficulty. The mixing shaft speed can be adjusted to aid mixing of the soil column when needed. Mixing shaft speed may be adjusted to assist penetration in hard drilling. The quality of mixing should be ensured by sufficient blade rotation number which should be recorded per each column and is the key parameter to ensure that sufficient mixing energy is applied per each meter of DSM column.

7.6.2. Penetration Rate

In order to ensure adequate mixing, the penetration rate of the mixing shafts shall be maintained such that the proper amount of grout/slurry is added and the proper amount of mixing time is allowed. The penetration rate and maximum depth of each stroke shall be recorded on the field checklist.

7.6.3. Grout Intake

The grout/ slurry intake or injection rate per running meter of column shall be adjusted to the requirements of the design mix. Positive displacement pumps shall be used to transfer the grout from the mix plant to the DSM rig. The grout shall be delivered separately to each auger. Flow monitoring devices shall be installed in each grout line to detect any line blockage.

The rate of application may be controlled and monitored by any of the following three methods.

1. The positive displacement grout pumps shall be calibrated according to real site conditions to produce a time versus. flow correlation. By adjusting the pump output to the penetration rate, a pre-set grout take can be achieved.
2. The transfer pumps shall deliver grout to the DSM rig where a return line can be adjusted to bleed off any overflow back to the surge tank. The surge tank shall be a cylindrical vessel with a constant depth-volume relationship that can be monitored while the return line is adjusted to ensure a constant injection rate.
3. A programmable electronic controller, flow metering, pressure regulating device may be employed.

The overall application rate to each stroke shall be monitored, calculated and controlled. Additional mixing shall be used when necessary to evenly distribute the grout through the entire column. The injection of grout to each stroke shall be monitored, checked by calculation and recorded.

The final depth and penetration of the column shall be measured from shaft penetration and checked by the Contractor and approved by the Engineer immediately following penetration.

8. QUALITY ASSURANCE / QUALITY CONTROL

8.1. General

Prior to construction, a mix design program shall be conducted to determine the design mix ingredients, sequence of mixing, grout/slurry properties and soil mix properties. The basic guiding principal for the laboratory mix program is to strive to accurately model expected field conditions.

8.2. Sampling

Samples shall be retrieved from the column for testing (as per approved plan, from each day work). These samples shall be taken by a special sampling tool at specified depth of the DSM column immediately following installation. The soil mix shall be placed in suitable molds, rodded to remove trapped air pockets and then sealed. The samples will be stored in a damp environment for curing until initial set has been achieved.

8.3. Testing

The samples shall be transported to an independent geotechnical laboratory for testing once they have sufficient strength gain so that the transporting will not adversely affect the properties.

Based on the mix design program field testing of the grout/slurry) properties shall be submitted for approval. Grout/Slurry control may be performed by one or a combination of the following tests:

- Unit weight by Mud Balance method
- Viscosity by Marsh Funnel method
- pH by pH meter or paper
- Filtrate by filter press

Frequency and standards for field tests shall be determined by the mix design program.

Quality control of the DSM works normally includes the following standard tests:

- Coring at 30 cm off-centre or in column intersections.
- Core samples across blocks for strength, deformation modulus (E-modulus) values, density and integrity checks.
- UCS of grout samples by laboratory press
- QA tests to be staggered across 28-day and 56-day timelines for strength gain analysis.

A Quality Control Test Plan needs to be established to monitor and control the materials and the works. Contractor has to prepare the detailed QAP covering all lab and field tests for DSM trials.

Note: Settlement markers to be installed at nearby grouting column/location to monitor the ground upheaval during the DSM works.

8.4. Treated soil (DSM mix)

In analogy to the design basis for Soil site the required tentative performance characteristics of improved soil are predefined as follows:

- Uniaxial Compressive Strength (UCS) $R_c > 1.0 \text{ MPa}$.
- Deformation modulus for settlement assessment $E > 200 \text{ MPa}$.
- Permeability $k_f < 10^{-7} \text{ m/sec}$.

9. MEASUREMENT, RATE & PAYMENT

Drilling of holes shall be by rotary drilling machine including manpower, machineries, casings, tools and tackles for conducting Deep Soil Mixing as per approved method statement.

- Quoted rates shall include supply, fabrication and erection of all tools and tackles including auger, pumps, etc as required.
- Quoted rates shall include all manpower and resources required for the works including shifting of machine from one point to another.
- Grout material shall be paid as per actual consumption under relevant BOQ item depending upon the composition of grout.
- Quoted rates shall also include supply, fabrication, installation and monitoring of settlement markers.
- During execution of DSM activity (i.e. drilling, grouting, retrieval, etc), in case of any interruption due to various reasons such as breakdown of machinery/equipment/pump etc., choking/blockage of discharge pipe or any other reasons which requires additional DSM point, the same shall be done by contractor at its own cost and shall not be considered for measurement/ extra payment.
- For measurement purpose, DSM points will be paid only once as per original approved drawing.

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TECHNICAL SPECIFICATION ON TRIALS OF DEEP SOIL MIXING	PAGE 46 OF 48 REV. NO.- R1

Annexure-I SAMPLE FIELD QUALITY PLAN FOR DEEP SOIL MIXING												
S. NO.	Description of activity	Type of Check	Reference Documents	Acceptance document/ Limit of acceptance	Quantum of check/Frequency	Record generated (report/format)	Responsible Agencies					Remarks
							Internal/ External lab	CONTRACTOR		CLIENT		
								EXE	QA	Exe	QA	
I. Materials (Upon Received)												
1.1	Cement - OPC-43/53/ Equivalent i. Fineness ii. Soundness iii. Insoluble Residue iv. Total Loss on Ignition	Review of MTC	IS 269	i. 225 m2/kg (Min.) ii. By Le-Chat Expansion-10mm (Max.) iii. %by mass- 5 (Max) iv. % by mass- 4 (Max)	Each delivery	IMIR - MTC	-	R	R	R*	R	
1.2	Chemical Admixture	Review of MTC	IS 9103	IS 9103 - Table 2 Uniformity Tests and Requirements	Each delivery	IMIR - MTC	-	R	R	R*	R	
1.3	Bentonite: Liquid limit pH	Review of MTC	IS 2911	Liquid limit>= 400% pH: 9-11	Each delivery	IMIR - MTC	-	R	R	R*	R	
1.4	Water: Organic Inorganic Sulphates Chloride Suspended matter	Review of Test Report	IS 456	IS 456	Once in 6 months	Water test report	P	R	R	R*	R	

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
TECHNICAL SPECIFICATION ON TRIALS OF DEEP SOIL MIXING	PAGE 47 OF 48 REV. NO.- R1

S. NO.	Description of activity	Type of Check	Reference Documents	Acceptance document/ Limit of acceptance	Quantum of check/Frequency	Record generated (report/format)	Responsible Agencies					Remarks
							Internal/ External lab	CONTRACTOR		CLIENT		
								EXE	QA	Exe	QA	
2. Grout: Mixing & Testing												
2.1	Mixing proportion	Measurement	Approved Procedure	Approved procedure	Each batch	FORMAT	-	P	W	-	W	
2.2	Water Temperature for grout	Measurement	Approved Procedure	30 Deg. Celsius	Each batch	FORMAT	-	P	W	-	W	
2.3	Fresh grout properties	Measurement	Approved Procedure	Theoretical value	Each batch	FORMAT	P	W	W	-	W	
3. Drilling and grouting												
3.1	Borehole location and Elevation	Level and Coordinate check	Approved drawing	Approved drawing	Each Borehole	FORMAT	-	P	W	W	W	
3.2	Verticality	Inclination Sensor or Sperit level chk	Approved Procedure	Approved Procedure	Each Borehole	FORMAT	-	P	W	W	W	
3.3	DSM parameters	Mixing shaft speed	Approved Procedure	Approved Procedure	Each Borehole	FORMAT	-	P	W	W	W	
		Penetration rate										
		Grout intake										

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
TECHNICAL SPECIFICATION ON TRIALS OF DEEP SOIL MIXING	PAGE 48 OF 48 REV. NO.- R1

S. NO.	Description of activity	Type of Check	Reference Documents	Acceptance document/ Limit of acceptance	Quantum of check/Frequency	Record generated (report/format)	Responsible Agencies					Remarks
							Internal/ External lab	CONTRACTOR		CLIENT		
								EXE	QA	Exe	QA	
4. Post Grouting Works												
4.1	Column length	Measurement	As per approved work procedure	As per approved work procedure	As per approved work procedure	FORMAT	-	P	W	W	W	
4.2	Core recovery	TCR, SCR	As per approved work procedure	As per approved work procedure	As per approved work procedure	FORMAT	-	P	W	W	W	
4.3	Core strength	UCS	ASTM D 2166	UCS > 1.0 MPa	As per approved work procedure	FORMAT	P	W	W	W	W	
4.4	Permeability	Permeability coefficient	IS 3085	kf < 10 ⁻⁷ m/sec	As per approved work procedure	FORMAT	P	W	W	R	R	
4.5	E-Modulus	Triaxial	EN ISO 17892-9 (or 8)	E > 200 MPa	As per approved work procedure	FORMAT	P	W	W	R	R	
5. Report Submission												
5.1	Submission of report	Review of Documents	As per approved work procedure	As per approved work procedure	Each Borehole/ Grout column	Compile Report	-	R	R	R	R	Hold Point
LEGENDS: H-Hold point before checking of which subsequent activity can not be started , P = Performance of the activity, W - 100% Witness of activity, TS- Technical Specifications, R-Review of documents, Exe= Execution Engineer, QA= Quality Assurance. , R*= Material Identification Only												
		CONTRACTOR- EXECUTION		CONTRACTOR QA/QC			CLIENT-EXECUTION		CLIENT -QA			

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-06										SHEET NO. : 1 OF 4													
LOCATION : NDCT- 3B										DATE : 10/04/2018 TO 15/04/2018													
CO-ORDINATES : N 3257035.401, E 560471.844										METHOD : ROTARY DRILLING													
GROUND R. L. : 214.186m										CASING : SX mm Ø Upto 33.00m Below EGL..													
GROUND W. T. : 3.54m Below EGL										BOREHOLE DEPTH : 33.00m.Below EGL													
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %			
0.50		0.00																					
1.00																							
1.50		1.50/1.80	UDS1/1													7.80	1.84	1.71					
2.00		1.80/2.10	UDS1/2																				
2.50																							
3.00		3.00/3.45	SPT1	(06) 02/03/03--						ML	02	25	69	04									
3.50																							
4.00																							
4.50		4.50/4.80	UDS2/1													7.39	1.74	1.62	23	16	07		
5.00	SX Ø	4.80/5.10	UDS2/2																				
5.50																							
6.00		6.00/6.45	SPT2	(14) 03/06/08--						ML	02	10	84	04									
6.50																							
7.00																							
7.50		7.50/8.10	UDS3													7.74	1.80	1.67					
8.00																							
8.50																							
9.00		9.00/9.45	SPT3	(21) 06/10/11--						ML	01	06	82	11									
9.50																							
10.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE				WT : WATER TABLE						LL (%) : LIQUID LIMIT							
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE				TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT							
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL				RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION							
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL				NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50		
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BORE HOLE NO. : BH-06

SHEET NO. : 2 OF 4

FIELD DATA								DESCRIPTION	LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
10.50		10.50/11.10	UDS4												21.88	1.92	1.58						
11.00																							
11.50																							
12.00		12.00/12.45	SPT4	(22) 06/09/13/--						ML	00	02	88	10									
12.50																							
13.00																							
13.50		13.50/14.10	UDS5												25.75	1.75	1.39	35	28	07			
14.00																							
14.50																							
15.00	SX Ø	15.00/15.45	SPT5	(26) 05/11/15/--						ML	00	01	82	17									
15.50																							
16.00																							
16.50		16.50/17.10	UDS6												11.78	1.85	1.66						
17.00																							
17.50																							
18.00		18.00/18.45	SPT6	(26) 08/12/14/--						ML	00	01	77	22									
18.50																							
19.00																							
19.50		19.50/20.10	UDS7												8.53	1.90	1.75						
20.00																							

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)

NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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SCALE : 1: 50
JOB NO. : 3870

SHEET NO. : 3 OF 4

SCALE : 1: 50
JOB NO. : 3870

FIELD DATA								DESCRIPTION	LABORATORY DATA																	
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK				
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %						
30.50	SX Ø	31.50/ 32.10	UDS11	(R) 38/100/--/--					SM	00	65	31	04	13.93	2.01	1.76										
31.00																										
31.50																	NP									
32.00																										
32.50																										
33.00		33.00/	SPT11														NP									

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BORE HOLE NO. : BH-07	SHEET NO. : 1 OF 4
LOCATION : NDCT - 3B	DATE : 13/04/2018 TO 17/04/2018
CO-ORDINATES : N 3257142.450, E 560427.391	METHOD : ROTARY DRILLING
GROUND R. L. : 214.274m	CASING : SX mm Ø Upto 32.10m Below EGL..
GROUND W. T. : 3.17m Below EGL	BOREHOLE DEPTH : 32.10m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
0.50		0.00																				
1.00																						
1.50		1.50/1.80	UDS1												16.25	1.96	1.69	26	--	--		
2.00																						
2.50		2.50	PMT1																			
3.00		3.00/3.45	SPT1	(05) 02/02/03/--					Loose, brownish, fine grained, silty SAND	SM	03	32	62	03				25	--	--		
3.50																						
4.00																						
4.50		4.50/5.10	UDS2												21.47	1.91	1.57	NP				
5.00	SX Ø																					
5.50																						
6.00		6.00/6.45	SPT2	(11) 03/05/06/--						SM	00	16	21					NP				
6.50																						
7.00																						
7.50		7.50/8.10	UDS3												22.35	1.83	1.50	NP				
8.00																						
8.50		8.50	PMT2																			
9.00		9.00/9.45	SPT3	(19) 06/08/11/--						SM	00	77	23					NP				
9.50																						
10.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE




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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	ROD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) Ø/(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
10.50	SX	10.50/ 11.10	UDS4	(28) 09/12/16/--									23.38	1.86	1.51							
11.00																NP						
11.50																						
12.00		12.00/ 12.50	PMT3																			
12.50	SX Ø	12.50/ 12.95	SPT4	(31) 11/14/17/--					SM	00	83	17		19.55	1.83	1.53	NP					
13.00																						
13.50		13.50/ 14.10	UDS5																			
14.00																						
14.50	SX Ø			(39) 14/18/21/--					SM	00	76	24		17.77	1.89	1.60	NP					
15.00		15.00/ 15.45	SPT5																			
15.50																						
16.00																						
16.50		16.50/ 17.10	UDS6									17.77	1.89	1.60	NP							
17.00		17.10/ 17.70	RD6																			
17.50																						
18.00		18.00/ 18.45	SPT6												19							
18.50																						
19.00																						
19.50		19.50/ 20.10	UDS7																			
20.00																						

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BORE HOLE NO. : BH-07												SHEET NO. : 3 OF 4															
FIELD DATA										LABORATORY DATA																	
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK					
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %							
.50	SX Ø	21.00/21.45	SPT7	(45) 17/21/24/--					Dense, brown, fine grained, silty SAND	SM	00	76	24		18.60	1.88	1.59			NP							
.00																											
.50																											
1.00		22.00	PMT5																								
.50		22.50/23.10	UDS8																			NP					
1.00																											
.50																											
1.00		24.00/24.45	SPT8	(48) 19/23/25/--									SM	00	77	23						NP					
.50																											
1.00		25.50/26.10	UDS9															20.48	1.85	1.54		NP					
.50																											
1.00	27.00	PMT6																									
.50	27.50/27.95	SPT9	(51) 21/24/27/--							SM	00	76	24						NP								
1.00																											
.50	28.50/29.10	UDS10													20.24	1.82	1.51		NP								
1.00																											
.50																											
1.00	30.00/30.45	SPT10	(52) 18/23/29/--							SM	00	79	21					--	--	--							
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																											
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50 JOB NO. : 3870			
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BORE HOLE NO. : BH-07	SHEET NO. : 4 OF 4
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DS	: DISTURBED SAMPLE	N	: SPT VALUE	WT	: WATER TABLE	LL (%)	: LIQUID LIMIT
UDS	: UNDISTURBED SOIL SAMPLE	R	: REFUSAL 'N' VALUE	TCR	: TOTAL CORE RECOVERY (%)	PL%	: PLASTIC LIMIT
RD	: UDS FOR RELATIVE DENSITY TEST	EGL	: EXISTING GROUND LEVEL	RQD	: ROCK QUALITY DESIGNATION (%)	Cu	: COHESION
SPT	: STD. PENETRATION TEST	RL	: REDUCED LEVEL	NMC	: NATURAL MOISTURE CONTENT	Ø	: ANGLE OF INTERNAL FRICTION

Checked By : Dhiraj Patil	Drawn By: Akshay Chavan	SCALE : 1: 50 JOB NO. : 3870
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CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-11	SHEET NO. : 1 OF 4
LOCATION : CHLORINATION PLANT	DATE : 27/09/2018 TO 01/10/2018
CO-ORDINATES : N 3257272.345, E 560472.205	METHOD : ROTARY DRILLING
GROUND R. L. : 213.995m	CASING : SX mm Ø Upto 32.10m Below EGL..
GROUND W. T. : 3.90m Below EGL	BOREHOLE DEPTH : 32.10m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50		0.00																				
1.00		1.50/1.80	UDS1/1																			
1.50		1.80/2.10	UDS1/2												25.40	1.93	1.54	37	25	12		
2.00																						
2.50																						
3.00		3.00/3.45	SPT1	(07) 02/03/04/--					Medium stiff, dark brown, fine grained, SILT with medium compressibility	MI	00	15	69	16				45	27	18		
3.50																						
4.00																						
4.50		4.50/4.80	UDS2/1												18.05	1.85	1.57	24	--	--		
5.00	SX Ø	4.80/5.10	UDS2/2																			
5.50																						
6.00		6.00/6.45	SPT2	(12) 04/06/06/--						SM	11	43	36	10				28	--	--		
6.50																						
7.00																						
7.50		7.50/8.10	UDS3						Medium dense, dark brown, fine grained, silty SAND						18.39	1.93	1.63	25	--	--		
8.00																						
8.50																						
9.00		9.00/9.45	SPT3	(20) 06/09/11/--						ML	00	45	47	08				27	--	--		
9.50									Very stiff, dark brown, fine grained, SILT with low compressibility													
10.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-11											SHEET NO. : 2 OF 4												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu' (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		10.50/11.10	UDS4												16.58	1.80	1.54	25	--	--			
1.00																							
1.50																							
2.00	SX	12.00/12.45	SPT4	(49) 11/23/26/--						ML	00	33	55	12				26	--	--			
2.50																							
3.00																							
3.50		13.50/14.10	UDS5												14.79	1.91	1.66	23	--	--			
4.00																							
4.50																							
5.00	SX Ø	15.00/15.45	SPT5	(52) 13/25/27/--						ML	00	38	53	09				28	--	--			
5.50																							
6.00																							
6.50		16.50/17.10	UDS6												18.39	1.81	1.53	NP					
7.00																							
7.50																							
8.00		18.00/18.45	SPT6	(56) 15/27/29/--						SM	00	54	38	08				NP					
8.50																							
9.00																							
9.50		19.50/20.10	UDS7												17.92	1.88	1.59	24	--	--			
10.00																							
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-11											SHEET NO. : 3 OF 4												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50	SX Ø	21.00/21.45	SPT7	(59) 16/27/32/--					Very dense, dark brown, fine grained, silty SAND	ML	00	44	46	10				26	--	--			
1.00																							
1.50																							
2.00			22.50/23.10	UDS8											17.46	1.82	1.55	24	--	--			
2.50																							
3.00			24.00/24.45	SPT8	(63) 18/29/34/--						ML	00	47	45	08				29	--	--		
3.50																							
4.00			25.50/26.10	UDS9						Hard, dark brown, fine grained, SILT with low compressibilty						17.94	1.80	1.53	25	--	--		
4.50																							
5.00			27.00/27.45	SPT9	(56) 16/25/31/--						ML	00	49	44	07				28	--	--		
5.50																							
6.00		28.50/29.10	UDS10												16.99	1.89	1.62	23	--	--			
6.50																							
7.00		30.00/30.45	SPT10	(60) 19/27/33/--						ML	00	44	47	09				25	--	--			
7.50																							
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-11

SHEET NO. : 4 OF 4

FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES		CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%			PLASTICITY INDEX %
30.50	SX Ø								Hard, dark brown, fine grained, SILT with low compressibility													
31.00																						
31.50		31.50/	UDS11/1																			
32.00		31.80/ 31.80/ 32.10	UDS11/2																			

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)

NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

REMARKS : BORE HOLE IS TERMINATED AT DEPTH 32.10m.BELOW EGL..

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SCALE : 1: 50

JOB NO. : 3870

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BORE HOLE NO. : BH-12	SHEET NO. : 1 OF 4
LOCATION : CCWPH-4	DATE : 19/01/2019 TO 25/01/2019
CO-ORDINATES : N 3256774.473, E 560719.639	METHOD : ROTARY DRILLING
GROUND R. L. : 213.758m	CASING : SX mm Ø Upto 34.15m Below EGL..
GROUND W. T. : 3.72m Below EGL	BOREHOLE DEPTH : 34.15m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
0.50		0.00																				
1.00																						
1.50		1.50/2.10	UDS1												18.64	1.82	1.53	NP				
2.00																						
2.50																						
3.00		3.00/3.45	SPT1	(04) 01/02/02/--					Loose, dark brown, fine grained, silty SAND	SM	00	54	36	10				25	--	--		
3.50																						
4.00		4.15	PMT1																			
4.50		4.50/5.10	UDS2												19.52	1.99	1.66	NP				
5.00	SX Ø																					
5.50																						
6.00		6.00/6.45	SPT2	(08) 02/03/05/--						MI	00	12	73	15				37	25	12		
6.50																						
7.00																						
7.50		7.50/8.10	UDS3												19.63	1.87	1.63	NP				
8.00									Stiff, dark brown, fine grained, SILT with medium compressibility													
8.50																						
9.00		9.15	PMT2																			
9.50		9.65/10.10	SPT3	(13) 04/06/07/--						ML	00	19	70	11				34	--	--		
10.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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SCALE : 1: 50
JOB NO. : 3870

SHEET NO. : 2 OF 4

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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-12											SHEET NO. : 3 OF 4												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		21.00/21.45	SPT7	(38) 13/17/21/--						MI	00	05	68	27				37	26	11			
0.50		22.50/23.10	UDS8												18.14	1.87	1.58	NP					
1.00		24.15	PMT5							MI	00	08	76	16				36	25	11			
0.50		24.50/24.95	SPT8	(45) 14/21/24/--																			
0.50	SX Ø	25.50/26.10	UDS9												20.08	1.85	1.54	NP					
0.50		27.00/27.45	SPT9	(47) 12/20/27/--						SM	00	86	14					NP					
0.50		28.50/29.10	UDS10												19.93	1.81	1.51	NP					
0.50		29.50	PMT6																				
0.00		30.00/30.45	SPT10	(52) 14/22/30/--						SM	00	84	16					NP					
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870		
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FIELD DATA								DESCRIPTION	LABORATORY DATA																		
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) Ø/(degrees)	REMARK					
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %							
30.50	SX Ø	31.50/ 32.10	UDS11	(47) 12/20/27/--					SM	00	65	27	08	19.64	1.80	1.50											
31.00																											
31.50																	NP										
32.00																											
32.50																											
33.00		33.00/ 33.45	SPT9														NP										
33.50																											
34.00		34.15	PMT7																								

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BORE HOLE NO. : BH-13										SHEET NO. : 1 OF 3																						
LOCATION : TUNNEL										DATE : 12/08/2018 TO 17/08/2018																						
CO-ORDINATES : N 3256978.473, E 560550.894										METHOD : ROTARY DRILLING																						
GROUND R. L. : 213.923m										CASING : SX mm Ø Upto 30.00m Below EGL..																						
GROUND W. T. : 3.45m Below EGL										BOREHOLE DEPTH : 30.00m.Below EGL																						
FIELD DATA										LABORATORY DATA																						
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK										
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %												
0.50	SX Ø	0.00							Loose, dark brown, fine grained, slity SAND	SM	00	71	27	02	8.18	1.83	1.69	NP														
1.00																																
1.50		1.50/2.10	UDS1																													
2.00																																
2.50																																
3.00		3.00/3.45	SPT1		(05) 02/02/03/--														NP													
3.50																																
4.00																																
4.50		4.50/5.10	UDS2													8.12	1.77	1.64	26	--	--											
5.00																																
5.50																																
6.00	6.00/6.45	SPT2		(13) 03/05/08/--					Medium dense, dark brown, fine grained, slity SAND	SM	00	63	34	03	8.26	1.79	1.65	NP														
6.50																																
7.00																																
7.50	7.50/8.10	UDS3																														
8.00																																
8.50																																
9.00	9.00/9.45	SPT3		(19) 06/08/11/--																												
9.50																																
10.00																																
ABBREVIATIONS :																																
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT																	
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT																	
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION																	
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION																	
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50											
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BORE HOLE NO. : BH-13												SHEET NO. : 2 OF 3											
FIELD DATA												LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
10.50	SX	10.50/11.10	UDS4	(24) 06/10/14/--					Medium dense, dark brown, fine grained, slity SAND	SM	00	70	27	03	10.55	1.89	1.71	NP					
1.00																							
1.50																							
2.00																							
2.50	SX Ø	12.00/12.45	SPT4	(30) 07/13/17/--						SM	00	68	29	03				NP					
3.00																							
3.50																							
4.00																							
4.50		13.50/14.10	UDS5												7.57	1.80	1.67	35 -- --					
5.00																							
5.50																							
6.00																							
6.50		15.00/15.45	SPT5	(33) 07/15/18/--						SM	00	65	33	02				NP					
7.00																							
7.50																							
8.00																							
8.50		16.50/17.10	UDS6												7.89	1.84	1.71	NP					
9.00																							
9.50																							
10.00																							
10.50		18.00/18.45	SPT6							SM	00							NP					
11.00																							
11.50																							
12.00																							
12.50		19.50/20.10	UDS7															NP					
13.00																							
13.50																							
14.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT					
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT					
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION					
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						ø : ANGLE OF INTERNAL FRICTION					
REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50 JOB NO. : 3870			
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BORE HOLE NO. : BH-13										SHEET NO. : 3 OF 3																																			
FIELD DATA										LABORATORY DATA																																			
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK																							
20.50	SX Ø	21.00/21.45	SPT7	(40) 09/19/21/--					Dense, dark brown, fine grained, slity SAND	ML	00	46	45	09				NP																											
21.00																																													
21.50		22.50/23.10	UDS8						Hard, dark brown, fine grained, SILT with low compressibility						9.74	1.79	1.63	NP																											
22.00																																													
22.50		24.00/24.45	SPT8	(46) 12/21/25/--						SM	00	63	31	06				NP																											
23.00																																													
23.50		25.50/26.10	UDS9						Dense, dark brown, fine grained, slity SAND						6.14	1.69	1.59	NP																											
24.00																																													
25.00		27.00/27.45	SPT9	(50) 14/23/27/--						SM	00	63	32	05				NP																											
25.50																																													
26.00		28.50/29.10	UDS10						Dense, light brown, fine grained, slity SAND						15.69	1.81	1.56	NP																											
26.50																																													
27.00		30.00/30.45	SPT10	(53) 15/24/29/--						ML	00	32	50	18				NP																											
27.50																																													
28.00																																													
28.50																																													
29.00																																													
29.50																																													
30.00																																													
ABBREVIATIONS :																																													
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT																														
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT																														
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION																														
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION																														
REMARKS : BORE HOLE IS TERMINATED AT DEPTH 30.00m.BELOW EGL.										Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50																									
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BORE HOLE NO. : BH-14											SHEET NO. : 1 OF 3																									
LOCATION : D/M FILTRATION PLANT AREA											DATE : 18/09/2018 TO 22/09/2018																									
CO-ORDINATES : N 3257246.824, E 560745.580											METHOD : ROTARY DRILLING																									
GROUND R. L. : 214.246m											CASING : SX mm Ø Upto 27.00m Below EGL..																									
GROUND W. T. : 4.10m Below EGL											BOREHOLE DEPTH : 27.00m.Below EGL																									
FIELD DATA											LABORATORY DATA																									
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %	Cu/ (kg/cm²) / Ø(degrees)	REMARK														
0.50	SX Ø	0.00							Loose, dark brown, fine grained, silty SAND	SM	00	51	36	13	10.58	1.91	1.73	25	--	--																
1.00																																				
1.50		1.50/	UDS1/1																																	
1.80		1.80/	UDS1/2																																	
2.00		2.10																																		
2.50																																				
3.00		3.00/	SPT1	(06)	02/03/03/--																															
3.45																																				
3.50																																				
4.00																																				
4.50	4.50/	UDS2							Stiff, dark brown, fine grained, SILT with medium compressibility	MI	12	19	49	20	8.45	1.69	1.56	39	27	12																
5.00	5.10																																			
5.50																																				
6.00	6.00/	SPT2	(13)	04/06/07/--																																
6.45																																				
6.50																																				
7.00																																				
7.50	7.50/	UDS3																																		
7.80	8.10																																			
8.00																																				
8.50																																				
9.00	9.00/	SPT3	(22)	06/10/12/--					Very stiff, dark brown, fine grained, SILT with medium compressibility	MI	00	05	62	33				46	29	17																
9.45																																				
9.50																																				
10.00																																				
ABBREVIATIONS : DS : DISTURBED SAMPLE UDS : UNDISTURBED SOIL SAMPLE RD : UDS FOR RELATIVE DENSITY TEST SPT : STD. PENETRATION TEST N : SPT VALUE R : REFUSAL 'N' VALUE EGL : EXISTING GROUND LEVEL RL : REDUCED LEVEL WT : WATER TABLE TCR : TOTAL CORE RECOVERY (%) RQD : ROCK QUALITY DESIGNATION (%) NMC : NATURAL MOISTURE CONTENT LL (%) : LIQUID LIMIT PL% : PLASTIC LIMIT Cu : COHESION Ø : ANGLE OF INTERNAL FRICTION																																				
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870																
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BORE HOLE NO. : BH-14	SHEET NO. : 2 OF 3

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By: Akshay Chavan
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FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	ROD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %		
20.50	SX Ø	21.00/ 21.45	SPT7	(57) 17/27/30/--					SM	00	77	23		10.68	1.90	1.72	NP					
21.50																						
22.00																						
22.50		22.50/ 23.10	UDS8										24	--	--							
23.00																						
23.50																						
24.00		24.00/ 24.45	SPT8	(60) 19/28/32/--						SM	00	78	22					NP				
24.50																						
25.00																						
25.50	25.50/ 26.10	UDS9											14.18	1.86	1.63	25	--	--				
26.00																						
26.50																						
27.00	27.00/ 27.45	SPT9	(63) 20/30/33/--						SM	00	76	24					NP					


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BORE HOLE NO. : BH-61											SHEET NO. : 1 OF 14																													
LOCATION : NB - 3											DATE : 18/05/2019 TO 11/06/2019																													
CO-ORDINATES : N 3257003.700, E 561013.738											METHOD : ROTARY DRILLING																													
GROUND R. L. : 213.813m											CASING : SX mm Ø Upto 140.10m Below EGL																													
GROUND W. T. : 5.46m Below EGL											BOREHOLE DEPTH : 140.10m.Below EGL																													
FIELD DATA											LABORATORY DATA																													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %	Cu/ (kg/cm²) / Ø(degrees)	REMARK																		
0.00	SX Ø	0.00	UDS1	(07) 02/03/04/--					Loose, dark brown, fine grained, silty SAND	SM	00	60	36	04	15.65	2.02	1.75	23	--	--																				
0.50																																								
1.00																																								
1.50		1.50/2.10																																						
2.00																																								
2.50																																								
3.00		3.00/3.45	SPT1																					NP																
3.50																																								
4.00																																								
4.50		4.50/5.10	UDS2																		16.89	1.80	1.54	26	--	--														
5.00																																								
5.50																																								
6.00	6.00/6.45	SPT2		(16) 05/07/09/--						ML	00	38	53	09					25	--	--																			
6.50																																								
7.00																																								
7.50	7.50/8.10	UDS3													20.85	1.99	1.65	NP																						
8.00																																								
8.50																																								
9.00	9.00/9.45	SPT3		(22) 07/10/12/--						ML	00	29	57	14				34	25	09																				
9.50																																								
10.00	9.00/	PMT1																																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																																								
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870																		
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BORE HOLE NO. : BH-61

SHEET NO. : 2 OF 14

FIELD DATA								DESCRIPTION	LABORATORY DATA																	
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK				
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %						
10.50	SX Ø	10.50/ 11.10	UDS4	(25) 07/11/14/--					ML	00	66	30	04	19.64	1.87	1.56										
11.00		NP																								
11.50																										
12.00		NP																								
12.50																										
13.00																										
13.50		13.50/ 14.10	UDS5	(30) 09/13/17/--					ML	00	47	47	06	18.59	1.97	1.66	NP									
14.00																										
14.50		14.50	PMT2																							
15.00		15.00/ 15.45	SPT5														NP									
15.50																										
16.00									Stiff, brownish, fine grained, SILT with low compressibility					24.51	1.85	1.49	NP									
16.50		16.50/ 17.10	UDS6																							
17.00																										
17.50																										
18.00		18.00/ 18.45	SPT6	(32) 10/15/17/--					SM	00	61	34	05	NP												
18.50				Dense, brownish, fine grained, silty SAND																						
19.00																										
19.50	19.50/ 20.10	UDS7	NP																							
20.00																										

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE


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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

FIELD DATA								DESCRIPTION	LABORATORY DATA																		
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	ROD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK					
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %							
20.50	SX Ø	20.50	PMT3	(38) 12/18/20/--					SM	00	56	41	03	16.87	1.69	1.58											
21.00		21.00/ 21.45	SPT7														NP										
21.50																											
22.00																											
22.50		22.50/ 23.10	UDS8																		NP						
23.00																											
23.50																											
24.00		24.00/ 24.45	SPT8	(40) 14/19/21/--										SM	00	57	39	04				NP					
24.50																											
25.00		25.00	PMT4																								
25.50		25.50/ 26.10	UDS9																21.64	1.94	1.59	NP					
26.00																											
26.50																											
27.00		27.00/ 27.45	SPT9	(44) 16/21/23/--										SM	00	61	35	04				NP					
27.50																											
28.00																											
28.50	28.50/ 29.10	UDS10												22.13	1.48	1.81	NP										
29.00																											
29.50	29.50	PMT5																									
30.00	30.00/ 30.45	SPT10	(49) 18/23/26/--						SM	00	89	11					NP										

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)


NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																								
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-61											SHEET NO. : 4 OF 14													
FIELD DATA									LABORATORY DATA															
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
0.50	SX Ø	31.50/32.10	UDS11	(54) 17/25/29/--					Dense, greyish brown, fine grained, silty SAND	SM	00	79	21	26.58	1.82	1.44	26	--	--					
1.00		33.00/33.45	SPT11																			NP		
1.50																								
2.00		34.50/35.10	UDS12	(58) 19/27/31/--					Very dense, dark brown, fine grained, silty SAND		28.30	1.88	1.47				NP							
2.50		35.50	PMT6																					
3.00		36.00/36.45	SPT12															35	26			09		
3.50			37.50/38.10	UDS13					(62) 21/29/33/--		Hard, dark brown, fine grained, SILT with medium compressibility	25.03	1.87				1.50	29	--			--		
4.00		39.00/39.45	SPT13	34																			25	09
4.50		40.00	PMT7																					
5.00																								

ABBREVIATIONS :											
DS	: DISTURBED SAMPLE	N	: SPT VALUE	WT	: WATER TABLE	LL (%)	: LIQUID LIMIT				
UDS	: UNDISTURBED SOIL SAMPLE	R	: REFUSAL 'N' VALUE	TCR	: TOTAL CORE RECOVERY (%)	PL%	: PLASTIC LIMIT				
RD	: UDS FOR RELATIVE DENSITY TEST	EGL	: EXISTING GROUND LEVEL	RQD	: ROCK QUALITY DESIGNATION (%)	Cu	: COHESION				
SPT	: STD. PENETRATION TEST	RL	: REDUCED LEVEL	NMC	: NATURAL MOISTURE CONTENT	Ø	: ANGLE OF INTERNAL FRICTION				

REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50	
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-61											SHEET NO. : 5 OF 14													
FIELD DATA									DESCRIPTION	LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
0.50		40.50/41.10	UDS14												27.58	1.81	1.42	29	--	--				
1.00																								
1.50																								
2.00		42.00/42.40	SPT14	(60) 20/28/32/--					ML	02	14	66	18					33	25	08				
2.50																								
3.00																								
3.50		43.50/44.10	UDS15												26.46	1.81	1.43	30	--	--				
4.00																								
4.50		44.50	PMT8																					
5.00	SX Ø	45.00/45.45	SPT15	(65) 23/31/34/--					ML	07	16	64	13					34	25	09				
5.50																								
6.00																								
6.50		46.50/47.10	UDS16												25.86	1.88	1.49	NP						
7.00																								
7.50																								
8.00		48.00/48.45	SPT16	(70) 23/32/38/--					SM	00	79	21						NP						
8.50																								
9.00																								
9.50		49.50/50.10	UDS17												30.31	1.88	1.44	25	--	--				
10.00																								
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION									
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870					
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BORE HOLE NO. : BH-61										SHEET NO. : 6 OF 14														
FIELD DATA									DESCRIPTION	LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %				
50.50		50.50	PMT9																					
51.00		51.00/51.45	SPT17	(76) 24/35/41/--						SM	00	61	36	03					NP					
52.50		52.50/53.10	UDS18												22.75	1.92	1.56	24	--	--				
54.00		54.00/54.45	SPT18	(79) 23/36/43/--						SP-SM	00	90	10						NP					
55.50	SX Ø	55.50/56.10	UDS19												18.68	1.95	1.64			NP				
57.00		57.00/57.45	SPT19	(85) 25/39/46/--						SM	00	86	14						NP					
58.50		58.50/59.10	UDS20												18.41	1.88	1.59	23	--	--				
59.50		59.50	PMT10																					
60.00		60.00/60.45	SPT20	(90) 30/42/48/--						ML	03	51	42	04				25	--	--				
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION									
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50			
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BORE HOLE NO. : BH-61											SHEET NO. : 7 OF 14											
FIELD DATA									DESCRIPTION	LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
.50																						
.00																						
.50		61.50/62.10	UDS21												17.43	1.81	1.54		NP			
1.00																						
.50																						
1.00		63.00/63.45	SPT21	(97) 42/47/50/--					SM	00	77		23						NP			
.50																						
1.00																						
.50		64.50/65.10	UDS22												19.65	1.82	1.52		NP			
1.00	SX Ø																					
.50																						
1.00		66.00/66.45	SPT22	(87) 18/37/50/--					ML	08	36	50	06					21	--	--		
.50																						
1.00																						
.50		67.50/68.10	UDS23												23.88	1.88	1.52	26	--	--		
1.00																						
.50																						
1.00		69.00/69.45	SPT23	(94) 36/41/53/--					ML	00	33	54	13					34	25	09		
.50																						
1.00		70.00	PMT11																			
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870			
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BORE HOLE NO. : BH-61											SHEET NO. : 8 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		70.50/71.10	UDS24												19.34	1.93	1.62	20	--	--			
1.00																							
1.50																							
2.00		72.00/72.45	SPT24	(100) 39/45/55/--					SM	00	83	17							NP				
2.50																							
3.00																							
3.50		73.50/74.10	UDS25												24.93	1.85	1.48	24	--	--			
4.00																							
4.50																							
5.00	SX Ø	75.00/75.43	SPT25	(R) 45/56/44/--					ML	00	41	52	07					23	--	--			
5.50																							
6.00																							
6.50		76.50/77.10	UDS26												17.85	1.81	1.54		NP				
7.00																							
7.50																							
8.00		78.00/78.39	SPT26	(R) 47/61/39/--					SM	00	58	38	04						NP				
8.50																							
9.00																							
9.50		79.50/80.10	UDS27												22.91	1.88	1.53		NP				
10.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT					
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT					
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION					
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION					
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50		
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BORE HOLE NO. : BH-61											SHEET NO. : 9 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %		
.50		80.50	PMT12																			
.00		81.00/81.37	SPT27	(R) 51/66/34/--						SM	00	62	35	03						NP		
.50																						
1.00																						
.50		82.50/83.10	UDS28												20.15	1.99	1.66			NP		
1.00																						
.50																						
1.00		84.00/84.35	SPT28	(R) 54/71/29/--						SM	00	62	34	04						NP		
.50																						
1.00	SX Ø																					
.50		85.50/86.10	UDS29												18.45	1.87	1.58	24	--	--		
1.00																						
.50																						
1.00		87.00/87.33	SPT29	(R) 61/76/24/--						ML	00	49	49	02				24	--	--		
.50																						
1.00																						
.50		88.50/89.10	UDS30												27.12	2.02	1.59	28	--	--		
1.00																						
.50																						
1.00		90.00/90.41	SPT30	(R) 41/59/41/--						ML	00	46	48	06				26	--	--		
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50 JOB NO. : 3870	
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BORE HOLE NO. : BH-61											SHEET NO. : 10 OF 14												
FIELD DATA											LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50	SX Ø	91.50/92.10	UDS31						Hard, brownish, fine grained, SILT with low compressibilty						18.68	1.90	1.60	27	--	--			
1.00																							
1.50																							
2.00																							
2.50																							
3.00			93.00/93.41	SPT31	(R) 42/61/39/--						SM	00	53	43	04				25	--	--		
3.50																							
4.00																							
4.50			94.50/95.10	UDS32						Very dense, brownish, fine grained, silty SAND						16.90	1.93	1.65	28	--	--		
5.00																							
5.50																							
6.00		96.00/96.39	SPT32	(R) 44/68/32/--						ML	00	49	46	05				23	--	--			
6.50																							
7.00																							
7.50		97.50/98.10	UDS33						Hard, brownish, fine grained, SILT with low compressibilty														
8.00															23.21	1.83	1.49	25	--	--			
8.50																							
9.00		99.00/99.37	SPT33	(R) 48/71/29/--						SM	00	55	42	03				23	--	--			
9.50									Very dense, dark brown, fine grained, silty SAND														
10.00																							

ABBREVIATIONS :																							
DS : DISTURBED SAMPLE				N : SPT VALUE				WT : WATER TABLE				LL (%) : LIQUID LIMIT											
UDS : UNDISTURBED SOIL SAMPLE				R : REFUSAL 'N' VALUE				TCR : TOTAL CORE RECOVERY (%)				PL% : PLASTIC LIMIT											
RD : UDS FOR RELATIVE DENSITY TEST				EGL : EXISTING GROUND LEVEL				RQD : ROCK QUALITY DESIGNATION (%)				Cu : COHESION											
SPT : STD. PENETRATION TEST				RL : REDUCED LEVEL				NMC : NATURAL MOISTURE CONTENT				Ø : ANGLE OF INTERNAL FRICTION											
REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50			
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FIELD DATA								DESCRIPTION	LABORATORY DATA																				
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	ROD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK							
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %									
100.50	SX Ø	100.50/ 101.10	UDS34	(R) 51/77/23/--					ML	00	33	53	14	18.30	1.80	1.52													
101.00		NP																											
101.50																													
102.00		102.00/ 102.34	SPT34														32	--	--										
102.50																													
103.00																													
103.50		103.50/ 104.10	UDS35														25	--	--										
104.00																													
104.50																													
105.00		105.00/ 105.33	SPT35					(R) 49/75/25/--									Hard, dark brown, fine grained, SILT with low compressibilty	ML	00			47	47	06				25	--
105.50																													
106.00																													
106.50	106.50/ 107.10	UDS36		28	--	--																							
107.00																													
107.50																													
108.00	108.00/ 108.31	SPT36	(R) 52/78/22/--	SM	00	51	44	05				24	--	--															
108.50																													
109.00																													
109.50	109.50/ 110.10	UDS37													NP														
110.00																													

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Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-61

SHEET NO. : 12 OF 14

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
110.50									Very dense, dark brown, fine grained, silty SAND													
111.00		111.00/111.28	SPT37	(R) 59/100/--/--						ML	00	49	48	03				26	--	--		
111.50																						
112.00																						
112.50		112.50/113.10	UDS38						Hard, brownish, fine grained, SILT with low compressibilty						21.71	1.88	1.54	NP				
113.00																						
113.50																						
114.00		114.00/114.34	SPT38	(R) 56/72/28/--						SM	00	53	43	04				NP				
114.50																						
115.00	SX Ø																					
115.50		115.50/116.10	UDS39												24.57	1.90	1.53	NP				
116.00																						
116.50																						
117.00		117.00/117.31	SPT39	(R) 67/83/17/--					Very dense, brownish, fine grained, silty SAND	SM	00	54	41	05				NP				
117.50																						
118.00																						
118.50		118.50/119.10	UDS40												15.17	1.81	1.57	NP				
119.00																						
119.50																						
120.00		120.00/120.29	SPT40	(R) 59/100/--/--						SM	00	61	35	04				NP				

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-61											SHEET NO. : 13 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50																						
1.00																						
1.50		121.50/122.10	UDS41						Very dense, brownish, fine grained, silty SAND						21.32	1.87	1.54	23	--	--		
2.00																						
2.50																						
3.00		123.00/123.27	SPT41	(R) 62/100/--/--						ML	00	49	46	05				27	--	--		
3.50																						
4.00																						
4.50		124.50/125.10	UDS42						Hard, brownish, fine grained, SILT with low compressibility						23.54	1.95	1.58	20	--	--		
5.00	SX Ø																					
5.50																						
6.00		126.00/126.32	SPT42	(R) 53/78/22/--						SM	00	55	42	03				23	--	--		
6.50																						
7.00																						
7.50		127.50/128.10	UDS43												23.95	1.94	1.57	NP				
8.00									Very dense, brownish, fine grained, silty SAND													
8.50																						
9.00		129.00/129.31	SPT43	(R) 66/87/13/--						SM	00	68	29	03				NP				
9.50																						
0.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50 JOB NO. : 3870	
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CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

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Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-61

SHEET NO. : 14 OF 14

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
130.50		130.50/131.10	UDS44						Very dense, brownish, fine grained, silty SAND						28.02	1.87	1.44	26	--	--		
131.00																						
131.50																						
132.00		132.00/132.30	SPT44	(R) 51/100/--/--					Hard, brownish, fine grained, SILT with low compressibility	ML	00	48	49	03				25	--	--		
132.50																						
133.00																						
133.50		133.50/134.10	UDS45												29.99	1.87	1.44	26	--	--		
134.00																						
134.50																						
135.00	SX ø	135.00/135.29	SPT45	(R) 63/100/--/--					Hard, brownish, fine grained, SILT with low compressibility	ML	00	44	46	10				23	--	--		
135.50																						
136.00																						
136.50		136.50/137.10	UDS46												24.22	1.92	1.54	24	--	--		
137.00																						
137.50																						
138.00		138.00/138.27	SPT46	(R) 65/100/--/--					Very dense, brownish, fine grained, silty SAND	SM	00	64	33	03				NP				
138.50																						
139.00																						
139.50		139.50/140.10	UDS47												24.42	1.90	1.53	NP				
140.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	ø : ANGLE OF INTERNAL FRICTION

REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.10m BELOW EGL.

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-62	SHEET NO. : 1 OF 14
LOCATION : NB - 3	DATE : 28/12/2018 TO 15/01/2019
CO-ORDINATES : N 3256973.453, E 561026.283	METHOD : ROTARY DRILLING
GROUND R. L. : 213.689m	CASING : SX mm Ø Upto 140.10m Below EGL
GROUND W. T. : 3.71m Below EGL	BOREHOLE DEPTH : 140.10m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
0.00																						
0.50																						
1.00																						
1.50		1.50/2.10	UDS1												16.32	1.94	1.67					
2.00																						
2.50																						
3.00		3.00/3.45	SPT1	(05) 02/02/03/--					Loose, dark brown, fine grained, silty SAND	SM	00	76		24								
3.50																						
4.00																						
4.50		4.50/5.10	UDS2												18.65	1.88	1.58	27	--	--		
5.00	SX Ø																					
5.50																						
6.00		6.00/6.45	SPT2	(11) 03/05/06/--						ML	03	24	61	12				30	24	06		
6.50																						
7.00																						
7.50		7.50/8.10	UDS3						Stiff, dark brown, fine grained, SILT with low compressibility						21.33	1.94	1.60	28	23	05		
8.00																						
8.50																						
9.00		9.00/9.45	SPT3	(14) 04/06/08/--					Stiff, dark brown, fine grained, SILT with medium compressibility	MI	00	24	60	16				35	25	10		
9.50																						
10.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-62											SHEET NO. : 2 OF 14											
FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %		
0.50		10.50/11.10	UDS4												20.61	1.88	1.56	34	24	10	0.31 33.92 0.14 32.62	Effective Total
1.00																						
1.50																						
2.00		12.00/12.45	SPT4	(23) 07/10/13/--					MI	06	25	51	18					37	26	11		
2.50																						
3.00																						
3.50		13.50/14.10	UDS5												22.84	1.92	1.56	36	25	11	0.13 34.47 0.04 33.16	Effective Total
4.00																						
4.50																						
5.00	SX Ø	15.00/15.45	SPT5	(32) 08/14/18/--					MI	10	22	52	16					38	26	12		
5.50																						
6.00																						
6.50		16.50/17.10	UDS6												21.18	1.86	1.53	38	26	12	0.31 31.87 0.10 31.47	Effective Total
7.00																						
7.50																						
8.00		18.00/18.45	SPT6	(31) 07/13/18/--					MI	00	09	73	18					40	27	13		
8.50																						
9.00																						
9.50		19.50/20.10	UDS7												23.45	1.90	1.54	34	25	09	0.45 30.93 0.27 30.53	Effective Total
10.00																						
ABBREVIATIONS :																						
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT				
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT				
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION				
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION				
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50	
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BORE HOLE NO. : BH-62											SHEET NO. : 3 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm²) / Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %			
0.50	SX Ø	21.00/21.45	SPT7	(36) 09/15/21/--					Hard, dark brown, fine grained, SILT with medium compressibilty	ML	00	14	72	14				32	24	08			
1.00																							
1.50																							
2.00																							
2.50			22.50/23.10	UDS8						Hard, dark brown, fine grained, SILT with low compressibilty						19.54	1.84	1.54	33	25	28	0.41 32.62 0.19 31.74	Effective Total
3.00																							
3.50																							
4.00			24.00/24.45	SPT8	(39) 10/16/23/--						ML	00	16	69	15				30	24	06		
4.50																							
5.00																							
5.50		25.50/26.10	UDS9												18.87	1.89	1.59	32	25	07	0.24 31.33 0.16 30.46	Effective Total	
6.00																							
6.50																							
7.00		27.00/27.45	SPT9	(44) 11/18/26/--					Hard, brown, fine grained, SILT with low compressibilty	ML	02	21	59	18				34	25	09			
7.50																							
8.00																							
8.50		28.50/29.10	UDS10												20.98	1.85	1.53	22	--	--	0.21 31.47 0.11 29.74	Effective Total	
9.00																							
9.50																							
10.00		30.00/30.45	SPT10	(49) 19/21/28/--						ML	00	42	49	09				24	--	--			
ABBREVIATIONS : DS : DISTURBED SAMPLE UDS : UNDISTURBED SOIL SAMPLE RD : UDS FOR RELATIVE DENSITY TEST SPT : STD. PENETRATION TEST N : SPT VALUE R : REFUSAL 'N' VALUE EGL : EXISTING GROUND LEVEL RL : REDUCED LEVEL WT : WATER TABLE TCR : TOTAL CORE RECOVERY (%) RQD : ROCK QUALITY DESIGNATION (%) NMC : NATURAL MOISTURE CONTENT LL (%) : LIQUID LIMIT PL% : PLASTIC LIMIT Cu : COHESION Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870				
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<div> <div>CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED</div> <div>PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"</div> <div>BORE HOLE NO. : BH-62</div> <div>SHEET NO. : 4 OF 14</div> </div>																					
FIELD DATA								DESCRIPTION	LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			REMARK	
										GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL %	PL %	PLASTICITY INDEX %		
30.50								Hard, brown, fine grained, SILT with low compressibility													
31.00																					
31.50		31.50/32.10	UDS11											24.44	1.84	1.48				0.35	
32.00																				28.82	
32.50																				0.23	
33.00		33.00/33.45	SPT11	(54) 16/24/30/--					SM	00	56	38	06							28.42	
33.50																					
34.00																					
34.50		34.50/35.10	UDS12											21.63	1.86	1.53				0.32	
35.00	SX Ø																			31.00	
35.50																				0.20	
36.00		36.00/36.45	SPT12	(59) 19/26/33/--					SM	00	84		16							30.66	
36.50																					
37.00																					
37.50		37.50/38.10	UDS13											23.26	1.86	1.51	21	--	--	0.27	
38.00																				29.27	
38.50																				0.13	
39.00		39.00/39.45	SPT13	(64) 20/28/36/--					SM	00	55	39	06				24	--	--	28.88	
39.50																					
40.00																					
<div> <div>ABBREVIATIONS :</div> <div> <div>DS : DISTURBED SAMPLE</div> <div>UDS : UNDISTURBED SOIL SAMPLE</div> <div>RD : UDS FOR RELATIVE DENSITY TEST</div> <div>SPT : STD. PENETRATION TEST</div> </div> <div> <div>N : SPT VALUE</div> <div>R : REFUSAL 'N' VALUE</div> <div>EGL : EXISTING GROUND LEVEL</div> <div>RL : REDUCED LEVEL</div> </div> <div> <div>WT : WATER TABLE</div> <div>TCR : TOTAL CORE RECOVERY (%)</div> <div>RQD : ROCK QUALITY DESIGNATION (%)</div> <div>NMC : NATURAL MOISTURE CONTENT</div> </div> <div> <div>LL (%) : LIQUID LIMIT</div> <div>PL% : PLASTIC LIMIT</div> <div>Cu : COHESION</div> <div>Ø : ANGLE OF INTERNAL FRICTION</div> </div> </div>																					
REMARKS : CONTINUED ON NEXT PAGE										Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50							
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana
Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-62

SHEET NO. : 5 OF 14

FIELD DATA								DESCRIPTION	LABORATORY DATA																									
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) Ø/(degrees)	REMARK												
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %														
40.50		40.50/ 41.10	UDS14	(68) 21/30/38/--						SM	00	51	42	07	25.52	1.82	1.45	22	--	--	0.39	Effective												
41.00																					33.99		Total											
																					0.14													
																					33.64													
41.50																																		
42.00		42.00/ 42.40	SPT14							SM	00	51	42	07				25	--	--														
42.50																																		
43.00																																		
43.50		43.50/ 44.10	UDS15												23.86	1.88	1.52	23	--	--	0.21		Effective											
44.00																					33.02	Total												
																					0.14													
																					32.21													
44.50																																		
45.00	SX Ø	45.00/ 45.45	SPT15	(72) 19/32/40/--				Very dense, dark brown, fine grained, silty SAND		SM	00	54	38	08				24	--	--														
45.50																																		
46.00																																		
46.50		46.50/ 47.10	UDS16																										24.63	1.87	1.50	24	--	--
47.00																					28.49	Total												
																					0.22													
																					27.26													
47.50																																		
48.00		48.00/ 48.45	SPT16	(81) 20/34/42/--						SM	00	57	36	07				22	--	--														
48.50																																		
49.00																																		
49.50		49.50/ 50.10	UDS17												25.42	1.89	1.51	NP			0.23		Effective											
																					33.16	Total												
																					0.09													
50.00																					32.68													

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan



SCALE : 1: 50
JOB NO. : 3870

<div>CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED</div> <div>PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"</div> <div>BORE HOLE NO. : BH-62</div> <div>SHEET NO. : 6 OF 14</div>																								
FIELD DATA										LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL %	PL %	PLASTICITY INDEX %	Cu / (kg/cm ²) / Ø (degrees)	REMARK		
50.50									Very dense, dark brown, fine grained, silty SAND															
51.00		51.00/51.45	SPT17	(80) 23/36/44/--						SM	00	80	20											
51.50																								
52.00																								
52.50		52.50/53.10	UDS18												20.53	1.85	1.53				0.34	Effective		
53.00																					33.23	Total		
53.50																					3.23			
54.00		54.00/54.45	SPT18	(84) 24/38/46/--					Very dense, greyish, fine grained, silty SAND	SM	00	54	39	07										
54.50																								
55.00	SX Ø																							
55.50		55.50/56.10	UDS19												22.74	1.90	1.55				0.14	Effective		
56.00																					34.75	Total		
56.50																					0.05			
57.00		57.00/57.45	SPT19	(79) 22/36/43/--						SM	00	77	23											
57.50																								
58.00																								
58.50		58.50/59.10	UDS20						Very dense, brown, fine grained, silty SAND						19.27	1.87	1.57	25	--	--	0.34	Effective		
59.00																					33.85	Total		
59.50																					0.19			
60.00		60.00/60.45	SPT20	(86) 21/39/47/--						ML	00	39	54	07				23	--	--	32.48			
<div>ABBREVIATIONS :</div> <div> <div>DS : DISTURBED SAMPLE</div> <div>UDS : UNDISTURBED SOIL SAMPLE</div> <div>RD : UDS FOR RELATIVE DENSITY TEST</div> <div>SPT : STD. PENETRATION TEST</div> <div>N : SPT VALUE</div> <div>R : REFUSAL 'N' VALUE</div> <div>EGL : EXISTING GROUND LEVEL</div> <div>RL : REDUCED LEVEL</div> <div>WT : WATER TABLE</div> <div>TCR : TOTAL CORE RECOVERY (%)</div> <div>RQD : ROCK QUALITY DESIGNATION (%)</div> <div>NMC : NATURAL MOISTURE CONTENT</div> <div>LL (%) : LIQUID LIMIT</div> <div>PL% : PLASTIC LIMIT</div> <div>Cu : COHESION</div> <div>Ø : ANGLE OF INTERNAL FRICTION</div> </div>																								
REMARKS : CONTINUED ON NEXT PAGE										Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50 JOB NO. : 3870				
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BORE HOLE NO. : BH-62	SHEET NO. : 7 OF 14

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By: Akshay Chavan
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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
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BORE HOLE NO. : BH-62										SHEET NO. : 8 OF 14													
FIELD DATA								DESCRIPTION	LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø (degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		70.50/71.10	UDS24												19.77	1.91	1.59	21	--	--	0.39 34.06 0.14 33.64	Effective Total	
1.00																							
1.50																							
2.00		72.00/72.43	SPT24	(R) 29/49/51/--					ML	00	37	57	06					24	--	--			
2.50																							
3.00																							
3.50		73.50/74.10	UDS25												23.34	1.88	1.52	25	--	--	0.25 34.54 0.07 34.12	Effective Total	
4.00																							
4.50																							
5.00	SX Ø	75.00/75.41	SPT25	(R) 31/52/48/--					ML	00	39	54	07					23	--	--			
5.50																							
6.00																							
6.50		76.50/77.10	UDS26												18.39	1.85	1.56	NP			0.22 34.61 0.09 33.71	Effective Total	
7.00																							
7.50																							
8.00		78.00/78.42	SPT26	(R) 32/55/45/--					ML	00	42	50	08					NP					
8.50																							
9.00																							
9.50		79.50/80.10	UDS27												21.20	1.86	1.53	NP			0.36 32.96 0.17 32.07	Effective Total	
10.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT								
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT								
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION								
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION								
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan		SCALE : 1: 50			
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BORE HOLE NO. : BH-62												SHEET NO. : 9 OF 14											
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %			
.50	SX Ø	81.00/81.38	SPT27	(R) 40/59/41/--					Hard, brown, fine grained, SILT with low compressibility	SM	00	76	24										
.00																		NP					
.50																							
1.00			82.50/83.10	UDS28						Very dense, brown, fine grained, silty SAND						22.67	1.92	1.57		NP			
.50																							
1.00			84.00/84.39	SPT28	(R) 42/62/38/--					SP-SM	00	90	10							NP			
.50																							
1.00			85.50/86.10	UDS29												19.55	1.89	1.58		NP			
.50																							
1.00			87.00/87.38	SPT29	(R) 40/59/41/--					SM	00	89	11							NP			
.50																							
1.00		88.50/89.10	UDS30												23.63	1.94	1.57		NP				
.50																							
1.00		90.00/90.40	SPT30	(R) 40/62/38/--					SP-SM	00	91	09							NP				
.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT					
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT					
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION					
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION					
REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50			
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SHEET NO. : 10 OF 14

SHEET NO. : 11 OF 14

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-62											SHEET NO. : 12 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50																							
1.00		111.00/111.38	SPT37	(R) 51/61/39/--					Very dense, yellowish, fine grained, silty SAND	SM	00	57	39	04									
1.50																							
2.00																							
2.50		112.50/113.10	UDS38												22.36	1.92	1.57						
3.00																							
3.50																							
4.00		114.00/114.35	SPT38	(R) 55/68/32/--						SM	00	64	32	04									
4.50																							
5.00	SX Ø																						
5.50		115.50/116.10	UDS39						Very dense, dark brown, fine grained, silty SAND						25.19	1.84	1.47						
6.00																							
6.50																							
7.00		117.00/117.40	SPT39	(R) 53/62/38/--						SM	00	56	34	10				25	--	--			
7.50																							
8.00																							
8.50		118.50/119.10	UDS40												20.77	1.86	1.54	23	--	--			
9.00																							
9.50																							
0.00		120.00/120.33	SPT40	(R) 56/72/28/--						ML	00	47	44	09				25	--	--			
ABBREVIATIONS : DS : DISTURBED SAMPLE UDS : UNDISTURBED SOIL SAMPLE RD : UDS FOR RELATIVE DENSITY TEST SPT : STD. PENETRATION TEST N : SPT VALUE R : REFUSAL 'N' VALUE EGL : EXISTING GROUND LEVEL RL : REDUCED LEVEL WT : WATER TABLE TCR : TOTAL CORE RECOVERY (%) RQD : ROCK QUALITY DESIGNATION (%) NMC : NATURAL MOISTURE CONTENT LL (%) : LIQUID LIMIT PL% : PLASTIC LIMIT Cu : COHESION Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-62												SHEET NO. : 13 OF 14																								
FIELD DATA										LABORATORY DATA																										
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ϕ (degrees)	REMARK														
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %																
120.50	SX Ø								Very dense, dark brown, fine grained, silty SAND	SM	00	52	40	08	22.47	1.84	1.50	25	--	--																
121.00		121.50/122.10	UDS41																																	
121.50																																				
122.00																																				
122.50																																				
123.00		123.00/123.27	SPT41		(R) 60/100/--/--																															
123.50																																				
124.00																																				
124.50		124.50/125.10	UDS42																																	
125.00																																				
125.50																																				
126.00		126.00/126.37	SPT42		(R) 49/61/39/--					SM	00	53	39	08				26	--	--																
126.50																																				
127.00																																				
127.50		127.50/128.10	UDS43												23.34	1.85	1.50	NP																		
128.00																																				
128.50																																				
129.00		129.00/129.35	SPT43		(R) 26/70/30/--					SM	00	89	17					NP																		
129.50																																				
130.00																																				
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																																				
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870														
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																																	
BORE HOLE NO. : BH-62										SHEET NO. : 14 OF 14																							
FIELD DATA								LABORATORY DATA																									
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK											
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %													
130.50		130.50/131.10	UDS44						Very dense, dark brown, fine grained, silty SAND	SM	00	75	25		25.76	1.92	1.53	NP															
131.00																																	
131.50																																	
132.00		132.00/132.33	SPT44	(R) 58/73/27/--																									NP				
132.50																																	
133.00																																	
133.50		133.50/134.10	UDS45																							22.63	1.94	1.61	NP				
134.00																																	
134.50																																	
135.00	SX Ø	135.00/135.34	SPT45	(R) 55/69/31/--															SM	00			80	20						NP			
135.50																																	
136.00																																	
136.50		136.50/137.10	UDS46												23.74	1.85	1.50	NP															
137.00																																	
137.50																																	
138.00		138.00/138.32	SPT46	(R) 60/74/26/--						SM	00	77	23						NP														
138.50																																	
139.00																																	
139.50		139.50/140.10	UDS47												26.62	1.91	1.51	NP															
140.00																																	
ABBREVIATIONS :																																	
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT															
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT															
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION															
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION															
REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.10m BELOW EGL.												Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50															
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NPCIL/GHAVP/CTC/2026/PT-08 OF 934

Page 99 of 191

CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-63	SHEET NO. : 1 OF 14
LOCATION : NB - 3	DATE : 06/05/2019 TO 27/05/2019
CO-ORDINATES : N 3256943.207, E 561038.828	METHOD : ROTARY DRILLING
GROUND R. L. : 213.624m	CASING : SX mm Ø Upto 140.10m Below EGL
GROUND W. T. : 5.27m Below EGL	BOREHOLE DEPTH : 140.10m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
0.00																						
0.50																						
1.00																						
1.50		1.50/2.10	UDS1												17.79	1.85	1.57	23	--	--		
2.00																						
2.50																						
3.00		3.00/3.45	SPT1	(04) 01/02/02/--					Medium stiff, dark brown, fine grained, SILT with low compressibility	ML	02	32	52	14				25	--	--		
3.50																						
4.00																						
4.50		4.50/5.10	UDS2												18.53	1.83	1.54	24	--	--		
5.00	SX Ø																					
5.50																						
6.00		6.00/6.45	SPT2	(12) 03/06/06/--						MI	04	52	36	08				23	--	--		
6.50																						
7.00																						
7.50		7.50/8.10	UDS3						Stiff, dark brown, fine grained, SILT with medium compressibility						17.41	1.76	1.50	28	--	--		
8.00																						
8.50																						
9.00		9.00/9.45	SPT3	(22) 07/10/12/--						ML	00	41	50	09				25	--	--		
9.50																						
10.00		10.00	PMT1						Very stiff, dark brown, fine grained, SILT with low compressibility													

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan



SCALE : 1: 50
JOB NO. : 3870

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"	
BORE HOLE NO. : BH-63	SHEET NO. : 2 OF 14

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By : Akshay Chavan
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CLIENT : "NUCLEAR POWER CORPORATION OF INDIA LIMITED"																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-63											SHEET NO. : 3 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		20.50	PMT3																				
1.00		21.00/21.45	SPT7	(41) 12/19/22/--						ML	07	12	69	12				27	--	--			
1.50																							
2.00																							
2.50		22.50/23.10	UDS8												18.23	1.83	1.55	25	--	--			
3.00																							
3.50																							
4.00		24.00/24.45	SPT8	(45) 15/21/24/--						ML	00	06	82	12				28	--	--			
4.50																							
5.00	SX Ø	25.00	PMT4						Hard, brownish, fine grained, SILT with low compressibility														
5.50		25.50/26.10	UDS9												16.71	1.84	1.58	NP					
6.00																							
6.50																							
7.00		27.00/27.45	SPT9	(48) 14/22/26/--						ML	00	39	50	11				23	--	--			
7.50																							
8.00																							
8.50		28.50/29.10	UDS10												20.53	1.84	1.53	23	--	--			
9.00																							
9.50																							
10.00		30.00	PMT5																				
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870			
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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																								
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-63											SHEET NO. : 4 OF 14													
FIELD DATA											LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
0.50		30.50/30.95	SPT10	(52) 17/24/28/--						ML	00	30	59	11				25	--	--				
1.00																								
1.50		31.50/32.10	UDS11						Hard, greyish, fine grained, SILT with low compressibilty						21.40	1.80	1.48	NP						
2.00																								
2.50																								
3.00		33.00/33.45	SPT11	(48) 15/22/26/--						ML	00	29	54	17				22	--	--				
3.50																								
4.00																								
4.50		34.50/35.10	UDS12						Hard, dark brown, fine grained, SILT with low compressibilty						20.03	1.85	1.54	NP						
5.00	SX Ø																							
5.50		35.50	PMT6																					
6.00		36.00/36.45	SPT12	(53) 19/24/29/--						SM	00	79	21					NP						
6.50																								
7.00																								
7.50		37.50/38.10	UDS13						Very dense, light brown, fine grained, silty SAND						20.49	1.85	1.54	22	--	--				
8.00																								
8.50																								
9.00		39.00/39.45	SPT13	(57) 20/25/32/--						SM	00	85	15					NP						
9.50																								
10.00		40.00	PMT7																					
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT						
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT						
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION						
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION						
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50			
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BORE HOLE NO. : BH-63											SHEET NO. : 5 OF 14																											
FIELD DATA											LABORATORY DATA																											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø(degrees)	REMARK																
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %																		
40.50		40.50/41.10	UDS14	(62) 22/28/34/--					Very dense, light brown, fine grained, silty SAND							20.69	1.80	1.49	23	--	--																	
41.00																																						
41.50																																						
42.00		42.00/42.45	SPT14						Hard, light brown, fine grained, SILT with low compressibilty	ML	12	23	55	10					29	--	--																	
42.50																																						
43.00																																						
43.50		43.50/44.10	UDS15													19.47	1.54	1.54	NP																			
44.00																																						
44.50																																						
45.00	SX Ø	45.00	PMT8	(63) 22/29/34/--						ML	20	21	52	07					29	23	23																	
45.50		45.50/45.95	SPT15																																			
46.00																																						
46.50		46.50/47.10	UDS16													20.65	1.84	1.53	NP																			
47.00																																						
47.50																																						
48.00		48.00/48.45	SPT16	(68) 23/31/37/--						ML	00	48	46	06					NP																			
48.50																																						
49.00																																						
49.50		49.50/50.10	UDS17													20.89	1.91	1.58	NP																			
50.00																																						
ABBREVIATIONS :																																						
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT																							
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT																							
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION																							
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870																
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CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

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Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-63

SHEET NO. : 6 OF 14

FIELD DATA								DESCRIPTION	LABORATORY DATA																													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	ROD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK																
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %																		
50.50	SX Ø	50.50	PMT9	(73) 25/33/40/--					Hard, light brown, fine grained, SILT with low compressibility	ML	00	53	41	06																								
51.00		51.00/ 51.45	SPT17																																			
51.50																																						
52.00												Hard, yellowish, fine grained, SILT with low compressibility																										
52.50		52.50/ 53.10	UDS18																																			
53.00																																						
53.50													SM	00	79	21																						
54.00		54.00/ 54.45	SPT18	(66) 23/30/36/--																																		
54.50																																						
55.00												Very dense, yellowish, fine grained, silty SAND	SM	00	75	25																						
55.50		55.50/ 56.10	UDS19																																			
56.00																																						
56.50																																						
57.00		57.00/ 57.45	SPT19	(73) 25/34/39/--																																		
57.50																																						
58.00																																						
58.50		58.50/ 59.10	UDS20																																			
59.00																																						
59.50																																						
60.00		60.00	PMT10																																			

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-63										SHEET NO. : 7 OF 14													
FIELD DATA									LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
.50		60.50/60.95	SPT21	(77) 25/36/41/--					Very dense, dark brown, fine grained, silty SAND	SM	00	75	25										
.00																							
.50		61.50/62.10	UDS21												18.33	1.82	1.54						
1.00																							
.50																							
1.00		63.00/63.45	SPT21	(85) 28/40/45/--							SM	00	75	25									
.50																							
1.00																							
.50		64.50/65.10	UDS22												24.80	1.86	1.49						
1.00	SX Ø																						
.50																							
1.00		66.00/66.45	SPT22	(91) 30/43/48/--						SM	00	76	24										
.50																							
1.00																							
.50		67.50/68.10	UDS23											23.40	1.79	1.45							
1.00																							
.50																							
1.00		69.00/69.45	SPT23	(94) 30/45/49/--						SM	00	77	23										
.50																							
1.00		70.00	PMT11																				
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT								
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT								
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION								
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION								
REMARKS : CONTINUED ON NEXT PAGE										Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870									
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-63											SHEET NO. : 8 OF 14											
FIELD DATA									DESCRIPTION	LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ø (degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
70.50		70.50/71.10	UDS24												18.24	1.81	1.53					
71.00																		NP				
71.50																						
72.00		72.00/72.45	SPT24	(99) 31/48/51/--						SM	00	77	23						NP			
72.50																						
73.00																						
73.50		73.50/74.10	UDS25												18.99	1.82	1.53					
74.00																						
74.50																						
75.00	SX Ø	75.00/75.45	SPT25	(R) 29/46/54/--						SM	00	75	25						NP			
75.50																						
76.00																						
76.50		76.50/77.10	UDS26												17.69	1.84	1.56					
77.00																						
77.50																						
78.00		78.00/78.43	SPT26	(R) 33/51/49/--						SM	01	50	41	08				24	--	--		
78.50																						
79.00																						
79.50		79.50/80.10	UDS27												19.34	1.81	1.52					
80.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870		
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-63											SHEET NO. : 9 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
80.50		80.50	PMT12																			
81.00		81.00/81.41	SPT27	(R) 32/55/45/--					Very dense, dark brown, fine grained, silty SAND	SM	00	75	25							NP		
82.50		82.50/83.10	UDS28												18.98	1.84	1.55			NP		
84.00		84.00/84.39	SPT28	(R) 35/58/42/--						ML	00	45	48	07						NP		
85.50	SX Ø	85.50/86.10	UDS29												18.52	1.82	1.54			NP		
87.00		87.00/87.43	SPT29	(R) 31/54/46/--					Hard, brownish, fine grained, SILT with low compressibility	ML	00	48	45	07						NP		
88.50		88.50/89.10	UDS30												16.59	1.81	1.55			NP		
90.00		90.00/90.38	SPT30	(R) 36/61/39/--						SM	00	78	22							NP		
ABBREVIATIONS : DS : DISTURBED SAMPLE UDS : UNDISTURBED SOIL SAMPLE RD : UDS FOR RELATIVE DENSITY TEST SPT : STD. PENETRATION TEST N : SPT VALUE R : REFUSAL 'N' VALUE EGL : EXISTING GROUND LEVEL RL : REDUCED LEVEL WT : WATER TABLE TCR : TOTAL CORE RECOVERY (%) RQD : ROCK QUALITY DESIGNATION (%) NMC : NATURAL MOISTURE CONTENT LL (%) : LIQUID LIMIT PL% : PLASTIC LIMIT Cu : COHESION Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50 JOB NO. : 3870	
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BORE HOLE NO. : BH-63										SHEET NO. : 10 OF 14												
FIELD DATA										LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL %	PL %	PLASTICITY INDEX %	Cu / (kg/cm²) / Ø (degrees)	REMARK
90.50																						
91.00																						
91.50		91.50/92.10	UDS31												20.67	1.84	1.52	NP				
92.00																						
92.50																						
93.00		93.00/93.41	SPT31	(R) 39/58/42/--						SM	00	52	40	08				23	--	--		
93.50																						
94.00																						
94.50		94.50/95.10	UDS32												21.15	1.90	1.57	NP				
95.00	SX Ø								Very dense, dark brown, fine grained, silty SAND													
95.50																						
96.00		96.00/96.42	SPT32	(R) 33/56/44/--						SM	00	77	23					NP				
96.50																						
97.00																						
97.50		97.50/98.10	UDS33												21.04	2.02	1.67	NP				
98.00																						
98.50																						
99.00		99.00/99.40	SPT33	(R) 36/61/39/--						SM	00	76	24					NP				
99.50																						
100.00																						
ABBREVIATIONS :																						
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT				
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT				
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION				
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION				
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50	
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NPCIL/GHAVP/CTC/2026/PA-06318 OF 934																						
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BORE HOLE NO. : BH-63											SHEET NO. : 11 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50		100.50/101.10	UDS34												21.10	1.94	1.60	26	--	--		
1.00																						
1.50																						
2.00		102.00/102.38	SPT34	(R) 38/66/34/--						SM	00	51	41	14				25	--	--		
2.50																						
3.00																						
3.50		103.50/104.10	UDS35												22.22	2.02	1.65	NP				
4.00																						
4.50																						
5.00	SX Ø	105.00/105.35	SPT35	(R) 41/68/32/--						SM	00	53	37	10				NP				
5.50																						
6.00																						
6.50		106.50/107.10	UDS36												21.44	1.95	1.61	23	--	--		
7.00																						
7.50																						
8.00		108.00/108.33	SPT36	(R) 44/78/22/--						ML	00	36	52	12				24	--	--		
8.50																						
9.00																						
9.50		109.50/110.10	UDS37												17.92	1.86	1.58	NP				
0.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50 JOB NO. : 3870	
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BORE HOLE NO. : BH-63												SHEET NO. : 12 OF 14												
FIELD DATA										LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
0.50									Hard, dark brown, fine grained, SILT with low compressibility	SM	00	77	23		18.97	1.85	1.56	NP						
1.00	111.00/111.31	SPT37	(R) 47/83/17/--																					
1.50									Very dense, brownish, fine grained, silty SAND	SM	00	81	19		21.50	1.88	1.55	NP						
2.00																								
2.50	112.50/113.10	UDS38																NP						
3.00																								
3.50																		NP						
4.00	114.00/114.28	SPT38	(R) 59/100/--/--																					
4.50																		NP						
5.00	115.50/116.10	UDS39																						
5.50																		NP						
6.00																								
6.50																		NP						
7.00	117.00/117.36	SPT39	(R) 53/73/27/--																					
7.50																		NP						
8.00																								
8.50	118.50/119.10	UDS40							Hard, brownish, fine grained, SILT with low compressibility									NP						
9.00																								
9.50																		NP						
0.00	120.00/120.32	SPT40	(R) 58/81/19/--																					
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION									
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870						
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BORE HOLE NO. : BH-63										SHEET NO. : 13 OF 14													
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ϕ (degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %			
120.50	SX Ø								Hard, brownish, fine grained, SILT with low compressibility	ML													
121.00																							
121.50		121.50/122.10	UDS41													17.33	1.79	1.53	25	--	--		
122.00																							
122.50																							
123.00		123.00/123.31	SPT41		(R) 63/89/11/--									00	43	48	09			23	--	--	
123.50																							
124.00																							
124.50		124.50/125.10	UDS42														22.94	1.79	1.46	NP			
125.00																							
125.50																							
126.00	126.00/126.30	SPT42		(R) 67/100/--/--						ML	00	48	44	08				NP					
126.50																							
127.00																							
127.50	127.50/128.10	UDS43												18.76	1.83	1.54	NP						
128.00																							
128.50																							
129.00	129.00/129.27	SPT43		(R) 66/100/--/--						SM	00	54	42	04				NP					
129.50									Very dense, brownish, fine grained, silty SAND														
130.00																							
ABBREVIATIONS : DS : DISTURBED SAMPLE																							

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BORE HOLE NO. : BH-63											SHEET NO. : 14 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50		130.50/131.10	UDS44						Very dense, brownish, fine grained, silty SAND						18.32	1.83	1.55					
1.00																			NP			
1.50																						
2.00		132.00/132.34	SPT44	(R) 58/72/28/--						ML	00	49	46	05								
2.50																						
3.00																						
3.50		133.50/134.10	UDS45												23.15	1.94	1.58					
4.00																						
4.50																						
5.00	SX Ø	135.00/135.31	SPT45	(R) 63/78/22/--					Hard, brownish, fine grained, SILT with low compressibility	ML	00	45	48	07								
5.50																						
6.00																						
6.50		136.50/137.10	UDS46												23.39	1.91	1.55					
7.00																						
7.50																						
8.00		138.00/138.26	SPT46	(R) 67/100/--/--						SM	00	75	25									
8.50																						
9.00									Very dense, brownish, fine grained, silty SAND													
9.50		139.50/140.10	UDS47												20.81	1.86	1.54					
0.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.10m BELOW EGL.											Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870					
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BORE HOLE NO. : BH-64											SHEET NO. : 1 OF 15																										
LOCATION : NB-4											DATE : 23/03/2019 TO 02/04/2019																										
CO-ORDINATES : N 3256912.961, E 561051.373											METHOD : ROTARY DRILLING																										
GROUND R. L. : 213.695m											CASING : SX mm Ø Upto 140.70m Below EGL																										
GROUND W. T. : 3.84m Below EGL											BOREHOLE DEPTH : 140.70m.Below EGL																										
FIELD DATA											LABORATORY DATA																										
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL %	PL %	PLASTICITY INDEX %	Cu/ (kg/cm²) / Ø(degrees)	REMARK															
0.50	SX Ø	0.00							Stiff, dark brown, fine grained, SILT with low compressibility	ML	00	46	41	13	15.97	1.92	1.66	17	--	--																	
1.50		1.50/2.10	UDS1																																		
2.00		2.10/2.70	RD1																																		
3.00		3.00/3.45	SPT1	(10) 03/05/05/--																																	
4.50		4.50/5.10	UDS2																																		
5.00		5.10/5.70	RD2																																		
6.00		6.00/6.45	SPT2	(15) 05/07/08/--																																	
7.50		7.50/8.10	UDS3																																		
8.00		8.10/8.70	RD3																																		
9.00		9.00/9.45	SPT3	(20) 06/09/11/--																																	
10.00									Medium dense, dark brown, fine grained, silty SAND	SM	00	55	35	10	19.41	1.94	1.62	22	--	--																	
										SM	00	68	28	04	18.18	1.91	1.62	--	--	--																	
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																																					
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870																	
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BORE HOLE NO. : BH-64										SHEET NO. : 2 OF 15												
FIELD DATA										LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL%	PL%	PLASTICITY INDEX %		
10.50		10.50/11.10	UDS4						Medium dense, dark brown, fine grained, silty SAND						19.77	1.97	1.64	23	--	--		
11.00		11.10/11.70	RD4												18.29	1.95	1.65	--	--	--		
11.50																						
12.00		12.00/12.45	SPT4	(25) 08/11/14/--						ML	00	48	49	03				29	24	05		
12.50																						
13.00																						
13.50		13.50/14.10	UDS5						Very stiff, dark brown, fine grained, SILT with low compressibilty						18.26	1.83	1.55	23	--	--		
14.00		14.10/14.70	RD5												21.20	1.83	1.51	--	--	--		
14.50																						
15.00	SX Ø	15.00/15.45	SPT5	(32) 10/14/18/--						SM	00	76	24					NP				
15.50																						
16.00																						
16.50		16.50/17.10	UDS6						Dense, brown, fine grained, silty SAND						23.37	1.85	1.50	21	--	--		
17.00		17.10/17.70	RD6												21.66	1.88	1.55	--	--	--		
17.50																						
18.00		18.00/18.45	SPT6	(36) 11/16/20/--						ML	00	28	59	13				28	--	--		
18.50																						
19.00									Hard, brown, fine grained, SILT with low compressibilty													
19.50		19.50/20.10	UDS7												20.22	1.87	1.56	25	--	--		
20.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE										Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870								
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-64											SHEET NO. : 3 OF 15													
FIELD DATA											LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %				
.50	SX Ø	20.10/20.70	RD7	(53) 10/19/34/--					Hard, brown, fine grained, SILT with low compressibility	MI	00	10	69	21		17.85	1.85	1.57	--	--	--			
.00		21.00/21.45	SPT7																					
.50		22.50/23.10	UDS8	(52) 14/23/29/--					Hard, dark brown, fine grained, SILT with medium compressibility	SM	00	57	34	09		19.33	1.92	1.61	23	--	--	--		
.00		23.10/23.70	RD8																					
.50		24.00/24.45	SPT8																					
.00		25.50/26.10	UDS09	(57) 15/25/32/--						Very dense, dark brown, fine grained, silty SAND	SM	00	68	28	04		20.44	1.81	1.50	--	--	--		
.50		26.10/26.70	RD09																					
.00		27.00/27.45	SPT9																					
.50		28.50/29.10	UDS10	(60) 19/27/33/--							SM	00	83	17		18.53	1.84	1.55	--	--	--			
.00		29.10/29.70	RD10																					
.50	30.00/30.45	SPT10																						
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION									
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870					
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FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL %	PL %	PLASTICITY INDEX %	Cu / (kg/cm ²) / Ø (degrees)	REMARK	
30.50																							
31.00																							
31.50		31.50/32.10	UDS11												20.15	1.92	1.60	NP					
32.00		32.10/32.70	RD11												18.27	1.87	1.58	--	--	--			
32.50																							
33.00		33.00/33.45	SPT11	(65) 16/29/36/--					Very dense, greyish, fine grained, silty SAND	SP-SM	00	92	08					NP					
33.50																							
34.00																							
34.50		34.50/35.10	UDS12												19.92	1.78	1.48	NP					
35.00	SX Ø	35.10/35.70	RD12												19.06	1.83	1.54	--	--	--			
35.50																							
36.00		36.00/36.45	SPT12	(55) 13/24/31/--						MI	01	05	86	08				37	26	11			
36.50																							
37.00																							
37.50		37.50/38.10	UDS13						Hard, brown, fine grained, SILT with medium compressibility						20.09	1.93	1.61	NP					
38.00		38.10/38.70	RD13												19.24	1.93	1.62	--	--	--			
38.50																							
39.00		39.00/39.45	SPT13	(60) 18/27/33/--						SM	00	58	36	06				NP					
39.50									Very dense, brown, fine grained, silty SAND														
40.00																							
<div> <div>ABBREVIATIONS :</div> <div> <div>DS : DISTURBED SAMPLE</div> <div>UDS : UNDISTURBED SOIL SAMPLE</div> <div>RD : UDS FOR RELATIVE DENSITY TEST</div> <div>SPT : STD. PENETRATION TEST</div> </div> <div> <div>N : SPT VALUE</div> <div>R : REFUSAL 'N' VALUE</div> <div>EGL : EXISTING GROUND LEVEL</div> <div>RL : REDUCED LEVEL</div> </div> <div> <div>WT : WATER TABLE</div> <div>TCR : TOTAL CORE RECOVERY (%)</div> <div>RQD : ROCK QUALITY DESIGNATION (%)</div> <div>NMC : NATURAL MOISTURE CONTENT</div> </div> <div> <div>LL (%) : LIQUID LIMIT</div> <div>PL% : PLASTIC LIMIT</div> <div>Cu : COHESION</div> <div>Ø : ANGLE OF INTERNAL FRICTION</div> </div> </div>																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Sarvesh Sutar			SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-64											SHEET NO. : 5 OF 15											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
.50		40.50/41.10	UDS14						Very dense, brown, fine grained, silty SAND						21.91	1.87	1.53	NP				
.00		41.10/41.70	RD14												18.27	1.90	1.61	--	--	--		
.50																						
1.00		42.00/42.45	SPT14	(71) 23/32/39/--						ML	00	25	64	11				27	--	--		
.50																						
1.00		43.50/44.10	UDS15						Hard, brown, fine grained, SILT with low compressibilty						17.47	1.85	1.57	NP				
.50		44.10/44.70	RD15												22.69	1.83	1.49	--	--	--		
1.00		45.00/45.45	SPT15	(76) 24/35/41/--						MI	00	17	73	10				35	--	--		
.50																						
1.00		46.50/47.10	UDS16						Hard, brown, fine grained, SILT with medium compressibilty						23.57	1.94	1.57	23	--	--		
.50		44.10/44.70	RD16												16.40	1.90	1.63	--	--	--		
1.00		48.00/48.45	SPT16	(81) 26/37/44/--						SM	00	87	13					NP				
.50																						
1.00		49.50/50.10	UDS17						Very dense, brown, fine grained, silty SAND						20.10	1.92	1.60	21	--	--		
.50																						
1.00																						

ABBREVIATIONS :																						
DS	:	DISTURBED SAMPLE	N	:	SPT VALUE	WT	:	WATER TABLE	LL (%)	:	LIQUID LIMIT											
UDS	:	UNDISTURBED SOIL SAMPLE	R	:	REFUSAL 'N' VALUE	TCR	:	TOTAL CORE RECOVERY (%)	PL%	:	PLASTIC LIMIT											
RD	:	UDS FOR RELATIVE DENSITY TEST	EGL	:	EXISTING GROUND LEVEL	RQD	:	ROCK QUALITY DESIGNATION (%)	Cu	:	COHESION											
SPT	:	STD. PENETRATION TEST	RL	:	REDUCED LEVEL	NMC	:	NATURAL MOISTURE CONTENT	Ø	:	ANGLE OF INTERNAL FRICTION											

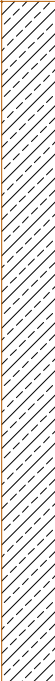

REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-64											SHEET NO. : 6 OF 15														
FIELD DATA											LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK			
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %					
50.50	SX Ø	50.10/50.70	RD17	(84) 24/38/46/--					Very dense, brown, fine grained, silty SAND	SM	00	72	24	04	20.14	1.88	1.56	--	--	--					
51.00		51.00/51.45	SPT17						NP																
51.50																									
52.00																									
52.50		52.50/53.10	UDS18	(89) 28/41/48/--					Very dense, dark brown, fine grained, silty SAND	ML	00	47	45	08	19.24	1.85	1.55	22	--	--			NP		
53.00		53.10/53.70	RD18						18.36									1.87	1.58	--				--	--
53.50																									
54.00		54.00/54.45	SPT18	(90) 26/39/51/--					Hard, dark brown, fine grained, SILT with low compressibilty	SM	00	70	27	03	24.78	1.92	1.54	20	--	--			NP		
55.00		55.50/56.10	UDS19						20.49									1.94	1.61	--				--	--
55.50																									
56.00	56.10/56.70	RD19	(97) 28/43/54/--			Very dense, dark brown, fine grained, silty SAND	ML	00	33	57	10	20.93	1.83	1.51	22	--	--								
56.50	56.50/57.10	UDS20				18.91									1.85	1.56	--		--	--					
57.00	57.00/57.45	SPT19																							
57.50																									
58.00	58.50/59.10	UDS20																							
58.50	59.10/59.70	RD20																							
59.00																									
59.50	60.00/60.45	SPT20																							
60.00																									
60.45																									
ABBREVIATIONS :																									
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT							
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT							
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION							
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50						
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BORE HOLE NO. : BH-64										SHEET NO. : 7 OF 15													
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL%	PL%	PLASTICITY INDEX %			
60.50									Hard, dark brown, fine grained, SILT with low compressibility														
61.00																							
61.50		61.50/62.10	UDS21													22.50	1.93	1.58					
62.00		62.10/62.70	RD21													19.91	1.88	1.57	--	--	--		
62.50																							
63.00		63.00/63.45	SPT21	(93) 31/42/51/--							ML	00	41	50	09				27	--	--		
63.50																							
64.00																							
64.50		64.50/65.10	UDS22													22.22	1.95	1.60	23	--	--		
65.00	SX Ø	65.10/65.70	RD22													22.65	1.93	1.57	--	--	--		
65.50																							
66.00		66.00/66.45	SPT22	(97) 30/44/53/--						ML	00	34	61	05				31	--	--			
66.50																							
67.00																							
67.50		67.50/68.10	UDS23												25.04	1.92	1.54	26	--	--			
68.00		68.10/68.70	RD23												22.53	1.90	1.55	--	--	--			
68.50																							
69.00		69.00/69.45	SPT23	(95) 29/41/54/--						SM	00	56	39	05									
69.50																							
70.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT								
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT								
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION								
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION								
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870								
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-64										SHEET NO. : 8 OF 15														
FIELD DATA									DESCRIPTION	LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
70.50		70.50/ 71.10	UDS24	(R) 32/48/52/--					ML	00	48	44	08	18.34	1.83	1.55	24	--	--					
71.00		71.10/ 71.70	RD24														20.36	1.85	1.54			--	--	--
71.50																								
72.00		72.00/ 72.44	SPT24														NP							
72.50																								
73.00																								
73.50		73.50/ 74.10	UDS25	(94) 33/44/50/--					SM	00	82	18	22.34	1.92	1.57	NP								
74.00		74.10/ 74.70	RD25													21.33	1.93	1.59			--	--	--	
74.50																								
75.00	SX Ø	75.00/ 75.45	SPT25													NP								
75.50																								
76.00																								
76.50		76.50/ 77.10	UDS26	(100) 36/48/52/--					SM	00	84	16	21.56	1.92	1.58	23	--	--						
77.00		77.10/ 77.70	RD26													21.41	1.90	1.56			--	--	--	
77.50																								
78.00		78.00/ 78.45	SPT26													NP								
78.50																								
79.00																								
79.50		79.50/ 80.10	UDS27										25.46	1.92	1.53	27	--	--						
80.00																								
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																								
REMARKS : CONTINUED ON NEXT PAGE														Checked By : Dhiraj Patil			Drawn By: Sarvesh Sutar			SCALE : 1: 50 JOB NO. : 3870				
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BORE HOLE NO. : BH-64											SHEET NO. : 9 OF 15												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %			
.50		80.10/83.70	RD27	(R) 29/51/49/--											22.57	1.90	1.55	--	--	--			
.00		81.00/81.43	SPT27							ML	00	42	51	07					25	--	--		
.50		82.50/83.10	UDS28													17.86	1.89	1.60	19	--	--		
1.00		83.10/83.70	RD28	(R) 34/62/38/--											22.07	1.88	1.54	--	--	--			
.50		84.00/84.38	SPT28							ML	00	42	52	06					28	--	--		
1.00	SX Ø	85.50/86.10	UDS29													24.64	1.86	1.49	27	--	--		
.50		86.10/86.70	RD29	(R) 41/71/29/--											24.40	1.88	1.51	--	--	--			
1.00		87.00/87.34	SPT29							SM	00	59	33	08					NP				
.50		88.50/89.10	UDS30													21.73	1.92	1.58	NP				
1.00		89.10/89.70	RD30	(R) 39/67/33/--											21.98	1.90	1.56	--	--	--			
.50		90.00/90.36	SPT30							SM	00	51	44	05					28				
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil		Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870								
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"	
BORE HOLE NO. : BH-64	SHEET NO. : 10 OF 15

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By: Sarvesh Sutar
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-64											SHEET NO. : 11 OF 15											
FIELD DATA									LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ø (degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
100.50		100.50/ 101.10	UDS34												18.96	1.85	1.56					
101.00		101.10/ 101.70	RD34												23.72	1.87	1.51	--	--	--		
101.50																						
102.00		102.00/ 102.33	SPT34	(R) 46/73/27/--						SM	00	68	29	03								
102.50																						
103.00																						
103.50		103.50/ 104.10	UDS35												22.02	1.91	1.57	25	--	--		
104.00		104.10/ 104.70	RD35												23.20	1.95	1.58	--	--	--		
104.50																						
105.00	SX Ø	105.00/ 105.39	SPT35	(R) 53/64/36/--					Very dense, brownish, fine grained, silty SAND	SM	00	56	37	07								
105.50																						
106.00																						
106.50		106.50/ 107.10	UDS36												22.09	1.92	1.57	20	--	--		
107.00		107.10/ 107.70	RD36												22.35	1.95	1.59	--	--	--		
107.50																						
108.00		108.00/ 108.32	SPT36	(R) 56/73/27/--						SM	00	53	41	06								
108.50																						
109.00																						
109.50		109.50/ 110.10	UDS37												18.34	1.89	1.60					
110.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Sarvesh Sutar		SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-64	SHEET NO. : 12 OF 15

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By: Sarvesh Sutar
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BORE HOLE NO. : BH-64

SHEET NO. : 13 OF 15

FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/ccm ³)	DRY DENSITY (gm/ccm ³)	LL%	PL%	PLASTICITY INDEX %		
120.50																						
121.00																						
121.50		121.50/122.10	UDS41												22.77	1.87	1.52	NP				
122.00		122.10/122.70	RD41												17.94	1.84	1.56	--	--	--		
122.50																						
123.00		123.00/123.33	SPT41	(R) 58/68/32/--						SM	00	56	40	04				NP				
123.50																						
124.00																						
124.50		124.50/125.10	UDS42												18.28	1.81	1.53	NP				
125.00	SX Ø	125.10/125.70	RD42												19.14	1.82	1.53	--	--	--		
125.50																						
126.00		126.00/126.36	SPT42	(R) 63/71/29/--						SM	00	65	31	04				NP				
126.50																						
127.00																						
127.50		127.50/128.10	UDS43												21.38	1.85	1.52	NP				
128.00		128.10/128.70	RD43												22.73	1.82	1.48	--	--	--		
128.50																						
129.00		129.00/129.38	SPT43	(R) 52/64/36/--						SM	00	58	36	06				NP				
129.50																						
130.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)

NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Drawn By: Sarvesh Sutar

SCALE : 1: 50

JOB NO. : 3870

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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																											
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																											
BORE HOLE NO. : BH-64											SHEET NO. : 14 OF 15																
FIELD DATA											LABORATORY DATA																
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK					
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %							
0.50		130.50/131.10	UDS44						Very dense, brownish, fine grained, silty SAND	SM	00	62	31	07	21.39	1.95	1.61	24	--	--							
1.00		131.10/131.70	RD44					22.61															1.90	1.55	--	--	--
2.00		132.00/132.26	SPT44	(R) 62/100/--/--																							
3.50		133.50/134.10	UDS45					21.61															1.87	1.54	24	--	--
4.00		134.10/134.70	RD45						22.89	1.85	1.51	--	--	--													
5.00	SX Ø	135.00/135.33	SPT45	(R) 56/79/21/--											ML	00	48	49	03	31	--	--					
6.50		136.50/137.10	UDS46						25.31	1.77	1.41	29	--	--													
7.00		137.10/137.70	RD46					23.92															1.81	1.46	--	--	--
8.00		138.00/138.34	SPT46	(R) 51/68/32/--																							
9.50		139.50/140.10	UDS47					22.62							1.86	1.52	30	--	--								
0.00																											
ABBREVIATIONS :																											
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION									
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil				Drawn By: Sarvesh Sutar				SCALE : 1: 50 JOB NO. : 3870								
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SHEET NO. : 15 OF 15

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.70m BELOW EGL.		Checked By : Dhiraj Patil	Drawn By: Sarvesh Sutar SCALE : 1:50 JOB NO. : 3870
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-65	SHEET NO. : 1 OF 14
LOCATION : NB - 4	DATE : 25/05/2019 TO 13/06/2019
CO-ORDINATES : N 3256943.207, E 561038.828	METHOD : ROTARY DRILLING
GROUND R. L. : 213.715m	CASING : SX mm Ø Upto 140.10m Below EGL
GROUND W. T. : 5.41m Below EGL	BOREHOLE DEPTH : 140.10m.Below EGL

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
0.00																						
1.50		1.50/	UDS1/1																			
1.80		1.80/																				
2.10		2.10/	UDS1/2																			
3.00		3.00/		(07)					Medium stiff, dark brown, fine grained, SILT with low compressibility	ML	00	45	44	11	16.96	1.92	1.64	23	--	--		
3.45		3.45	SPT1	02/03/04/--																		
4.50		4.50/	UDS2																			
5.10		5.10																				
6.00	SX Ø	6.00/		(11)						SM	00	54	37	09	18.94	1.88	1.58	25	--	--		
6.45		6.45	SPT2	03/05/06/--																		
7.50		7.50/	UDS3						Medium dense, dark brown, fine grained, silty SAND													
8.10		8.10																				
9.00		9.00/		(18)						ML	00	31	61	08				27	25	02		
9.45		9.45	SPT3	05/07/11/--					Very stiff, dark brown, fine grained, SILT with low compressibility													
10.00		10.00	PMT1																			

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Dhiraj Patil

Drawn By :
Akshay Chavan


SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-65											SHEET NO. : 2 OF 14												
FIELD DATA											LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
0.50		10.50/11.10	UDS4						Very stiff, dark brown, fine grained, SILT with low compressibility						21.69	1.80	1.48	27	--	--			
1.00																							
1.50																							
2.00		12.00/12.45	SPT4	(23) 06/09/14/--						ML	00	18	72	10				26	--	--			
2.50																							
3.00																							
3.50		13.50/14.10	UDS5												22.84	1.85	1.51	24	--	--			
4.00																							
4.50		14.50	PMT2																				
5.00	SX Ø	15.00/15.45	SPT5	(27) 08/11/16/--					Very stiff, greyish, fine grained, SILT with low compressibility	ML	00	40	53	07				NP					
5.50																							
6.00																							
6.50		16.50/17.10	UDS6												21.60	1.83	1.50	NP					
7.00																							
7.50																							
8.00		18.00/18.45	SPT6	(34) 08/15/19/--						ML	00	10	83	07				29	25	04			
8.50																							
9.00									Hard, brownish, fine grained, SILT with low compressibility														
9.50		19.50/20.10	UDS7												19.24	1.97	1.65	24	--	--			
10.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE						WT : WATER TABLE						LL (%) : LIQUID LIMIT					
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE						TCR : TOTAL CORE RECOVERY (%)						PL% : PLASTIC LIMIT					
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL						RQD : ROCK QUALITY DESIGNATION (%)						Cu : COHESION					
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL						NMC : NATURAL MOISTURE CONTENT						Ø : ANGLE OF INTERNAL FRICTION					
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan					SCALE : 1: 50		
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BORE HOLE NO. : BH-65												SHEET NO. : 3 OF 14														
FIELD DATA										LABORATORY DATA																
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø (degrees)	REMARK				
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %						
0.50	SX Ø	20.50	PMT3	(39) 10/18/21/--					Hard, brownish, fine grained, SILT with low compressibility	SP-SM	00	92	08		21.57	1.99	1.64	25	--	--						
1.00		21.00/21.45	SPT7					NP																		
0.50												Dense, brownish, fine grained, silty SAND														
1.00		22.50/23.10	UDS8																							
0.50																										
1.00		24.00/24.45	SPT8	(42) 08/19/23/--										ML	00	26	65	09				28	25	03		
0.50		25.00	PMT4																							
0.50		25.50/26.10	UDS9									Hard, brownish, fine grained, SILT with low compressibility							24.64	1.79	1.44	NP				
1.00																										
0.50																										
1.00	27.00/27.45	SPT9	(45) 12/20/25/--							SM	00	51	42	07				NP								
0.50																										
1.00																										
0.50		28.50/29.10	UDS10						Dense, brownish, fine grained, silty SAND						20.77	1.89	1.56	24	--	--						
1.00																										
0.50		29.50	PMT5																							
1.00	30.00/30.45	SPT10	(49) 14/22/27/--							SP-SM	00	91	09					NP								

ABBREVIATIONS :																								
DS	:	DISTURBED SAMPLE	N	:	SPT VALUE	WT	:	WATER TABLE	LL (%)	:	LIQUID LIMIT													
UDS	:	UNDISTURBED SOIL SAMPLE	R	:	REFUSAL 'N' VALUE	TCR	:	TOTAL CORE RECOVERY (%)	PL%	:	PLASTIC LIMIT													
RD	:	UDS FOR RELATIVE DENSITY TEST	EGL	:	EXISTING GROUND LEVEL	RQD	:	ROCK QUALITY DESIGNATION (%)	Cu	:	COHESION													
SPT	:	STD. PENETRATION TEST	RL	:	REDUCED LEVEL	NMC	:	NATURAL MOISTURE CONTENT	Ø	:	ANGLE OF INTERNAL FRICTION													

REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50			
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.																				JOB NO. : 3870			
Tel.:+91-22-49663500. Fax: +91 22 49663605. E-mail: dbm@dbm.in. URL : www.dbm.in																							

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																										
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																										
BORE HOLE NO. : BH-65												SHEET NO. : 4 OF 14														
FIELD DATA												LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK				
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %						
0.50	SX Ø	31.50/32.10	UDS11	(38) 11/18/20/--					Dense, brownish, fine grained, silty SAND	ML	03	29	60	08	17.71	1.85	1.57	NP								
1.00																										
1.50																										
2.00																										
2.50																										
3.00																										
3.50																										
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48.00																										
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49.00																										

SHEET NO. : 5 OF 14

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-65											SHEET NO. : 6 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
.50		50.50	PMT9	(93) 24/41/52/--					Hard, dark brown, fine grained, SILT with low compressibility	SM	04	64	29	07								
.00		51.00/ 51.45	SPT17																			
.50									Very dense, dark brown, fine grained, silty SAND	SP-SM	00	91		09								
.00		52.50/ 53.10	UDS18																			
.50																						
.00		54.00/ 54.45	SPT18	(97) 26/43/54/--					Very dense, greyish, fine grained, silty SAND	SM	00	90		10								
.50		55.50/ 56.10	UDS19																			
.50																						
.00		57.00/ 57.45	SPT19	(R) 27/45/55/--																		
.50																						
.00		58.50/ 59.10	UDS20																			
.50																						
.00		60.00	PMT10																			
.50																						
.00		60.00/ 60.45	SPT20	(90) 29/41/49/--						ML	00	48	44	08								
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil					Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870			
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI. Tel.:+91-22-49663500. Fax: +91 22 49663605. E-mail: dbm@dbm.in. URL : www.dbm.in																						

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BORE HOLE NO. : BH-65												SHEET NO. : 7 OF 14													
FIELD DATA												LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK			
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %					
0.50	SX Ø	61.50/62.10	UDS21						Hard, brownish, fine grained, SILT with low compressibilty																
0.50																									
1.00																									
1.50																									
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BORE HOLE NO. : BH-65											SHEET NO. : 8 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ϕ (degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %			
70.50		70.50/71.10	UDS24												17.82	1.96	1.66						
71.00																		NP					
71.50																							
72.00		72.00/72.45	SPT24	(96) 36/44/52/--					SM	00	78	22							NP				
72.50																							
73.00																							
73.50		73.50/74.10	UDS25												21.25	1.09	1.57						
74.00																							
74.50																							
75.00	SX Ø	75.00/75.45	SPT25	(99) 37/46/53/--					SM	00	76	24							NP				
75.50																							
76.00																							
76.50		76.50/77.10	UDS26												20.35	1.97	1.64						
77.00																							
77.50																							
78.00		78.00/78.43	SPT26	(R) 39/60/40/--					SM	00	51	40	09					22	--	--			
78.50																							
79.00																							
79.50		79.50/80.10	UDS27												20.43	2.02	1.68	22	--	--			
80.00																							
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT ϕ : ANGLE OF INTERNAL FRICTION																							
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870			
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BORE HOLE NO. : BH-65											SHEET NO. : 9 OF 14											
FIELD DATA									DESCRIPTION	LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ϕ (degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
80.50		80.50	PMT12																			
81.00		81.00/81.43	SPT27	(R) 38/63/37/--						SM	00	58	34	08					NP			
81.50																						
82.00																						
82.50		82.50/83.10	UDS28												22.89	1.98	1.61	23	--	--		
83.00																						
83.50																						
84.00		84.00/84.39	SPT28	(R) 41/66/34/--						SM	00	77	23						NP			
84.50																						
85.00	SX Ø								Very dense, dark brown, fine grained, silty SAND													
85.50		85.50/86.10	UDS29												17.90	1.85	1.57		NP			
86.00																						
86.50																						
87.00		87.00/87.37	SPT29	(R) 46/71/29/--						SM	00	57	34	09				23	--	--		
87.50																						
88.00																						
88.50		88.50/89.10	UDS30												18.60	1.82	1.53		NP			
89.00																						
89.50																						
90.00		90.00/90.38	SPT30	(R) 43/68/32/--						SM	00	58	37	05					NP			
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE																Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870		
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-65										SHEET NO. : 10 OF 14												
FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50																						
0.50		91.50/92.10	UDS31											25.38	1.86	1.48	NP					
1.00																						
0.50																						
1.00		93.00/93.36	SPT31	(R) 46/74/26/--					SM	00	58	36	06				NP					
0.50																						
1.00																						
0.50		94.50/95.10	UDS32											24.04	1.97	1.59	NP					
1.00	SX Ø																					
0.50																						
1.00		96.00/96.32	SPT32	(R) 51/82/18/--					ML	00	49	45	06				NP					
0.50																						
1.00																						
0.50		97.50/98.10	UDS33											23.66	1.94	1.57	NP					
1.00																						
0.50																						
1.00		99.00/99.34	SPT33	(R) 58/73/27/--					SM	00	55	36	09				23	--	--			
0.50																						
0.00																						
Very dense, dark brown, fine grained, silty SAND																						
Hard, dark brown, fine grained, SILT with low compressibility																						
Very dense, brownish, fine grained, silty SAND																						
ABBREVIATIONS :																						
DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT																						
UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT																						
RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION																						
SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50			
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-65										SHEET NO. : 11 OF 14													
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
100.50		100.50/101.10	UDS34												21.46	1.83	1.51						
101.00																							
101.50																							
102.00		102.00/102.34	SPT34	(R) 59/75/25/--						SM	00	52	42	06									
102.50																							
103.00																							
103.50		103.50/104.10	UDS35												23.41	1.82	1.47						
104.00									Very dense, brownish, fine grained, silty SAND														
104.50																							
105.00	SX Ø	105.00/105.33	SPT35	(R) 55/80/20/--						SM	00	55	39	06									
105.50																							
106.00																							
106.50		106.50/107.10	UDS36												16.96	1.95	1.67						
107.00																							
107.50																							
108.00		108.00/108.31	SPT36	(R) 63/88/12/--						ML	00	39	52	09									
108.50																							
109.00									Hard, brownish, fine grained, SILT with low compressibility														
109.50		109.50/110.10	UDS37												19.99	1.96	19.99						
110.00																							
ABBREVIATIONS :																							
DS : DISTURBED SAMPLE						N : SPT VALUE				WT : WATER TABLE				LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE				TCR : TOTAL CORE RECOVERY (%)				PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL				RQD : ROCK QUALITY DESIGNATION (%)				Cu : COHESION									
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL				NMC : NATURAL MOISTURE CONTENT				Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50		
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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-65											SHEET NO. : 12 OF 14											
FIELD DATA									DESCRIPTION	LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50																						
1.00		111.00/111.33	SPT37	(R) 57/73/27/--					Hard, brownish, fine grained, SILT with low compressibility	SM	00	76	24					NP				
1.50																						
2.00																						
2.50		112.50/113.10	UDS38											19.91	1.83	1.53	22	--	--			
3.00																						
3.50																						
4.00		114.00/114.31	SPT38	(R) 61/89/11/--						SM	00	76	24					NP				
4.50																						
5.00	SX Ø																					
5.50		115.50/116.10	UDS39						Very dense, brownish, fine grained, silty SAND					18.46	2.01	1.70		NP				
6.00																						
6.50																						
7.00		117.00/117.38	SPT39	(R) 66/100/--/--						SM	00	75	25					NP				
7.50																						
8.00																						
8.50		118.50/119.10	UDS40											21.76	2.01	1.65		NP				
9.00																						
9.50																						
0.00		120.00/120.32	SPT40	(R) 58/73/27/--						SM	00	52	44 04					NP				
ABBREVIATIONS :																						
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT							
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT							
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION							
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION							
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil				Drawn By: Akshay Chavan				SCALE : 1: 50			
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.																			JOB NO. : 3870			
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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-65											SHEET NO. : 13 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
0.50	SX Ø								Very dense, dark brown, fine grained, silty SAND													
1.00																						
1.50		121.50/122.10	UDS41												20.15	1.84	1.53	NP				
2.00																						
2.50																						
3.00		123.00/123.31	SPT41	(R) 60/76/24/--						ML	00	39	52	09				23	--	--		
3.50																						
4.00																						
4.50		124.50/125.10	UDS42												22.30	1.79	1.46	25	--	--		
5.00																						
5.50																						
6.00	126.00/126.32	SPT42	(R) 58/75/25/--						SM	00	75	25					NP					
6.50																						
7.00																						
7.50	127.50/128.10	UDS43												20.52	1.79	1.49	NP					
8.00																						
8.50																						
9.00	129.00/129.33	SPT43	(R) 52/73/27/--						SM	00	52	41	07				NP					
9.50																						
0.00																						
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT Ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : CONTINUED ON NEXT PAGE											Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870					
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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																						
BORE HOLE NO. : BH-65											SHEET NO. : 14 OF 14											
FIELD DATA									LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²)/ ø (degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
130.50		130.50/ 131.10	UDS44												23.40	1.81	1.47					
131.00																			NP			
131.50																						
132.00		132.00/ 132.31	SPT44	(R) 61/81/19/--						SM	00	55	37	08				22	--	--		
132.50																						
133.00																						
133.50		133.50/ 134.10	UDS45												19.01	1.84	1.55					
134.00																						
134.50																						
135.00	SX ø	135.00/ 135.30	SPT45	(R) 62/100/--/--					Very dense, dark brown, fine grained, silty SAND	SM	00	54	40	06								
135.50																						
136.00																						
136.50		136.50/ 137.10	UDS46												21.15	1.88	1.55					
137.00																			NP			
137.50																						
138.00		138.00/ 138.27	SPT46	(R) 57/100/--/--						SM	00	54	37	09				24	--	--		
138.50																						
139.00																						
139.50		139.50/ 140.10	UDS47												23.35	1.91	1.55					
140.00																			NP			
ABBREVIATIONS : DS : DISTURBED SAMPLE N : SPT VALUE WT : WATER TABLE LL (%) : LIQUID LIMIT UDS : UNDISTURBED SOIL SAMPLE R : REFUSAL 'N' VALUE TCR : TOTAL CORE RECOVERY (%) PL% : PLASTIC LIMIT RD : UDS FOR RELATIVE DENSITY TEST EGL : EXISTING GROUND LEVEL RQD : ROCK QUALITY DESIGNATION (%) Cu : COHESION SPT : STD. PENETRATION TEST RL : REDUCED LEVEL NMC : NATURAL MOISTURE CONTENT ø : ANGLE OF INTERNAL FRICTION																						
REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.10m BELOW EGL.															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870		
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BORE HOLE NO. : BH-66											SHEET NO. : 1 OF 14																													
LOCATION : NB - 3											DATE : 10/03/2019 TO 01/04/2019																													
CO-ORDINATES : N 3256994.019, E 560990.398											METHOD : ROTARY DRILLING																													
GROUND R. L. : 213.807m											CASING : SX mm Ø Upto 140.10m Below EGL																													
GROUND W. T. : 3.79m Below EGL											BOREHOLE DEPTH : 140.10m.Below EGL																													
FIELD DATA											LABORATORY DATA																													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %	Cu/ (kg/cm²) / Ø(degrees)	REMARK																		
0.50	SX Ø	0.00							Loose, dark brown, fine grained, silty SAND	SM	00	75	25		18.52	1.94	1.64																							
1.50		1.50/	UDS1/1																																					
1.80		1.80/																																						
2.10		2.10	UDS1/2																																					
3.00		3.00/	SPT1	(07)	03/03/04/--																																			
3.45		3.45																																						
4.50		4.50/	UDS2																																					
5.10		5.10																																						
6.00		6.00/	SPT2	(14)	05/07/07/--																																			
6.45		6.45																																						
7.50	7.50/	UDS3							Stiff, dark brown, fine grained, SILT with low compressibility	ML	00	49	42	09		17.87	1.88	1.59	25	--	--																			
7.00																																								
7.50	7.50/																																							
8.10	8.10	UDS3																																						
9.00	9.00/	SPT3	(22)	08/10/12/--																																				
9.45	9.45																																							
10.00																																								

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Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-66

SHEET NO. : 2 OF 14

FIELD DATA								DESCRIPTION	LABORATORY DATA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø/(degrees)	REMARK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
10.50	SX Ø	10.50/ 11.10	UDS4	(35) 07/14/21/--				<div></div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

ABBREVIATIONS :							
DS	: DISTURBED SAMPLE	N	: SPT VALUE	WT	: WATER TABLE	LL (%)	: LIQUID LIMIT
UDS	: UNDISTURBED SOIL SAMPLE	R	: REFUSAL 'N' VALUE	TCR	: TOTAL CORE RECOVERY (%)	PL%	: PLASTIC LIMIT
RD	: UDS FOR RELATIVE DENSITY TEST	EGL	: EXISTING GROUND LEVEL	RQD	: ROCK QUALITY DESIGNATION (%)	Cu	: COHESION
SPT	: STD. PENETRATION TEST	RL	: REDUCED LEVEL	NMC	: NATURAL MOISTURE CONTENT	Ø	: ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
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BORE HOLE NO. : BH-66											SHEET NO. : 3 OF 14											
FIELD DATA											LABORATORY DATA											
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / ϕ (degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %		
20.50									Hard, brownish, fine grained, SILT with low compressibility	ML	00	09	75	76				34	25	09		
21.00		21.00/21.45	SPT7	(31) 12/14/17/--																		
21.50																						
22.00																						
22.50		22.50/23.10	UDS8												21.47	1.90	1.56	32	24	08	0.26 27.37	DSCD
23.00																						
23.50																						
24.00		24.00/24.45	SPT8	(35) 08/16/19/--																		
24.50																						
25.00	SX Ø																					
25.50		25.50/26.10	UDS9												23.68	1.87	1.51	NP			0.02 35.05	DSCD
26.00																						
26.50																						
27.00		27.00/27.45	SPT9	(40) 10/18/22/--																		
27.50									SP-SM		00	91	09					NP				
28.00																						
28.50		28.50/29.10	UDS10												21.07	1.84	1.52	NP			0.02 30.49	DSCD
29.00																						
29.50																						
30.00		30.00/30.45	SPT10	(48) 13/22/26/--																		
ABBREVIATIONS : DS : DISTURBED SAMPLE																						

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PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																																		
BORE HOLE NO. : BH-66											SHEET NO. : 4 OF 14																							
FIELD DATA											LABORATORY DATA																							
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²)/ ø (degrees)	REMARK												
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %														
30.50	SX Ø								Dense, dark brown, fine grained, silty SAND	SP-SM	00	93	07	18.88	1.82	1.53	NP			0.03 33.69	DSCD													
31.00																																		
31.50		31.50/ 32.10	UDS11																															
32.00									Very dense, greyish, fine grained, silty SAND	ML	04	07	77	12	17.49	1.81	1.54	29	--	--	0.27 27.46	DSCD												
32.50																																		
33.00		33.00/ 33.45	SPT11	(53) 15/24/29/--																														
33.50										Hard, dark brown, fine grained, SILT with low compressibility	ML	10	38	38	14	17.82	1.84	1.56	31	25	06	0.20 29.93	DSCD											
34.00																																		
34.50		34.50/ 35.10	UDS12																															
35.00																																		
35.50																																		
36.00	36.00/ 36.45	SPT12	(48) 14/21/27/--																															
36.50																																		
37.00																																		
37.50	37.50/ 38.10	UDS13																																
38.00																																		
38.50																																		
39.00	39.00/ 39.45	SPT13	(42) 14/19/23/--																															
39.50																																		
40.00																																		
ABBREVIATIONS :																																		
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT																			
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT																			
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION																			
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					ø : ANGLE OF INTERNAL FRICTION																			
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50 JOB NO. : 3870													
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BORE HOLE NO. : BH-66											SHEET NO. : 5 OF 14													
FIELD DATA											LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
.50		40.50/41.10	UDS14												17.53	1.84	1.57	34	25	09	0.28/29.37	DSCD		
.00																								
.50																								
1.00		42.00/42.45	SPT14	(51) 16/22/29/--					Hard, dark brown, fine grained, SILT with low compressibilty	ML	04	11	76	13				31	24	07				
.50																								
1.00																								
.50		43.50/44.10	UDS15												20.69	1.87	1.55	20	--	--	0.24/30.23	DSCD		
.00																								
.50	SX Ø	45.00/45.45	SPT15	(56) 19/26/30/--						SM	20	32	41	07				22	--	--				
.00																								
.50		46.50/47.10	UDS16												19.73	1.85	1.55	23	--	--	0.16/29.76	DSCD		
.00																								
.50									Very dense, dark brown, fine grained, silty SAND															
1.00		48.00/48.45	SPT16	(60) 21/28/32/--						SM	00	53	40	07				22	--	--				
.50																								
1.00																								
.50		49.50/50.10	UDS17												20.35	1.88	1.56	21	--	--	0.23/29.76	DSCD		
.00																								
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT									
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT									
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION									
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION									
REMARKS : CONTINUED ON NEXT PAGE															Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50 JOB NO. : 3870					
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BORE HOLE NO. : BH-66												SHEET NO. : 6 OF 14											
FIELD DATA										LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm²) / Ø (degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm³)	DRY DENSITY (gm/cm³)	LL%	PL%	PLASTICITY INDEX %			
.50	SX Ø	51.00/51.45	SPT17	(64) 23/30/34/--					Very dense, dark brown, fine grained, silty SAND	ML	00	27	60	13				25	--	--			
.00																							
.50																							
.00																							
.50			52.50/53.10	UDS18												18.52	1.84	1.55	24	--	--	0.25 / 28.76	DSCD
.00																							
.50																							
.00																							
.50			54.00/54.45	SPT18	(66) 19/29/37/--					Hard, dark brown, fine grained, SILT with low compressibility	ML	00	32	55	13				25	--	--		
.00																							
.50		55.50/56.10	UDS19												18.90	1.85	1.56	NP			0.07 / 32.85	DSCD	
.00																							
.50																							
.00		57.00/57.45	SPT19	(71) 24/31/40/--						SM	00	87	13					NP					
.50																							
.00																							
.50		58.50/59.10	UDS20						Very dense, dark brown, fine grained, silty SAND						18.22	1.83	1.55	NP			0.02 / 32.85	DSCD	
.00																							
.50																							
.00		60.00/60.45	SPT10	(77) 27/34/43/--						SM	00	88	12					NP					

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE												Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50	
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.																JOB NO. : 3870	
Tel.:+91-22-49663500. Fax: +91 22 49663605. E-mail: dbm@dbm.in. URL : www.dbm.in																	

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																								
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-66												SHEET NO. : 7 OF 14												
FIELD DATA												LABORATORY DATA												
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %				
0.50		61.50/61.80	UDS21/1												19.55	1.87	1.56				0.03			
0.80		61.80/62.10	UDS21/2																		33.25		DSCD	
0.50		63.00/63.45	SPT21	(72) 24/33/39/--						SM	00	79	21											
0.50		64.50/65.10	UDS22												19.86	1.90	1.59				0.05		DSCD	
0.50	SX Ø	66.00/66.45	SPT22	(75) 28/33/42/--						SM	00	80	20											
0.50		67.50/68.10	UDS23												18.26	1.84	1.56				0.04		DSCD	
0.50		69.00/69.45	SPT23	(85) 31/39/46/--						SP-SM	00	91	09											
0.50									Very dense, dark brown, fine grained, silty SAND															
0.50																								
0.50																								
0.50																								
0.50																								
0.50																								
0.50																								
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CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																						
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BORE HOLE NO. : BH-66										SHEET NO. : 8 OF 14												
FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu / (kg/cm ²) / Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
.50		70.50/71.10	UDS24												20.64	1.91	1.58				0.01 / 33.69	DSCD
.00																						
.50																						
1.00		72.00/72.45	SPT24	(86) 33/38/48/--						SP-SM	00	92	08									
.50																						
1.00																						
.50		73.50/74.10	UDS25												22.99	1.93	1.57				0.23 / 30.19	DSCD
1.00																						
.50																						
1.00	SX Ø	75.00/75.45	SPT25	(93) 36/41/52/--						ML	00	43	48	09				22	--	--		
.50																						
1.00																						
.50		76.50/77.10	UDS26												19.74	1.89	1.58				0.01 / 35.51	DSCD
1.00																						
.50																						
1.00		78.00/78.43	SPT26	(97) 34/43/54/--						SM	00	77	23									
.50																						
1.00																						
.50		79.50/80.10	UDS27												21.07	1.93	1.59	24	--	--	0.14 / 31.66	DSCD
1.00																						
ABBREVIATIONS :																						
DS : DISTURBED SAMPLE					N : SPT VALUE					WT : WATER TABLE					LL (%) : LIQUID LIMIT							
UDS : UNDISTURBED SOIL SAMPLE					R : REFUSAL 'N' VALUE					TCR : TOTAL CORE RECOVERY (%)					PL% : PLASTIC LIMIT							
RD : UDS FOR RELATIVE DENSITY TEST					EGL : EXISTING GROUND LEVEL					RQD : ROCK QUALITY DESIGNATION (%)					Cu : COHESION							
SPT : STD. PENETRATION TEST					RL : REDUCED LEVEL					NMC : NATURAL MOISTURE CONTENT					Ø : ANGLE OF INTERNAL FRICTION							
REMARKS : CONTINUED ON NEXT PAGE																						
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.														Checked By : Dhiraj Patil		Drawn By: Akshay Chavan		SCALE : 1: 50				
Tel.:+91-22-49663500. Fax: +91 22 49663605. E-mail: dbm@dbm.in. URL : www.dbm.in																		JOB NO. : 3870				

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																							
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																							
BORE HOLE NO. : BH-66											SHEET NO. : 9 OF 14												
FIELD DATA									DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPT'N)	TCR (%)	RQD (%)	ELEVATION (m)	LOG		CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK	
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %			
.50	SX Ø	81.00/81.45	SPT27	(100) 36/50/50/--					Very dense, dark brown, fine grained, silty SAND	ML	00	48	44	08				22	--	--			
.00									Hard, dark brown, fine grained, SILT with low compressibility	ML	00	43	48	09	21.96	1.95	1.60	25	--	--			
.50		82.50/83.10	UDS28																				
1.00																							
.50		84.00/84.42	SPT28	(R) 34/54/46/--																			
1.00			85.50/85.80	UDS29/1												17.50	1.83	1.56	21	--	--		
.50			85.80/86.10	UDS29/2																			
1.00																							
.50																							
1.00			87.00/87.40	SPT29	(R) 36/58/42/--					Very dense, brownish, fine grained, silty SAND	SM	00	55	36	09				24	--	--		
.50																							
1.00																							
.50		88.50/89.10	UDS30												18.87	1.86	1.56	NP					
1.00																							
.50																							
1.00		90.00/90.42	SPT30	(R) 33/55/45/--						SM	00	78	22					NP					

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)

NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.

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Checked By : Dhiraj Patil

Drawn By: Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"	
BORE HOLE NO. : BH-66	SHEET NO. : 10 OF 14

ABBREVIATIONS :			
DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	Ø : ANGLE OF INTERNAL FRICTION
REMARKS : CONTINUED ON NEXT PAGE		Checked By : Dhiraj Patil	Drawn By : Akshay Chavan
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.		SCALE : 1: 50	
Tel.: +91-22-49663500. Fax: +91 22 49663605. E-mail: dbm@dbm.in. URL : www.dbm.in		JOB NO. : 3870	

CLIENT : **NUCLEAR POWER CORPORATION OF INDIA LIMITED**

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana
Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-66

SHEET NO. : 11 OF 14

FIELD DATA

LABORATORY DATA

DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cc)	DRY DENSITY (gm/cc)	LL %	PL %	PLASTICITY INDEX %		
100.50		100.50/101.10	UDS34						Very dense, brownish, fine grained, silty SAND						23.65	1.89	1.53					
101.00																						
101.50																						
102.00		102.00/102.41	SPT34	(R) 45/56/44/--						ML	00	48	46	06								
102.50																						
103.00																						
103.50		103.50/104.10	UDS35						Hard, brownish, fine grained, SILT with low compressibility						21.33	1.86	1.53					
104.00																						
104.50																						
105.00	SX ø	105.00/105.39	SPT35	(R) 49/53/47/--						SM	00	76		24								
105.50																						
106.00																						
106.50		106.50/107.10	UDS36						Very dense, brownish, fine grained, silty SAND						19.42	1.91	1.60	23	--	--		
107.00																						
107.50																						
108.00		108.00/108.37	SPT36	(R) 54/62/38/--						ML	00	42	48	10								
108.50																						
109.00									Hard, dark brown, fine grained, SILT with low compressibility													
109.50		109.50/110.10	UDS37												20.91	1.94	1.60	25	--	--		
110.00																						

ABBREVIATIONS :

DS : DISTURBED SAMPLE	N : SPT VALUE	WT : WATER TABLE	LL (%) : LIQUID LIMIT
UDS : UNDISTURBED SOIL SAMPLE	R : REFUSAL 'N' VALUE	TCR : TOTAL CORE RECOVERY (%)	PL% : PLASTIC LIMIT
RD : UDS FOR RELATIVE DENSITY TEST	EGL : EXISTING GROUND LEVEL	RQD : ROCK QUALITY DESIGNATION (%)	Cu : COHESION
SPT : STD. PENETRATION TEST	RL : REDUCED LEVEL	NMC : NATURAL MOISTURE CONTENT	ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By :
Dhiraj Patil

Drawn By:
Akshay Chavan

SCALE : 1: 50
JOB NO. : 3870

CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED

PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"

BORE HOLE NO. : BH-66

SHEET NO. : 12 OF 14

FIELD DATA								DESCRIPTION	LABORATORY DATA													
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)		LOG	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL%	PL%	PLASTICITY INDEX %		
110.50																						
111.00		111.00/111.38	SPT37	(R) 51/65/35/--						ML	00	40	49	11				24	--	--		
111.50																						
112.00																						
112.50		112.50/113.10	UDS38												18.77	1.86	1.57	23	--	--		
113.00																						
113.50																						
114.00		114.00/114.39	SPT38	(R) 46/57/43/--						ML	00	30	60	10				25	--	--		
114.50																						
115.00	SX Ø																					
115.50		115.50/116.10	UDS39												19.50	1.97	1.65	22	--	--		
116.00																						
116.50																						
117.00		117.00/117.40	SPT39	(R) 47/59/41/--						ML	00	44	48	08				23	--	--		
117.50																						
118.00																						
118.50		118.50/119.10	UDS40												22.05	1.94	1.59	21	--	--		
119.00																						
119.50																						
120.00		120.00/120.35	SPT40	(R) 47/61/39/--						ML	00	34	56	10				25	--	--		

ABBREVIATIONS :

DS : DISTURBED SAMPLE

UDS : UNDISTURBED SOIL SAMPLE

RD : UDS FOR RELATIVE DENSITY TEST

SPT : STD. PENETRATION TEST

N : SPT VALUE

R : REFUSAL 'N' VALUE

EGL : EXISTING GROUND LEVEL

RL : REDUCED LEVEL

WT : WATER TABLE

TCR : TOTAL CORE RECOVERY (%)

RQD : ROCK QUALITY DESIGNATION (%)

NMC : NATURAL MOISTURE CONTENT

LL (%) : LIQUID LIMIT

PL% : PLASTIC LIMIT

Cu : COHESION

Ø : ANGLE OF INTERNAL FRICTION

REMARKS : CONTINUED ON NEXT PAGE

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Checked By : Dhiraj Patil

Drawn By: Akshay Chavan

SCALE : 1: 50

JOB NO. : 3870

NPCIL/GHAVP/CTC/2026/PA-06363 OF 934

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SHEET NO. : 13 OF 14

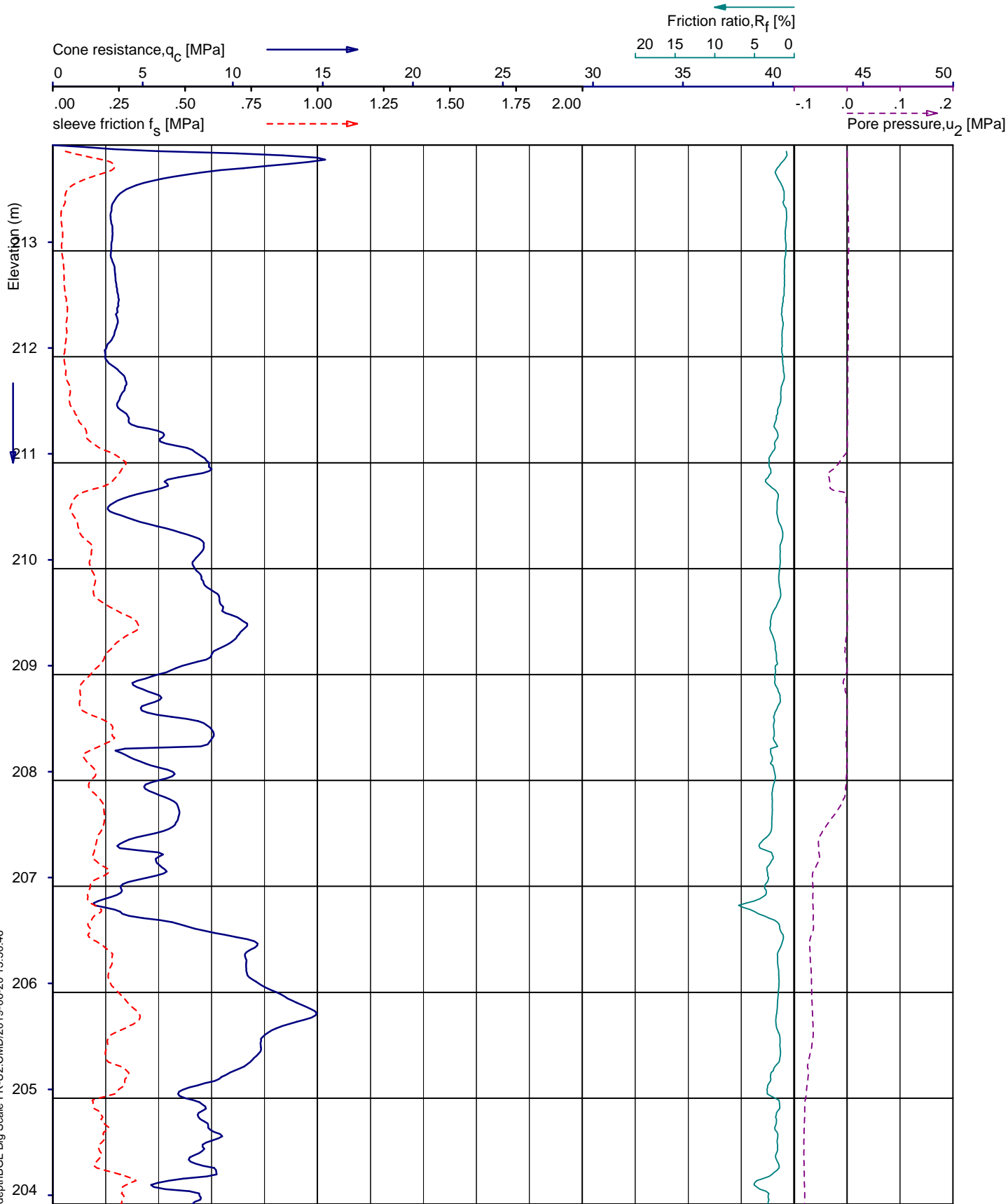
CLIENT : NUCLEAR POWER CORPORATION OF INDIA LIMITED																								
PROJECT : "Performance of Geotechnical Investigation, Field & Laboratory Tests, Determination of Foundations Parameters etc. for the Gorakhpur, Haryana Anu Vidyut Pariyojana-3&4 (GHAVP-3&4) Site at Village-Gorakhpur, Distt-Fatehabad, Haryana"																								
BORE HOLE NO. : BH-66										SHEET NO. : 14 OF 14														
FIELD DATA										LABORATORY DATA														
DEPTH BELOW EGL (m)	DIA OF BOREHOLE	SAMPLE & IN-SITU TEST DEPTH (m)	SAMPLE TYPE & NO.	FIELD TEST RESULT (SPTN)	TCR (%)	RQD (%)	ELEVATION (m)	LOG	DESCRIPTION	CLASSIFICATION	GRAIN SIZE ANALYSIS				MOISTURE CONTENT & DENSITIES			CONSISTENCY LIMIT			Cu/ (kg/cm ²)/ Ø(degrees)	REMARK		
											GRAVELS %	SAND %	SILT %	CLAY %	NMC %	BULK DENSITY (gm/cm ³)	DRY DENSITY (gm/cm ³)	LL %	PL %	PLASTICITY INDEX %				
130.50		130.50/131.10	UDS44												22.30	1.88	1.54							
131.00																		NP						
131.50																								
132.00		132.00/132.41	SPT44	(R) 47/58/42/--						SM	00	75	25							NP				
132.50																								
133.00																								
133.50		133.50/134.10	UDS45												20.81	1.92	1.59			NP				
134.00																								
134.50																								
135.00	SX Ø	135.00/135.27	SPT45	(R) 51/100/--/--					Very dense, dark brown, fine grained, silty SAND	SM	00	77	23							NP				
135.50																								
136.00																								
136.50		136.50/137.10	UDS46												22.57	1.56	22.57			NP				
137.00																								
137.50																								
138.00		138.00/138.36	SPT46	(R) 43/67/33/--						SM	00	76	24							NP				
138.50																								
139.00																								
139.50		139.50/140.10	UDS47												20.09	1.87	1.56			NP				
140.00																								
ABBREVIATIONS :																								
DS : DISTURBED SAMPLE						N : SPT VALUE				WT : WATER TABLE				LL (%) : LIQUID LIMIT										
UDS : UNDISTURBED SOIL SAMPLE						R : REFUSAL 'N' VALUE				TCR : TOTAL CORE RECOVERY (%)				PL% : PLASTIC LIMIT										
RD : UDS FOR RELATIVE DENSITY TEST						EGL : EXISTING GROUND LEVEL				RQD : ROCK QUALITY DESIGNATION (%)				Cu : COHESION										
SPT : STD. PENETRATION TEST						RL : REDUCED LEVEL				NMC : NATURAL MOISTURE CONTENT				Ø : ANGLE OF INTERNAL FRICTION										
REMARKS : BORE HOLE IS TERMINATED AT DEPTH OF 140.10m BELOW EGL.															Checked By : Dhiraj Patil			Drawn By: Akshay Chavan			SCALE : 1: 50			
DBM GEOTECHNICS AND CONSTRUCTIONS PVT. LTD. MUMBAI.																					JOB NO. : 3870			
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UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:46

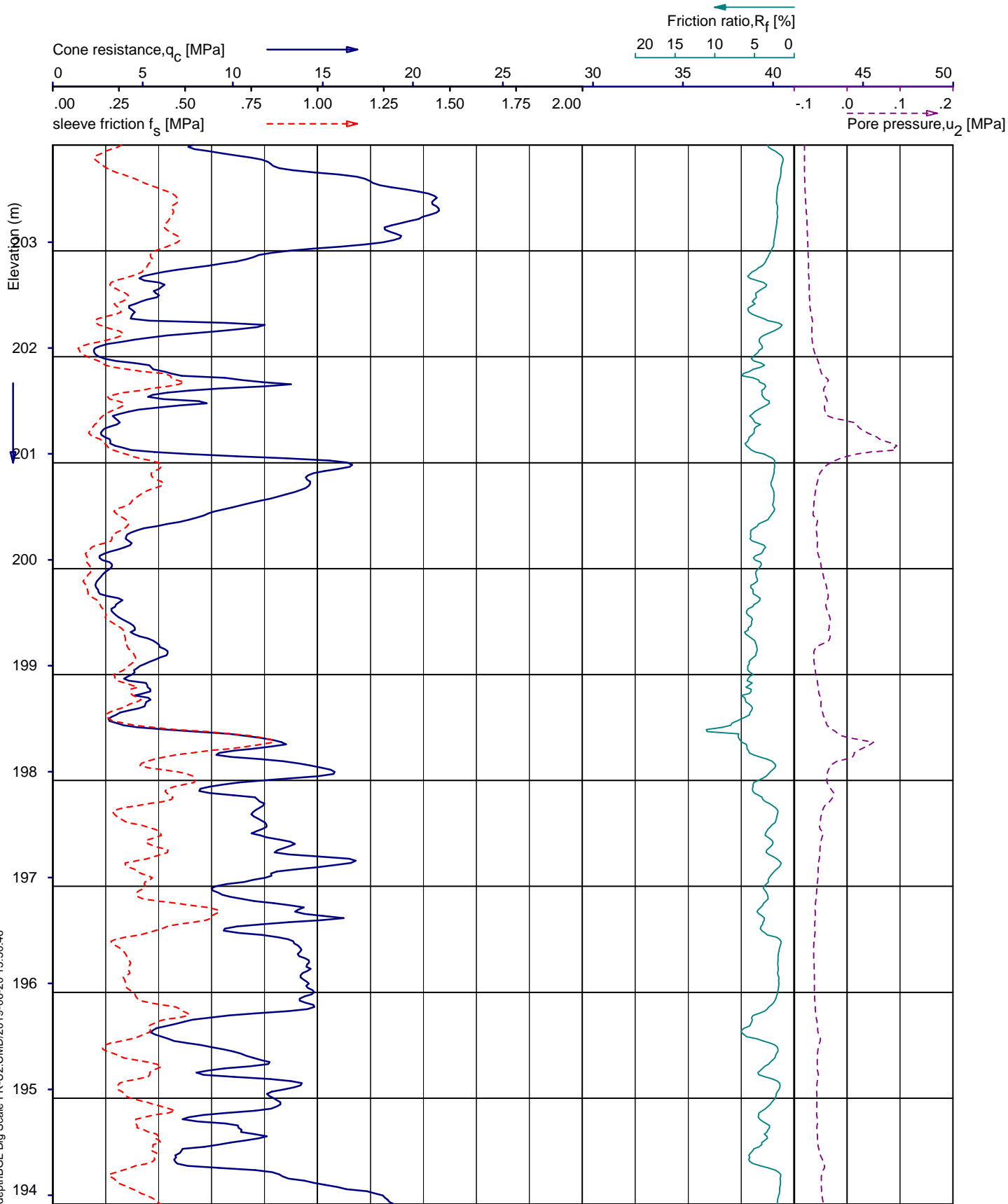


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561177.918	test in accordance with BS 1377/1990
	GL = +213.92 m	N = 3257140.891	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT01

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:46

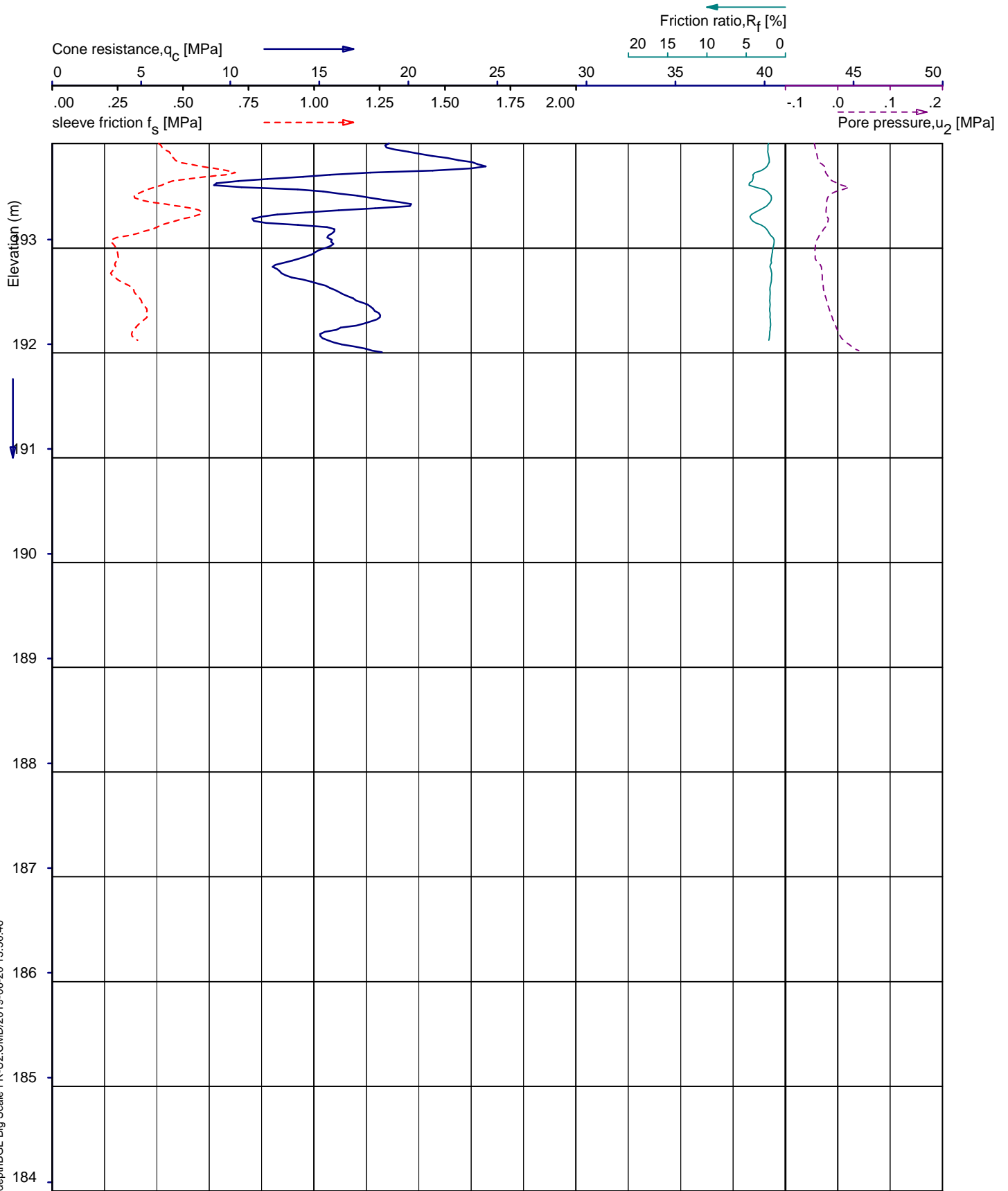


d.d.	15-Jun-2019	cone :	CP10-CF50PB10SN2	E = 561177.918	test in accordance with BS 1377/1990
		GL =	+213.92 m	N = 3257140.891	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT01

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:46

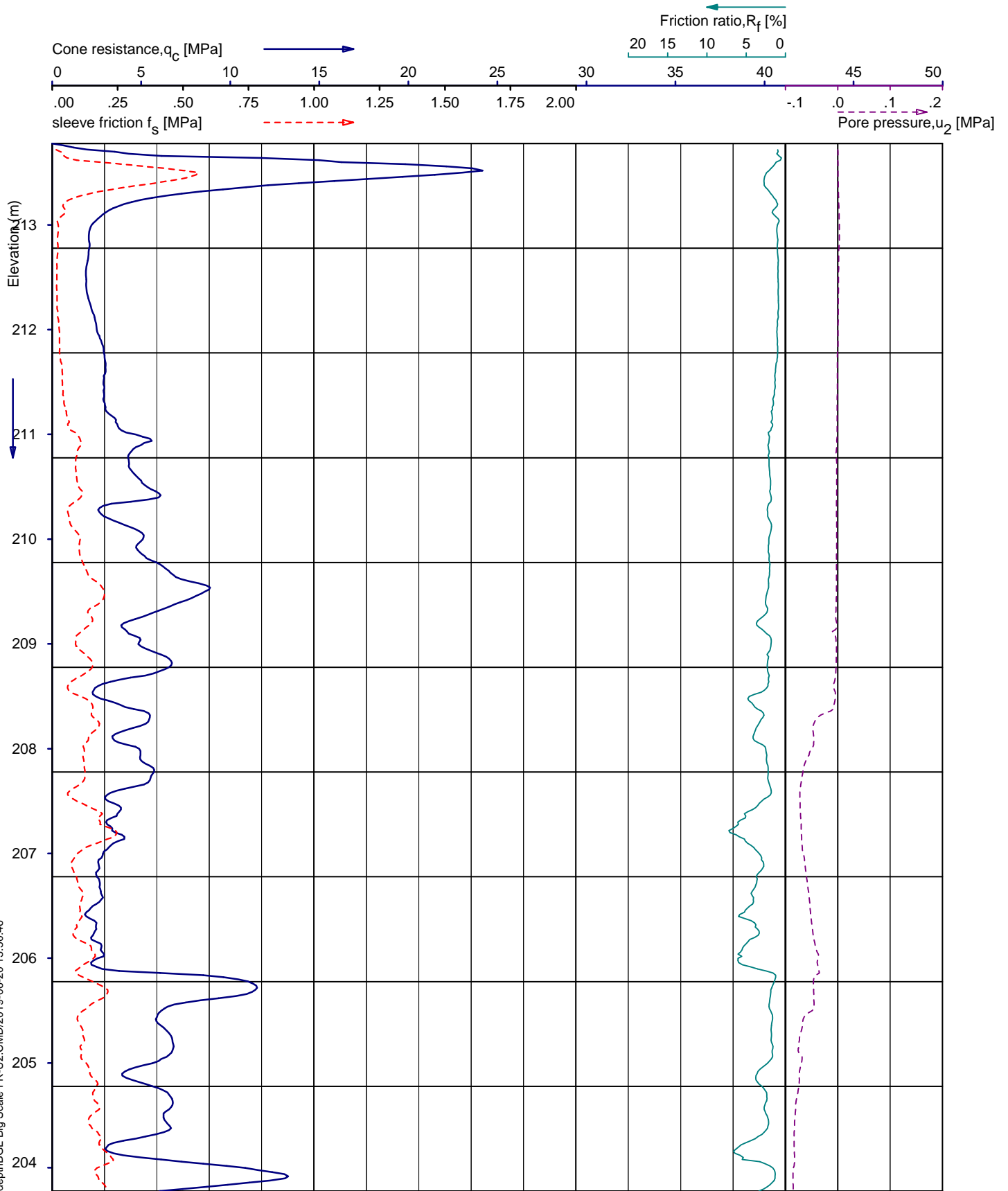


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561177.918	test in accordance with BS 1377/1990
	GL = +213.92 m	N = 3257140.891	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT01

UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:46

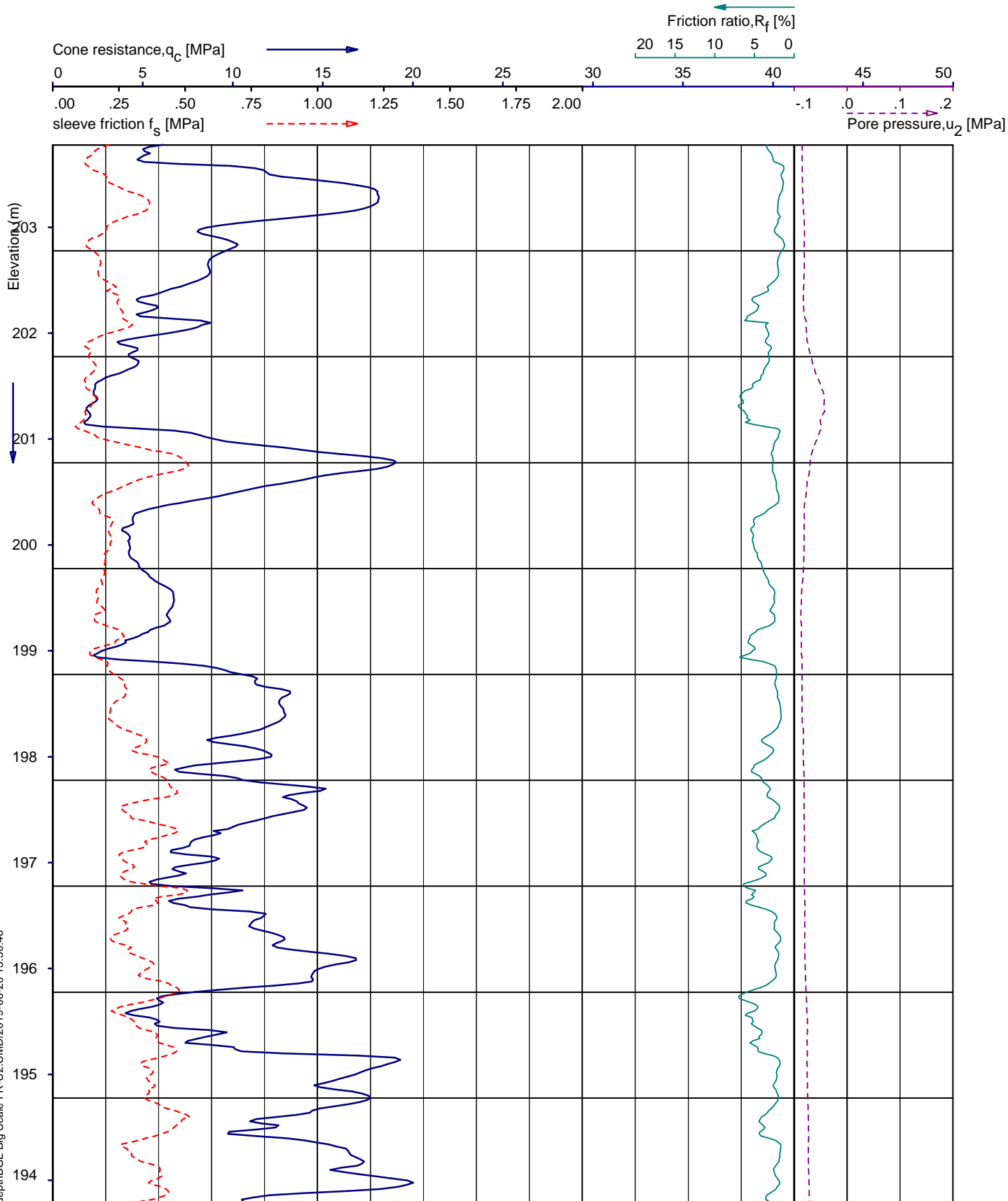


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561275.875	test in accordance with BS 1377/1990
	GL = +213.78 m	N = 3256904.714	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT02

UNIPLOT 05:27 n:\std_depthBGL_Big Scale FR-U2.CMD/2019-06-20 13:50:46



d.d. 15-Jun-2019

cone : CP10-CF50PB10SN2

E = 561275.875

test in accordance with BS 1377/1990

GL = +213.78 m

N = 3256904.714

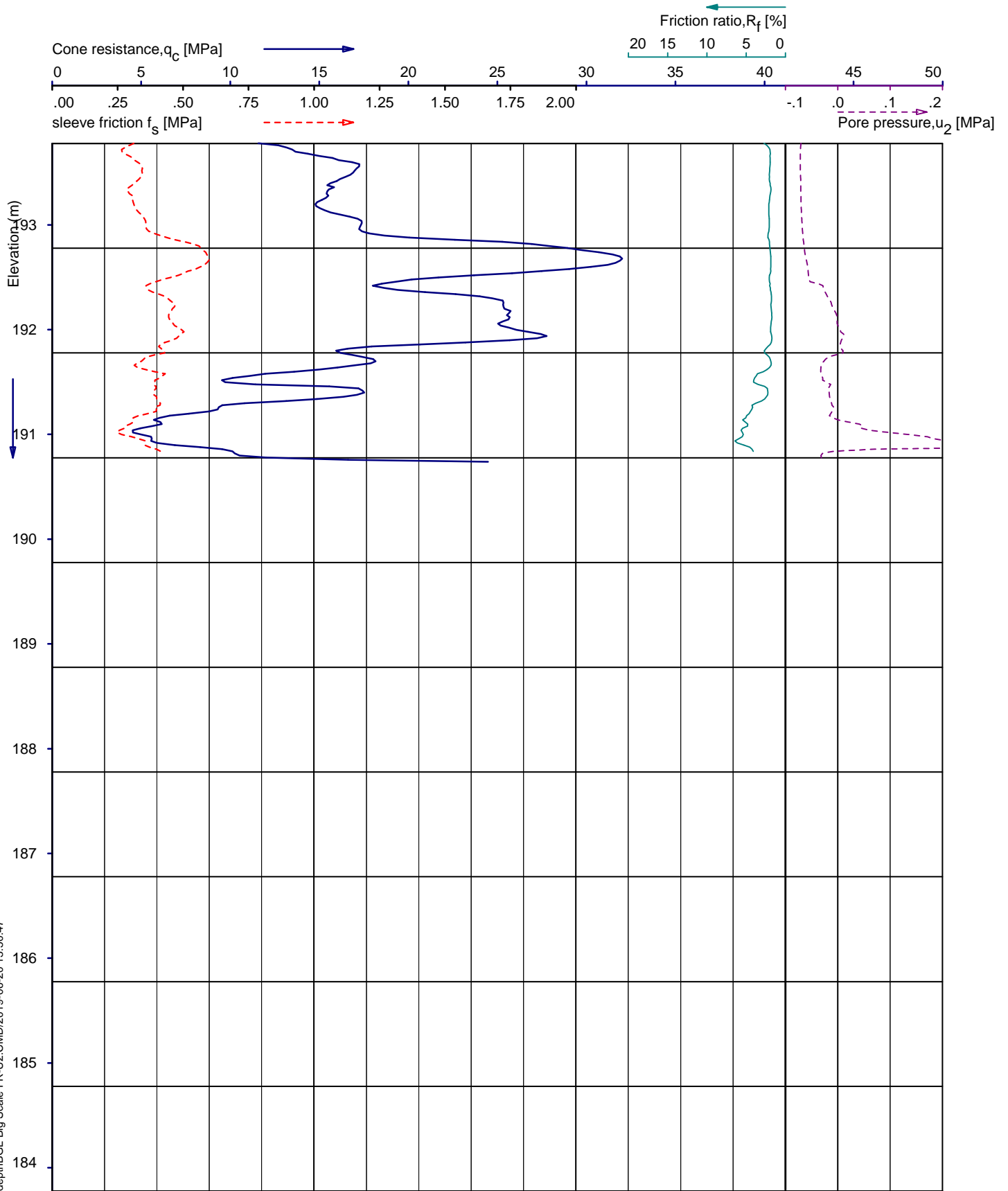
cone type cylindrical electrical

PIEZO CONE PENETRATION TEST

Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT02

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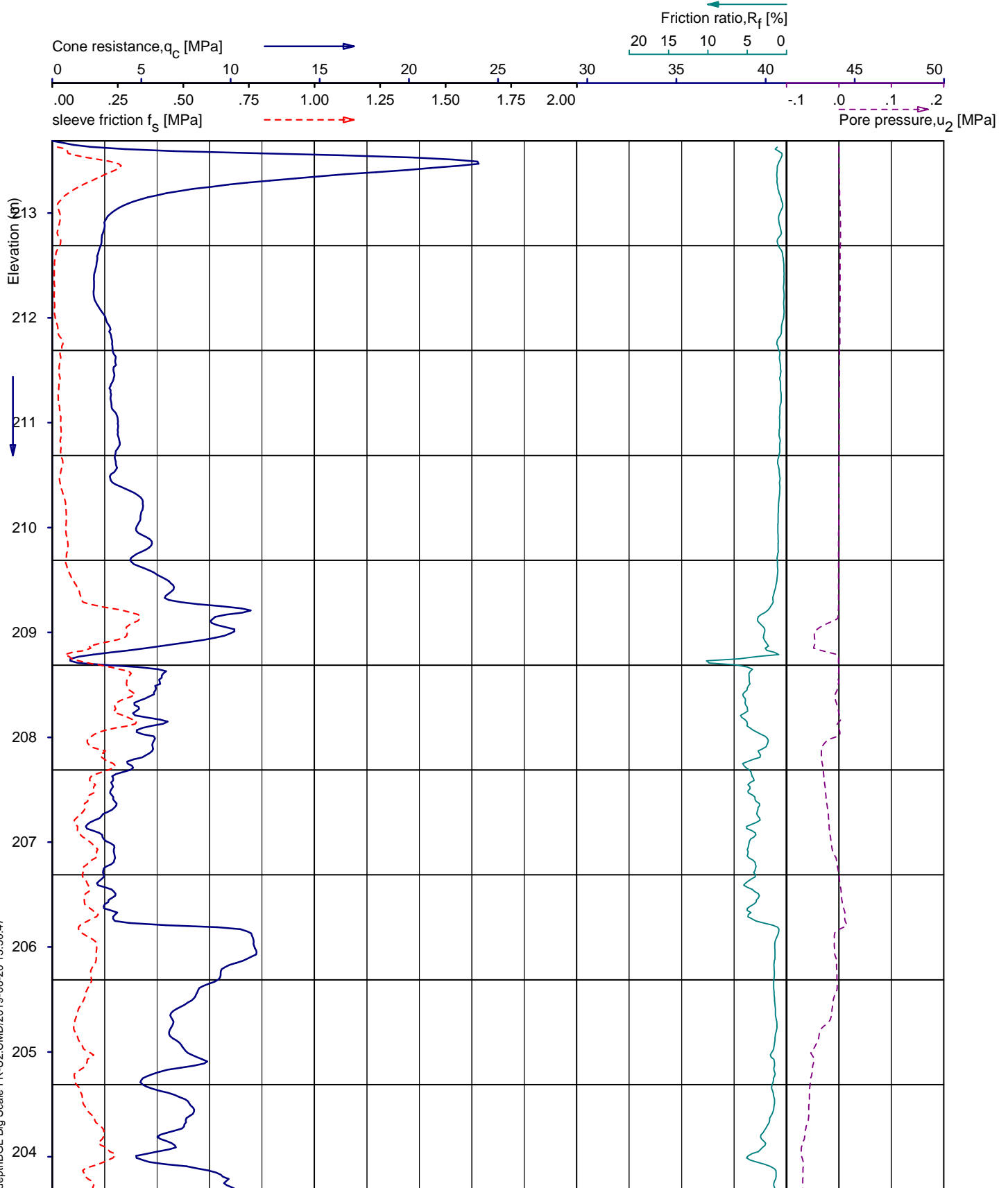


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561275.875	test in accordance with BS 1377/1990
	GL = +213.78 m	N = 3256904.714	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT02

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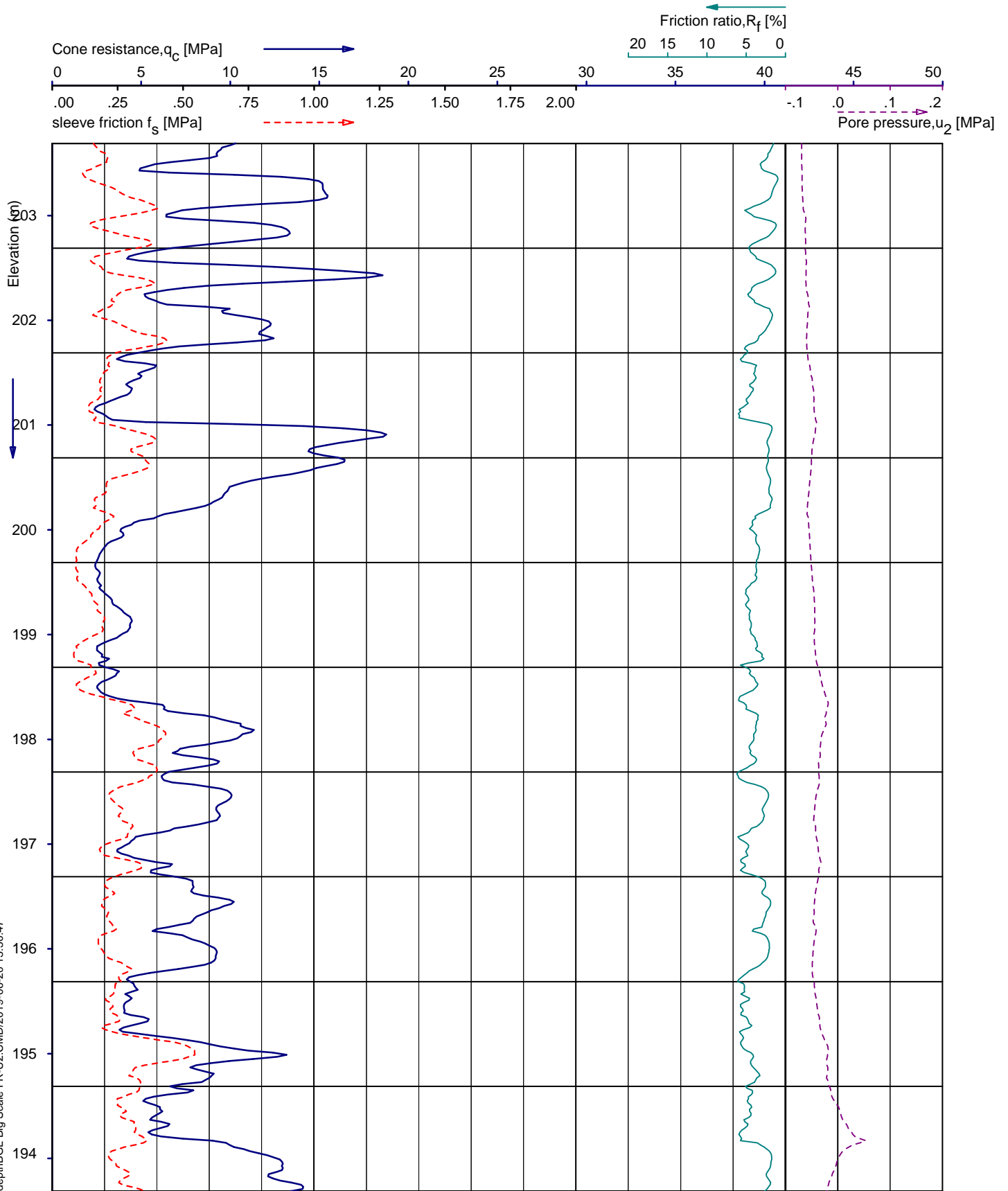


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561146.705	test in accordance with BS 1377/1990
	GL = +213.69 m	N = 3256999.696	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT03

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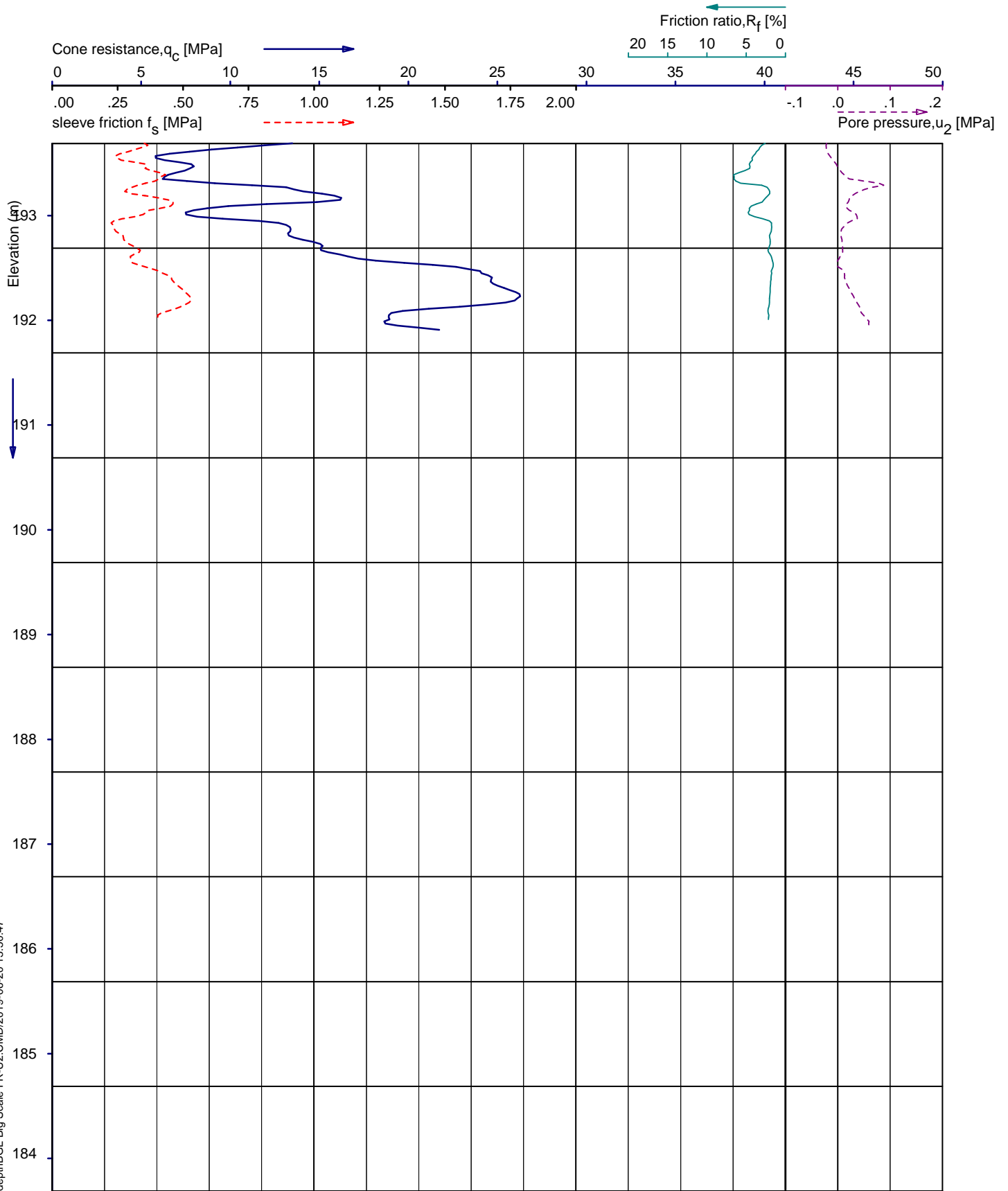


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561146.705	test in accordance with BS 1377/1990
	GL = +213.69 m	N = 3256999.696	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT03

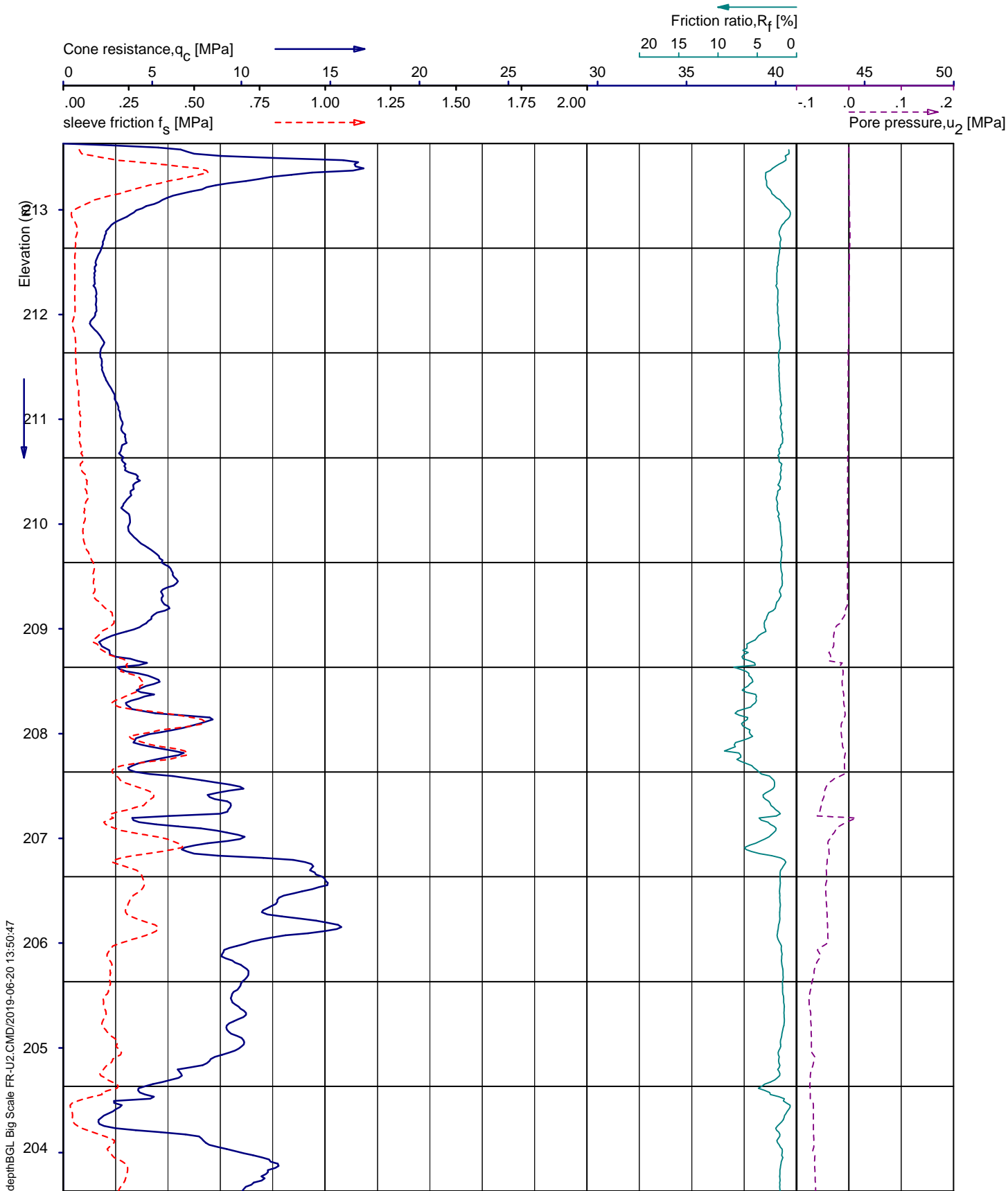
UNIPLOT 05:27 n/strd_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:47



d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561146.705	test in accordance with BS 1377/1990
	GL = +213.69 m	N = 3256999.696	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT03



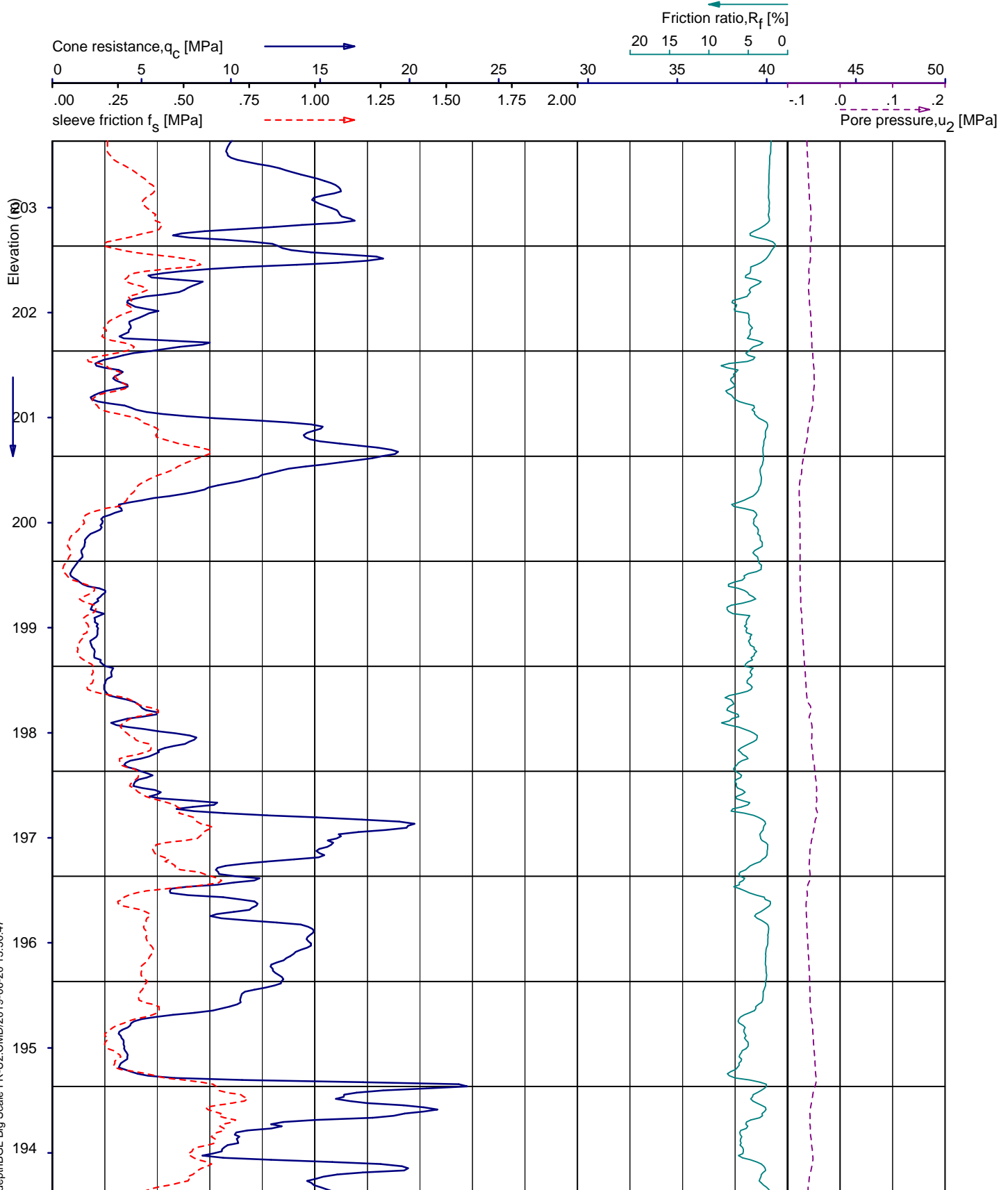
UNIPLOT 05.27 n/strd_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:47

d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561064.121	test in accordance with BS 1377/1990
	GL = +213.63 m	N = 3256938.724	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
 Carrying Out ECPT at NPCIL, Gorakhpur
 DBM

Proj. : 139834
 CPT : CPT04

UNIPLOT 05:27 n/strd_depthBGL_Big Scale FR-U2.CMD/2019-06-20 13:50:47



d.d. 15-Jun-2019

cone : CP10-CF50PB10SN2
GL = +213.63 m

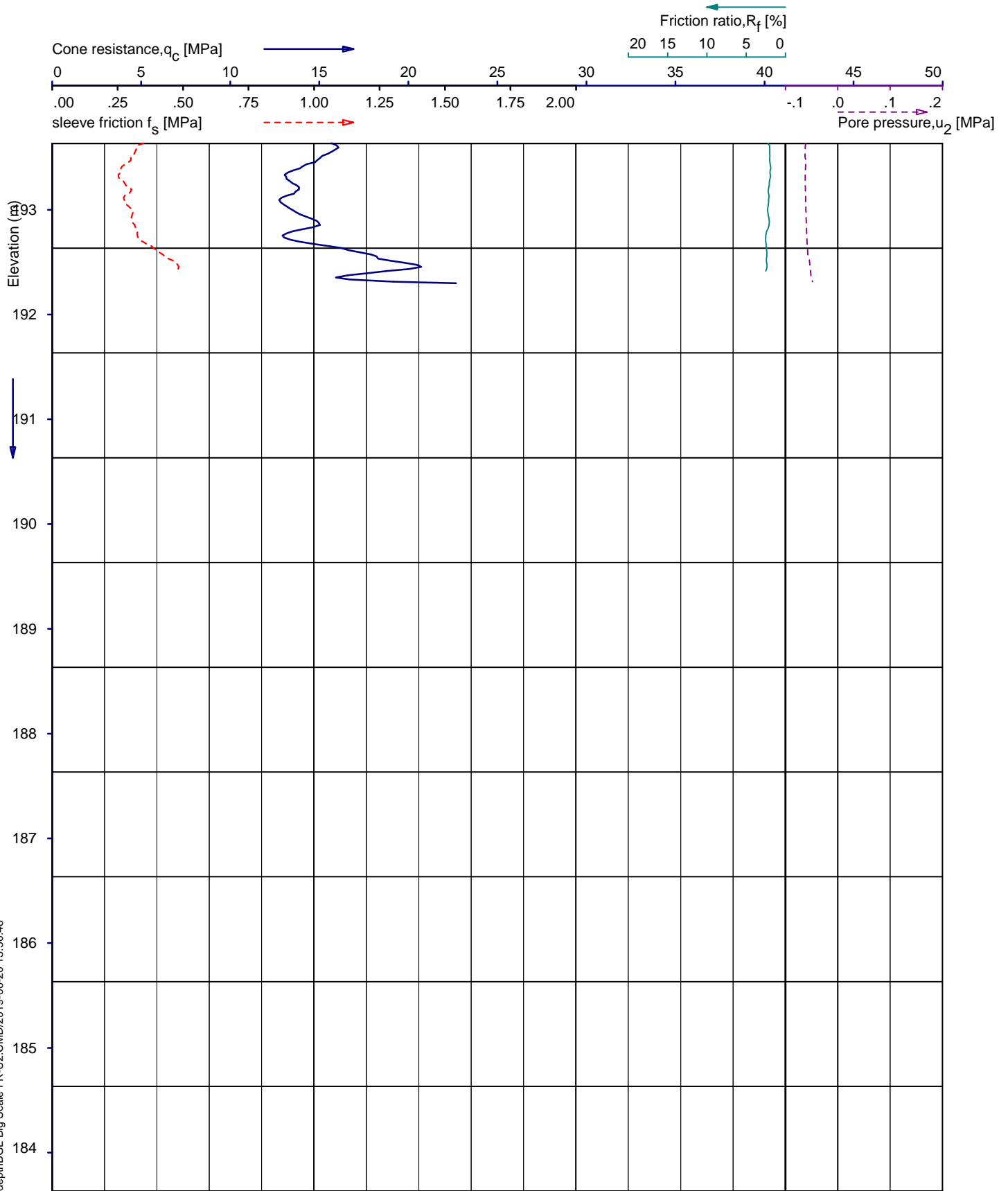
E = 561064.121
N = 3256938.724

test in accordance with BS 1377/1990
cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT04

UNIPLOT 05:27 n:\std_depthBGL_Big Scale FR-U2.CMD\2019-06-20 13:50:48

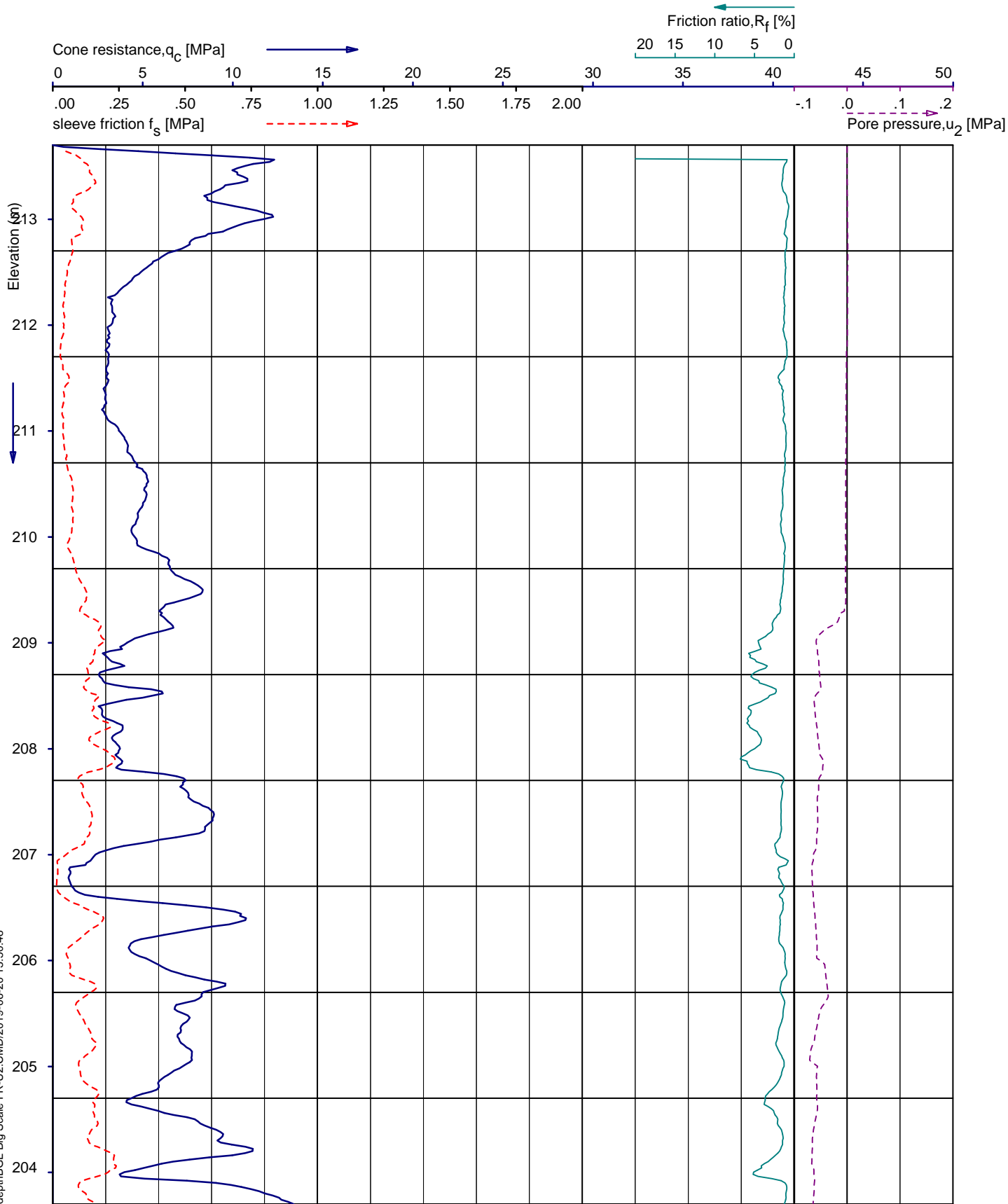


d.d. 15-Jun-2019	cone : CP10-CF50PB10SN2	E = 561064.121	test in accordance with BS 1377/1990
	GL = +213.63 m	N = 3256938.724	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT04

UNIPLOT 05:27 n/strd_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:48

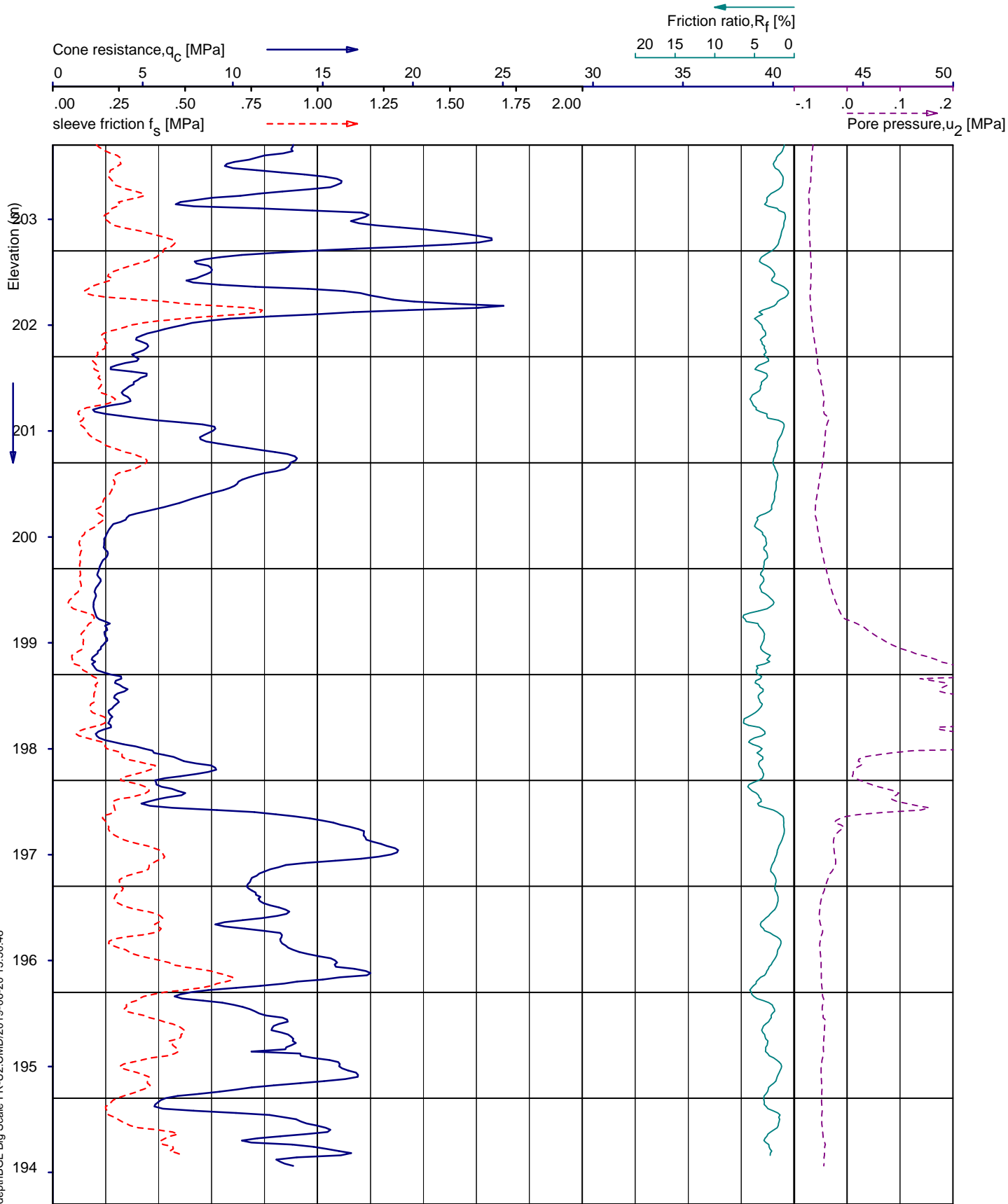


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 561021.00	test in accordance with BS 1377/1990
	GL = +213.70 m	N = 3256936.871	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT05

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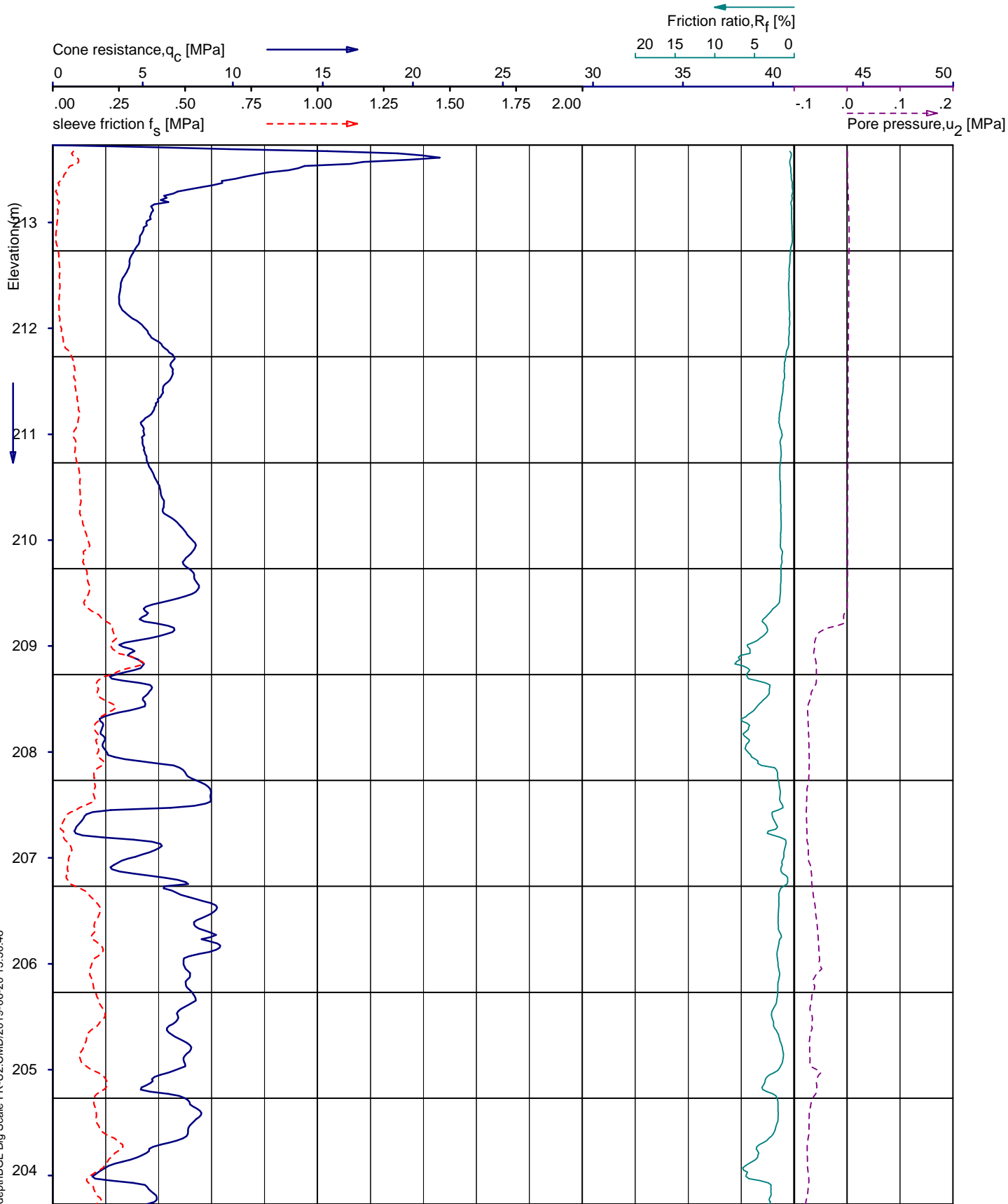


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 561021.00	test in accordance with BS 1377/1990
	GL = +213.70 m	N = 3256936.871	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT05

UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:48

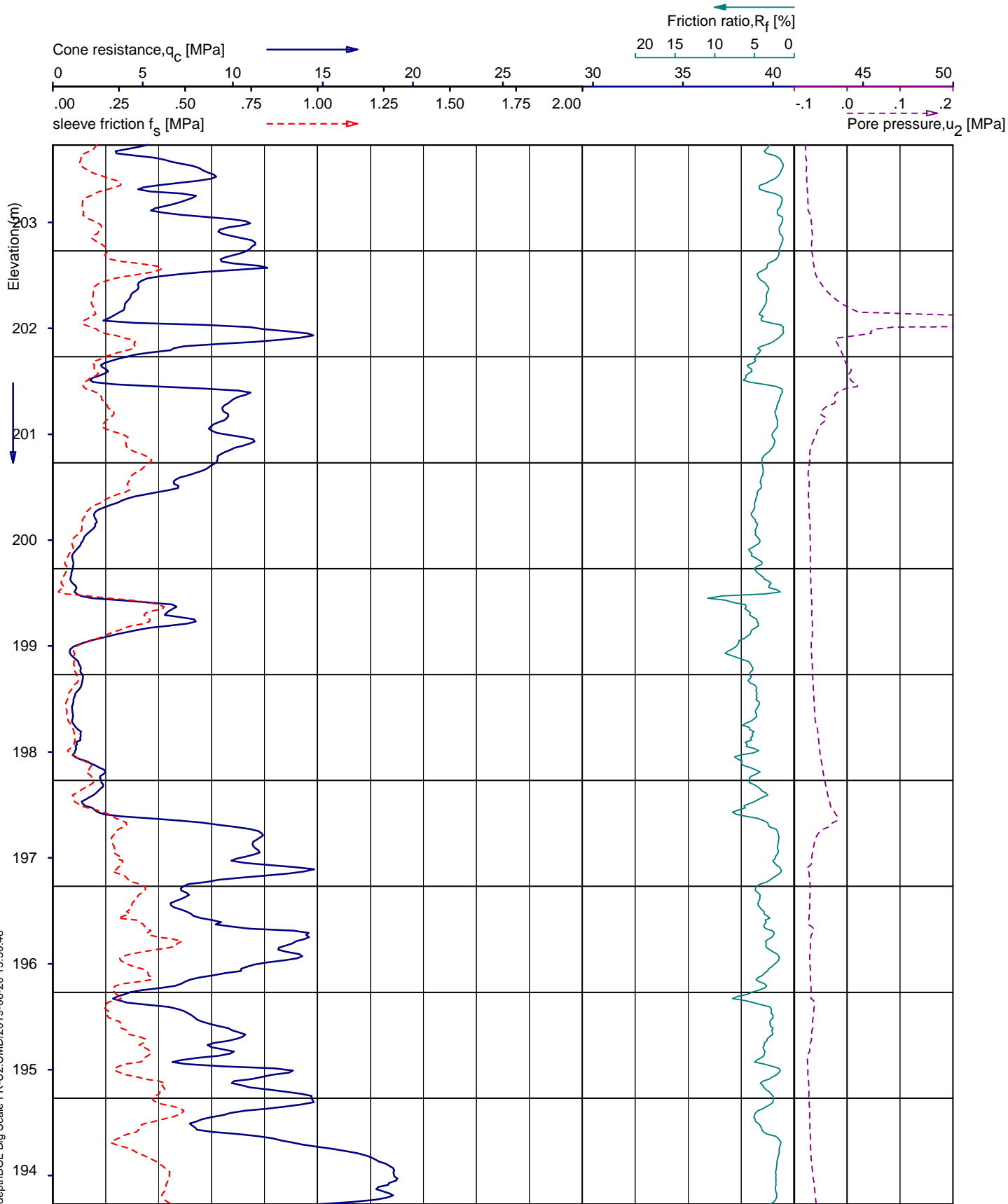


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560934.140	test in accordance with BS 1377/1990
	GL = +213.73 m	N = 3256991.688	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT06

UNIPLOT 05:27 n:\std_depth\BGL_Big Scale FR-U2.CMD\2019-06-20 13:50:48

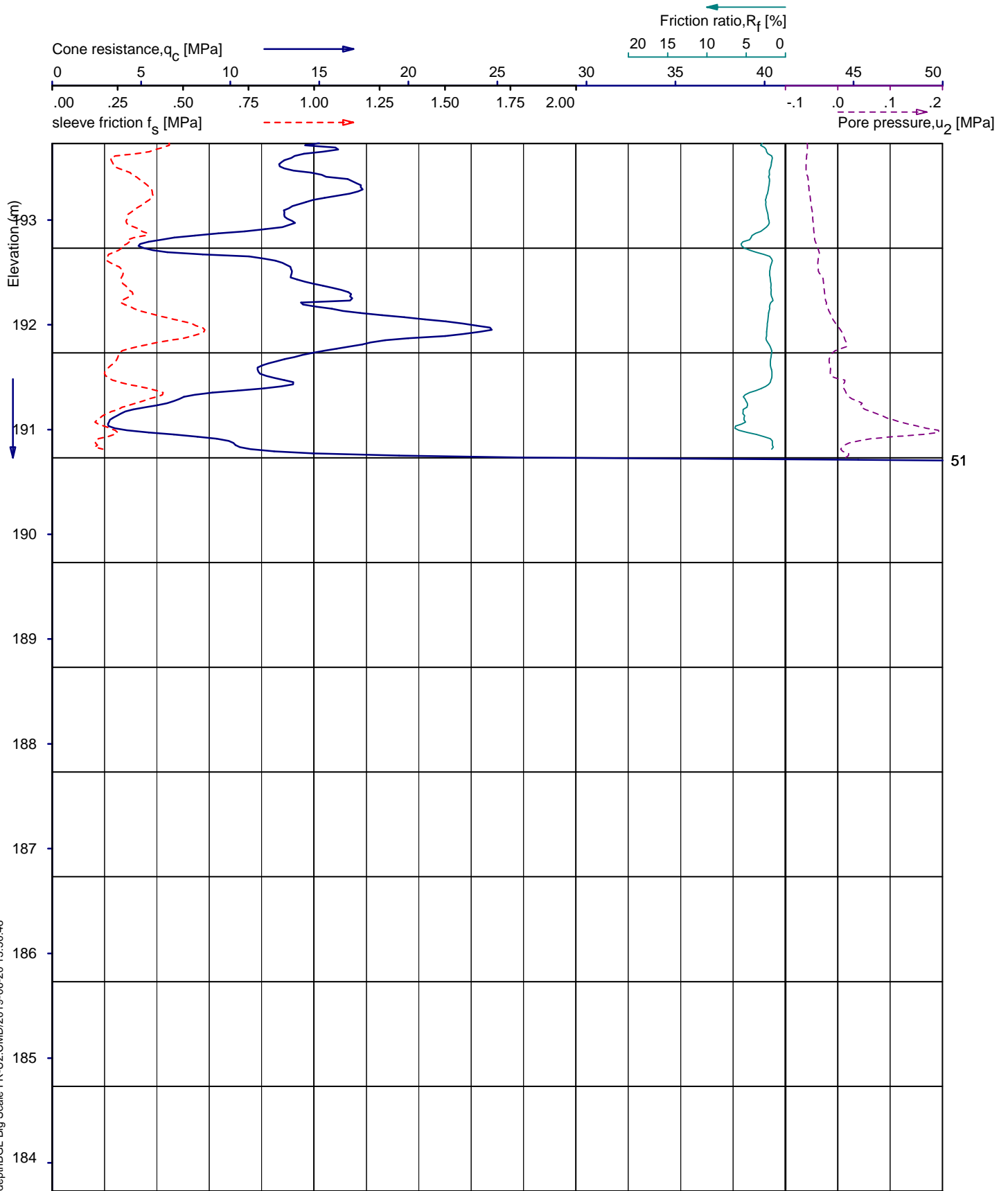


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560934.140	test in accordance with BS 1377/1990
	GL = +213.73 m	N = 3256991.688	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT06

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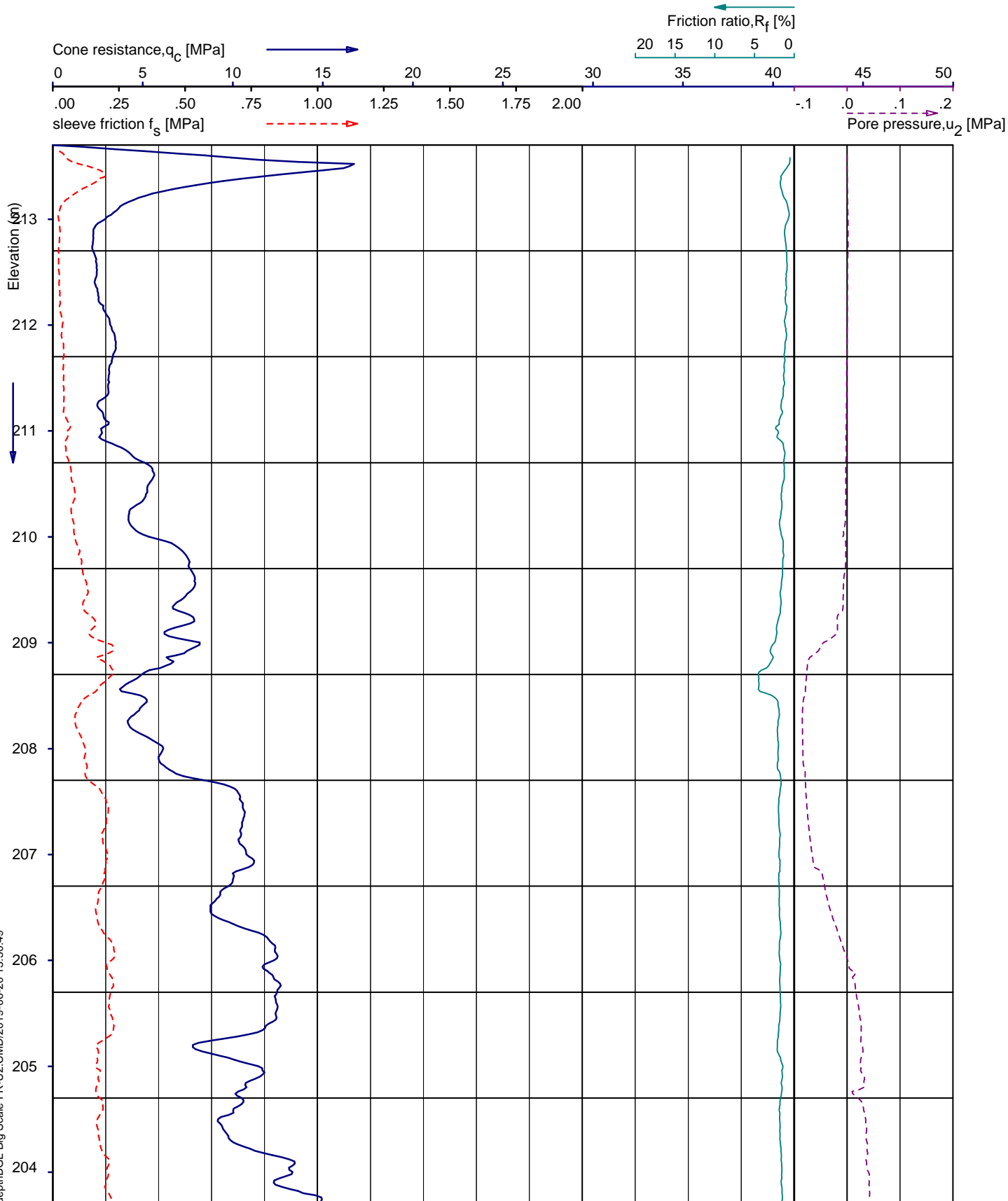


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560934.140	test in accordance with BS 1377/1990
	GL = +213.73 m	N = 3256991.688	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT06

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:49



d.d. 13-Jun-2019

cone : CP10-CF50PB10SN2
GL = +213.70 m

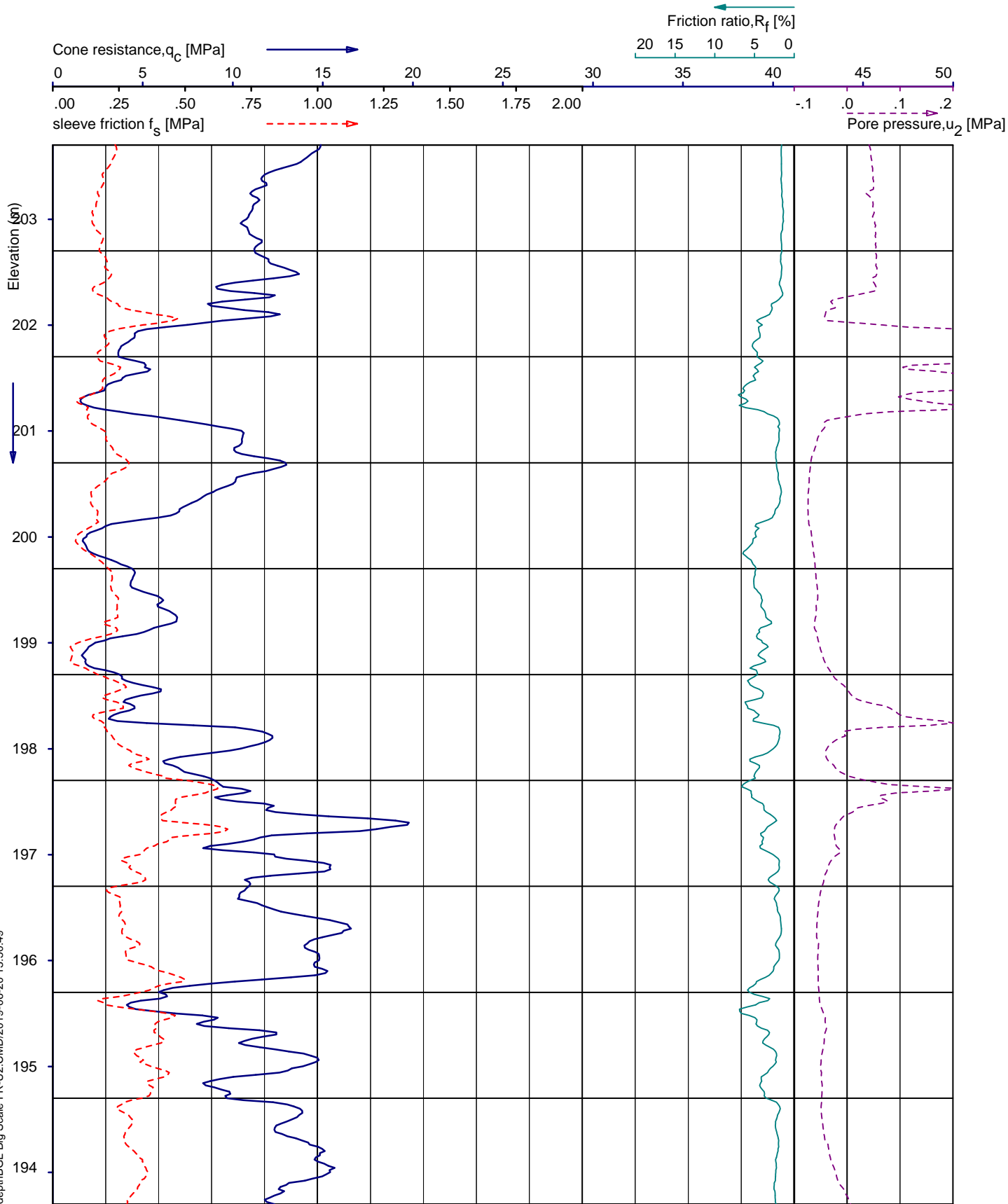
E = 561002.217
N = 3256827.55

test in accordance with BS 1377/1990
cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT07

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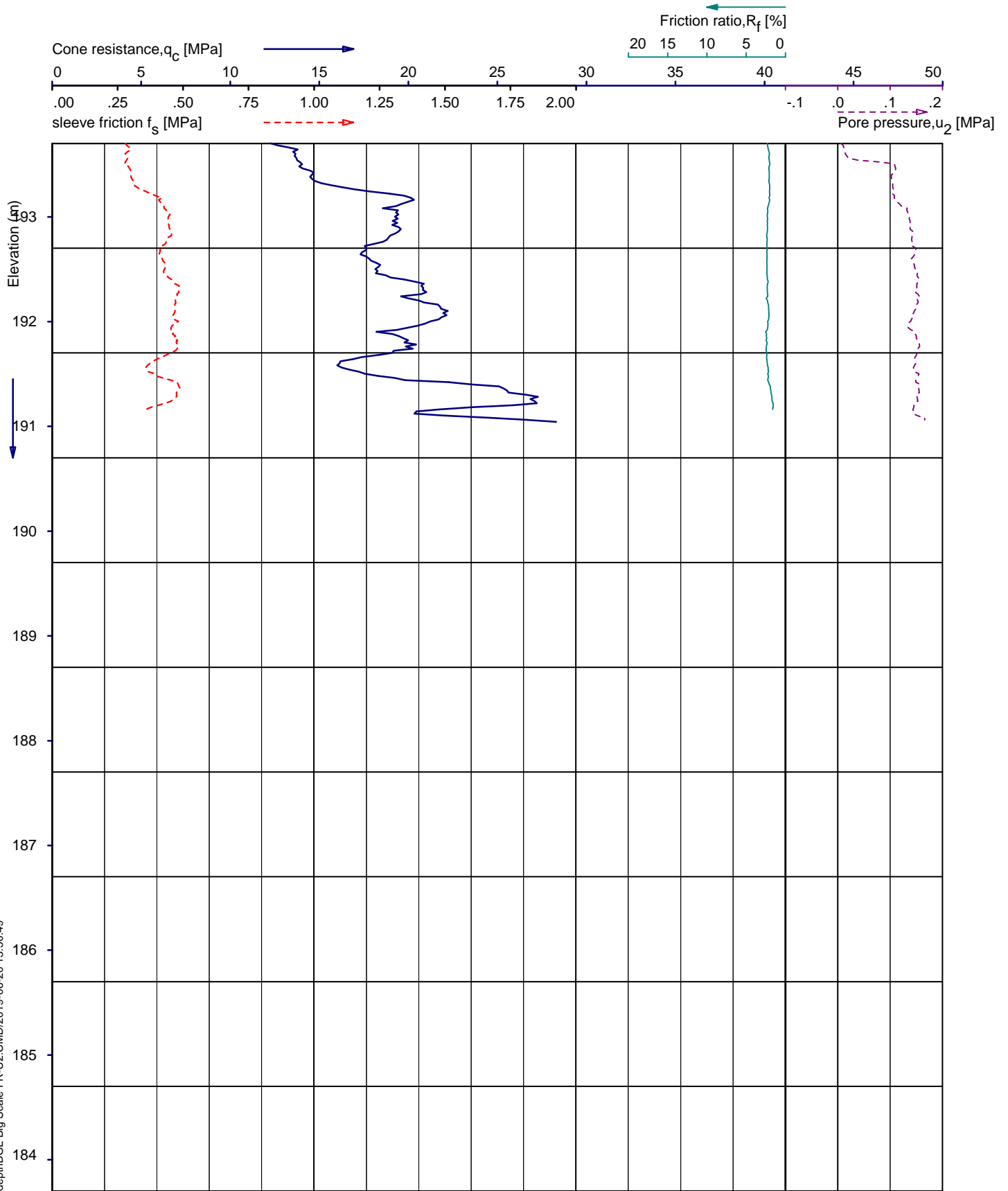


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 561002.217	test in accordance with BS 1377/1990
	GL = +213.70 m	N = 3256827.55	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT07

UNIPLOT 05:27 n:\std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:49

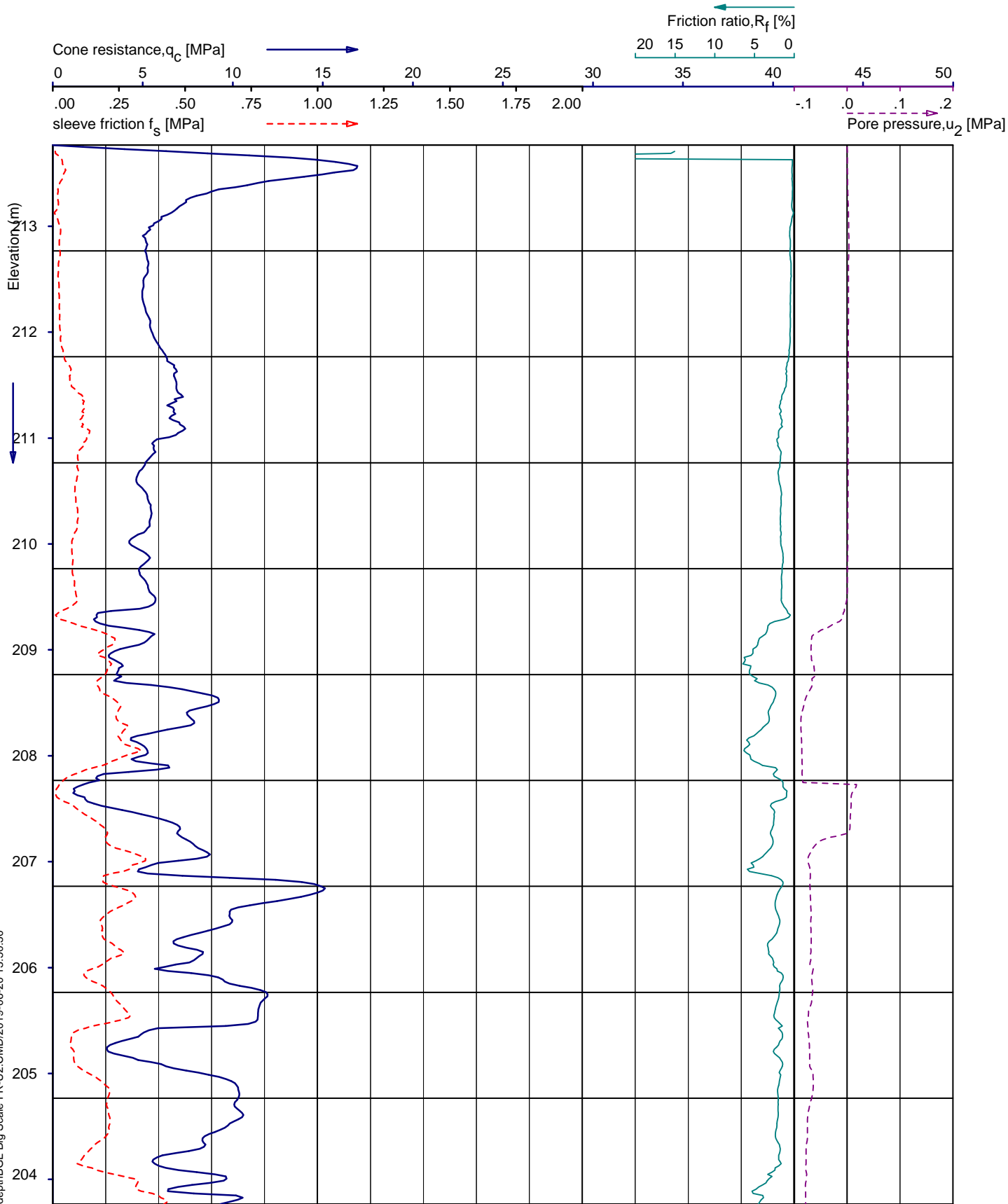


d.d.	13-Jun-2019	cone :	CP10-CF50PB10SN2	E = 561002.217	test in accordance with BS 1377/1990 cone type cylindrical electrical
		GL =	+213.70 m	N = 3256827.55	

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT07

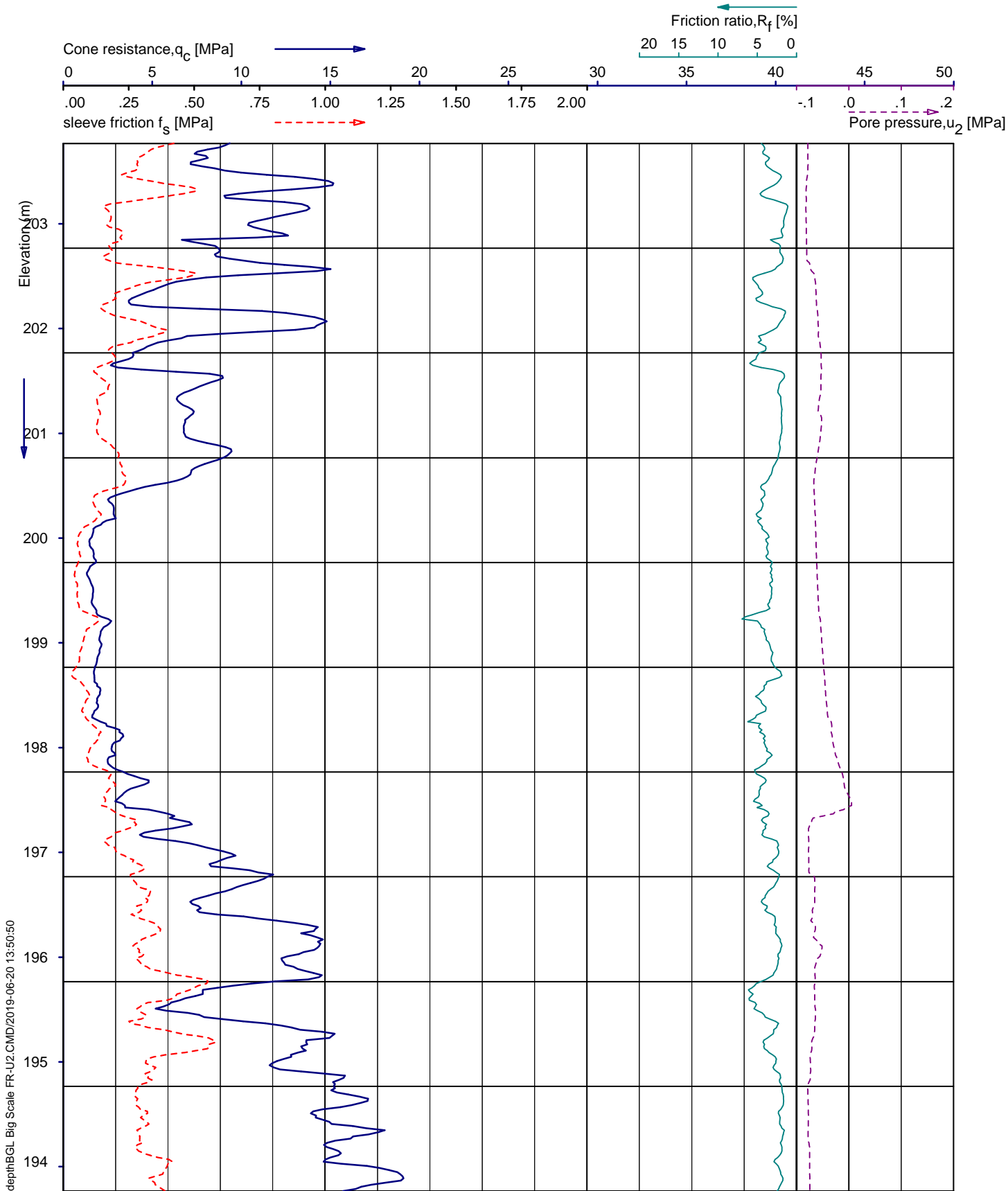
UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:50



d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560894.95	test in accordance with BS 1377/1990
	GL = +213.77 m	N = 3256988.259	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT08



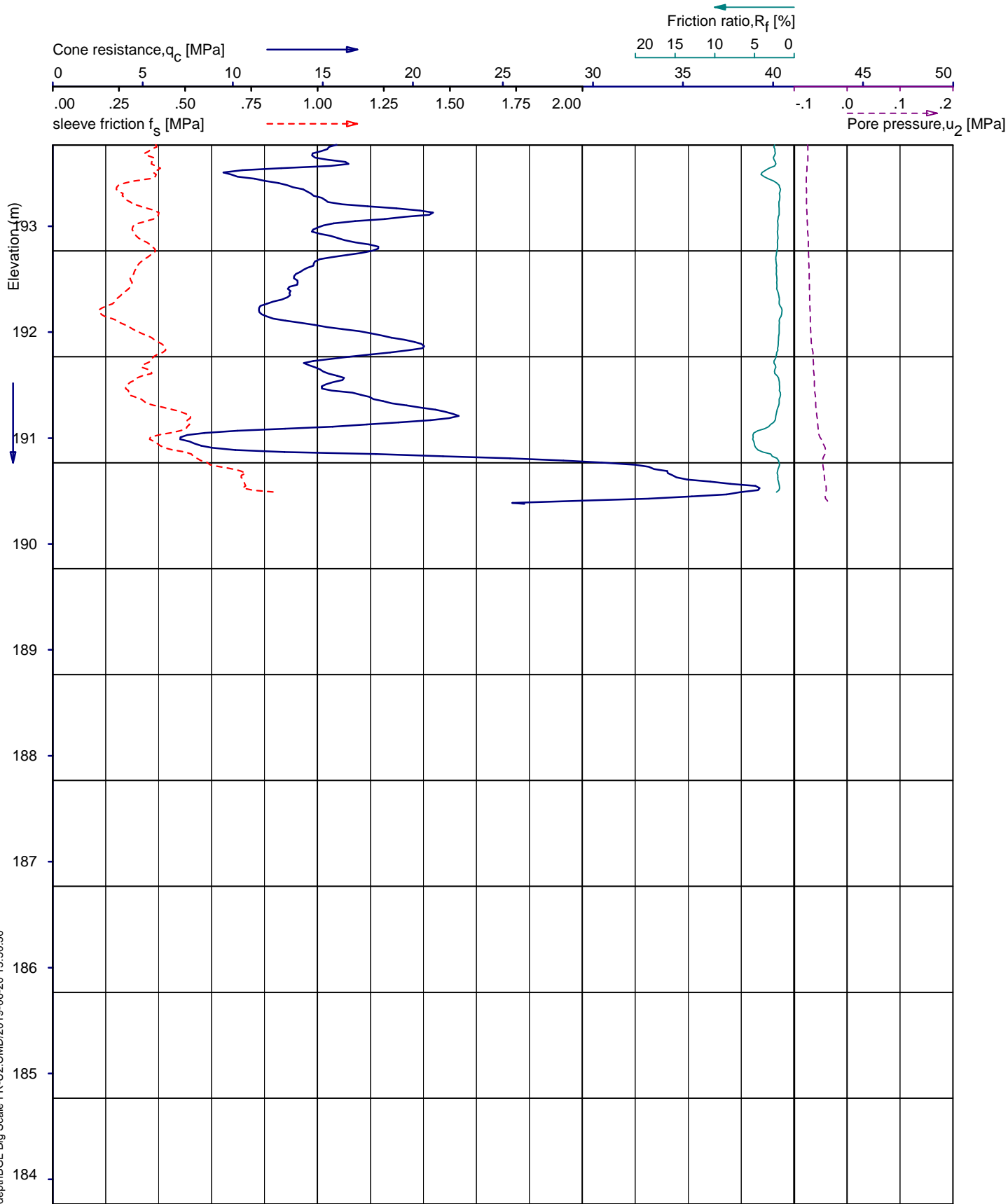
UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:50

d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560894.95	test in accordance with BS 1377/1990
	GL = +213.77 m	N = 3256988.259	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
 Carrying Out ECPT at NPCIL, Gorakhpur
 DBM

Proj. : 139834
 CPT : CPT08

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:50

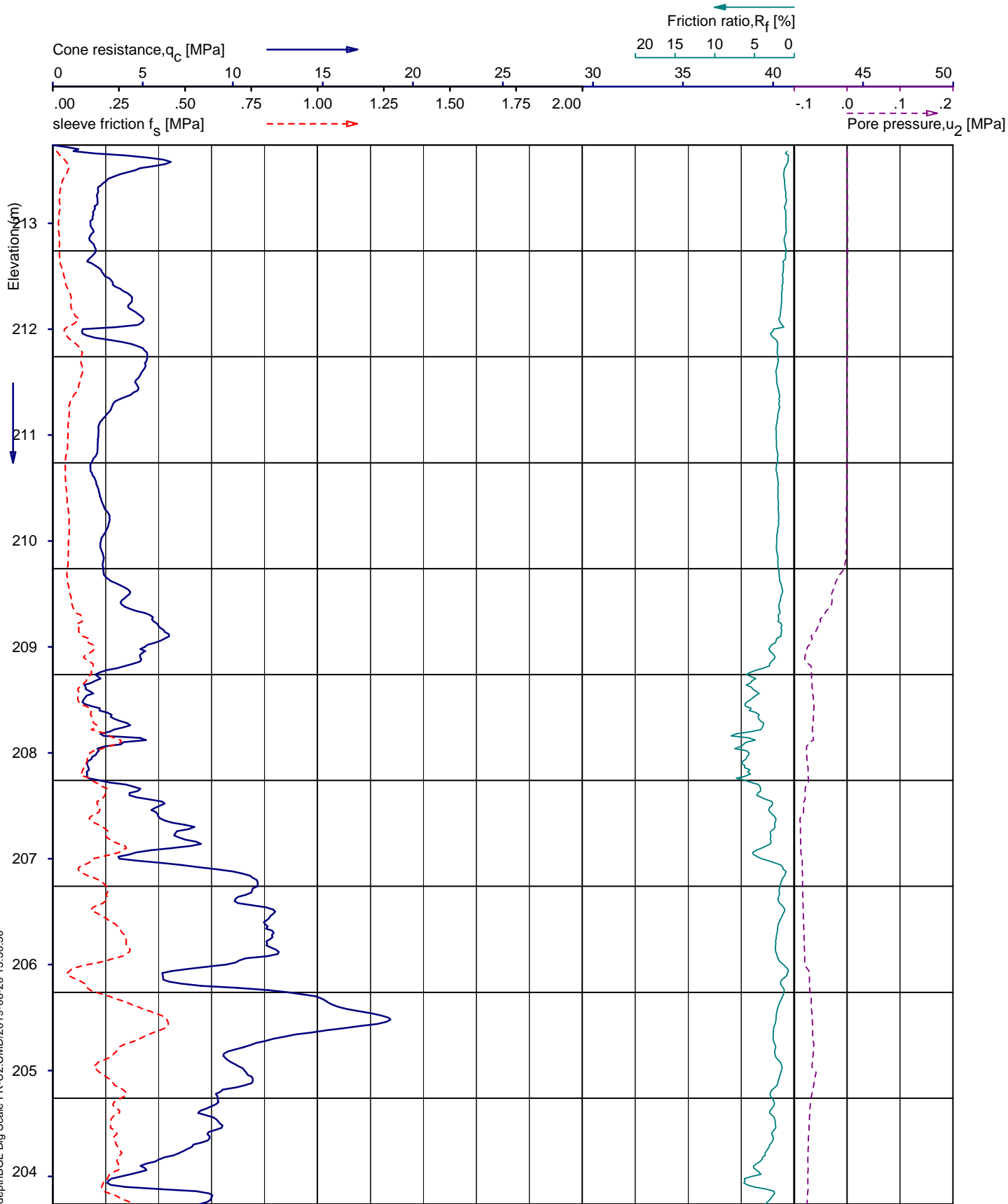


d.d. 13-Jun-2019	cone : CP10-CF50PB10SN2	E = 560894.95	test in accordance with BS 1377/1990
	GL = +213.77 m	N = 3256988.259	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT08

UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:50

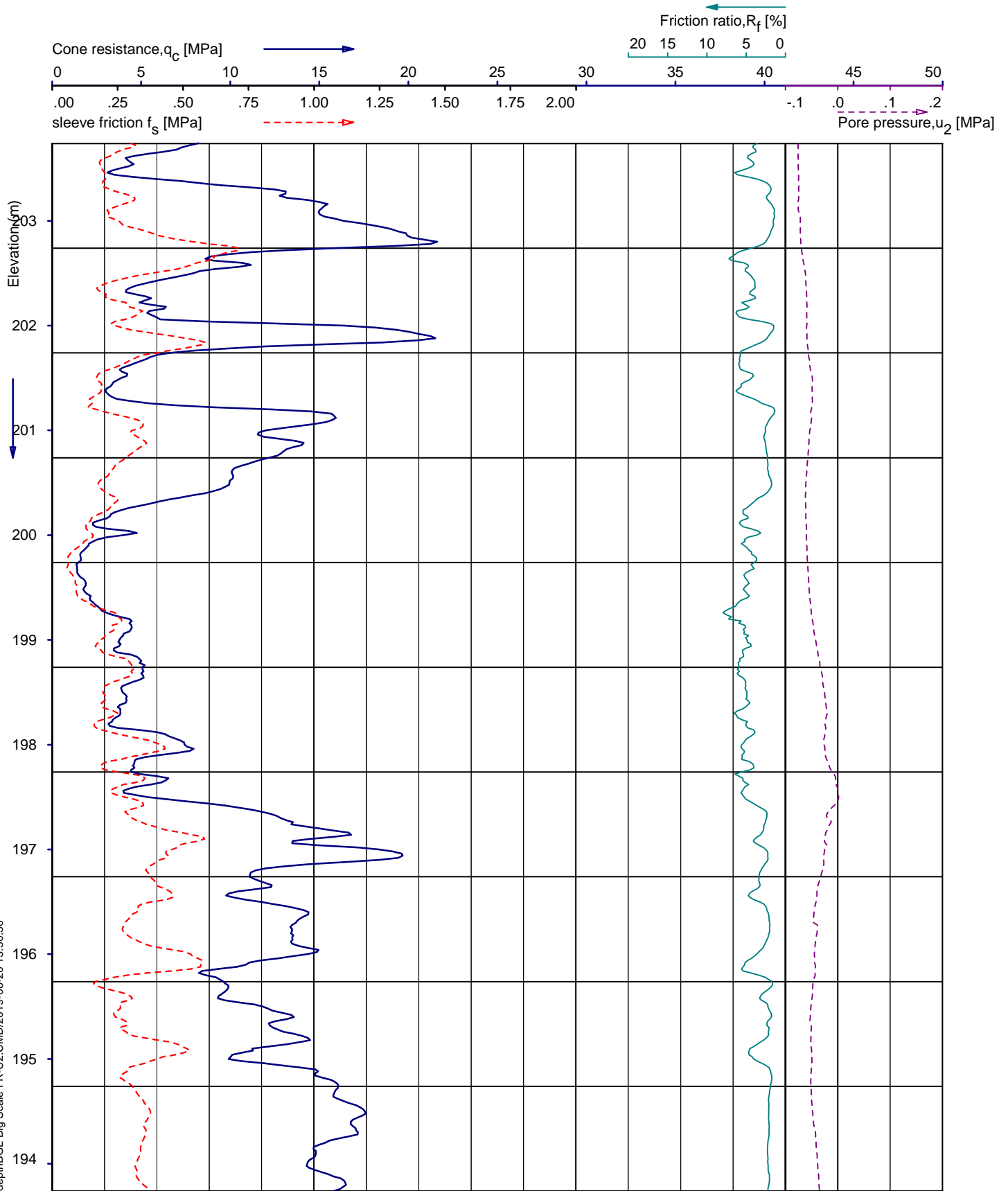


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560927.921	test in accordance with BS 1377/1990 cone type cylindrical electrical
		GL =	+213.74 m	N = 3256903.61	

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT09

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:50

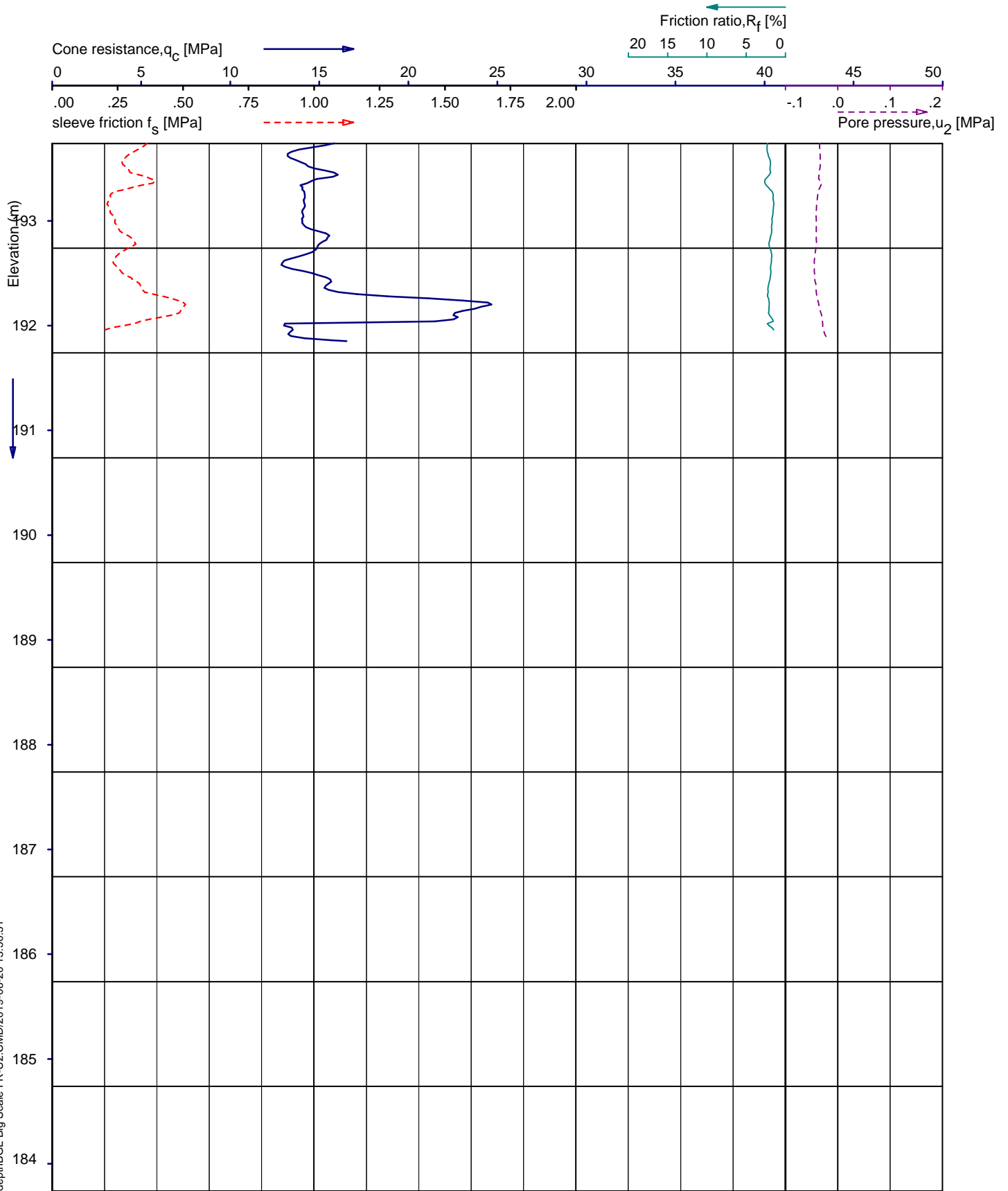


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560927.921	test in accordance with BS 1377/1990
		GL =	+213.74 m	N = 3256903.61	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT09

UNIPLOT 05:27 n/strd_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:51

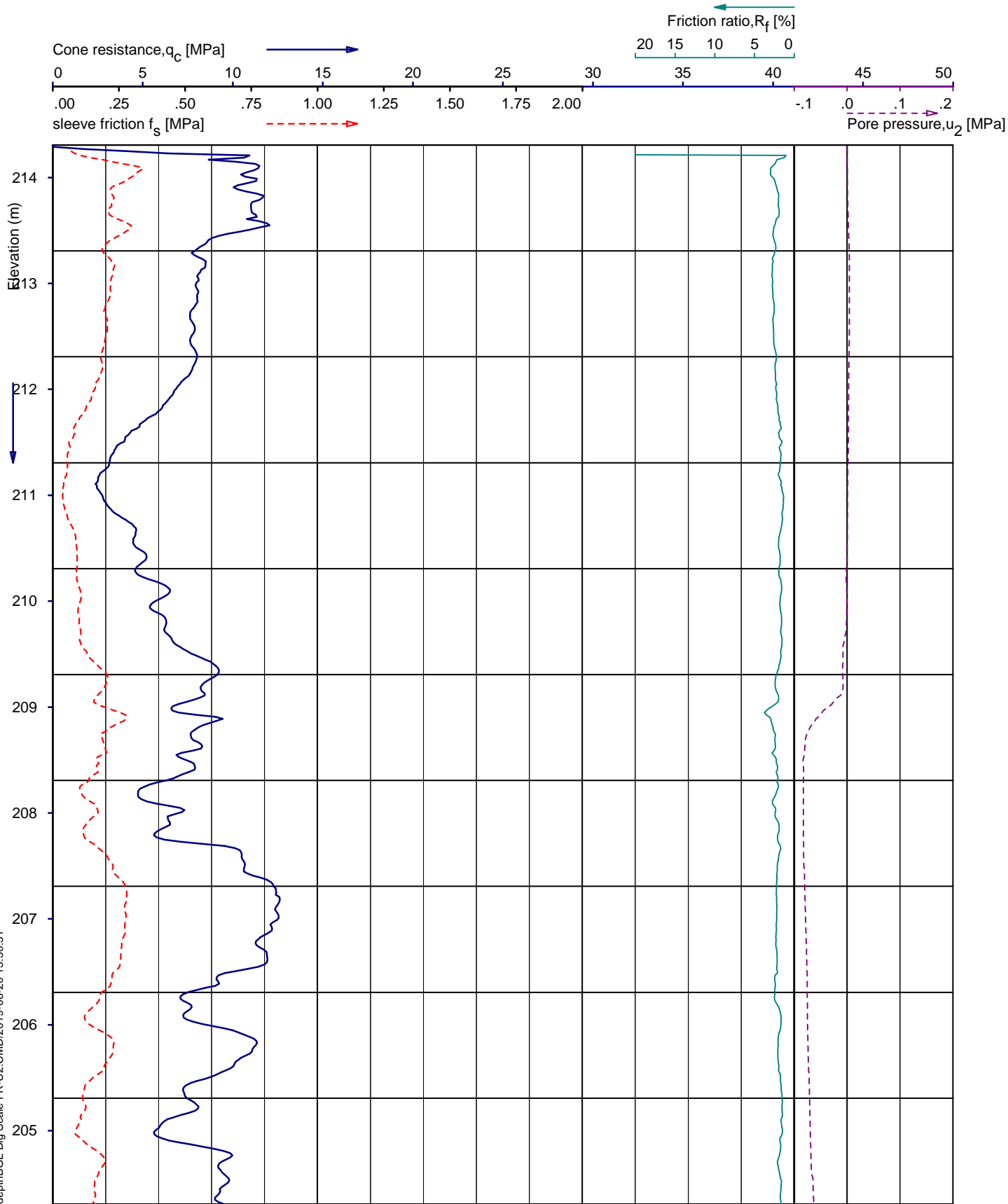


d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560927.921	test in accordance with BS 1377/1990
	GL = +213.74 m	N = 3256903.61	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT09

UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:51

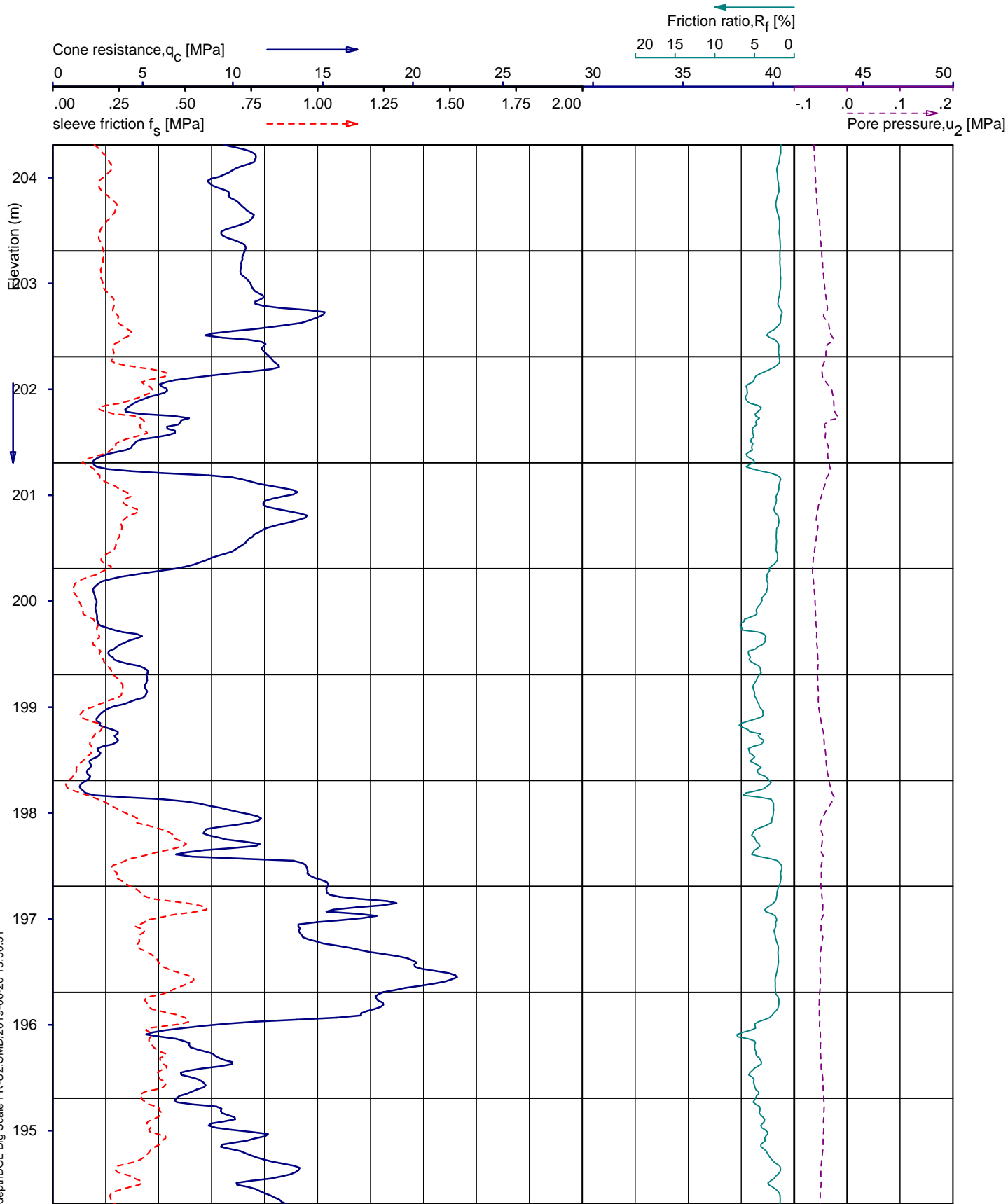


d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560962.338	test in accordance with BS 1377/1990
	GL = +214.31 m	N = 3256820.628	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT10

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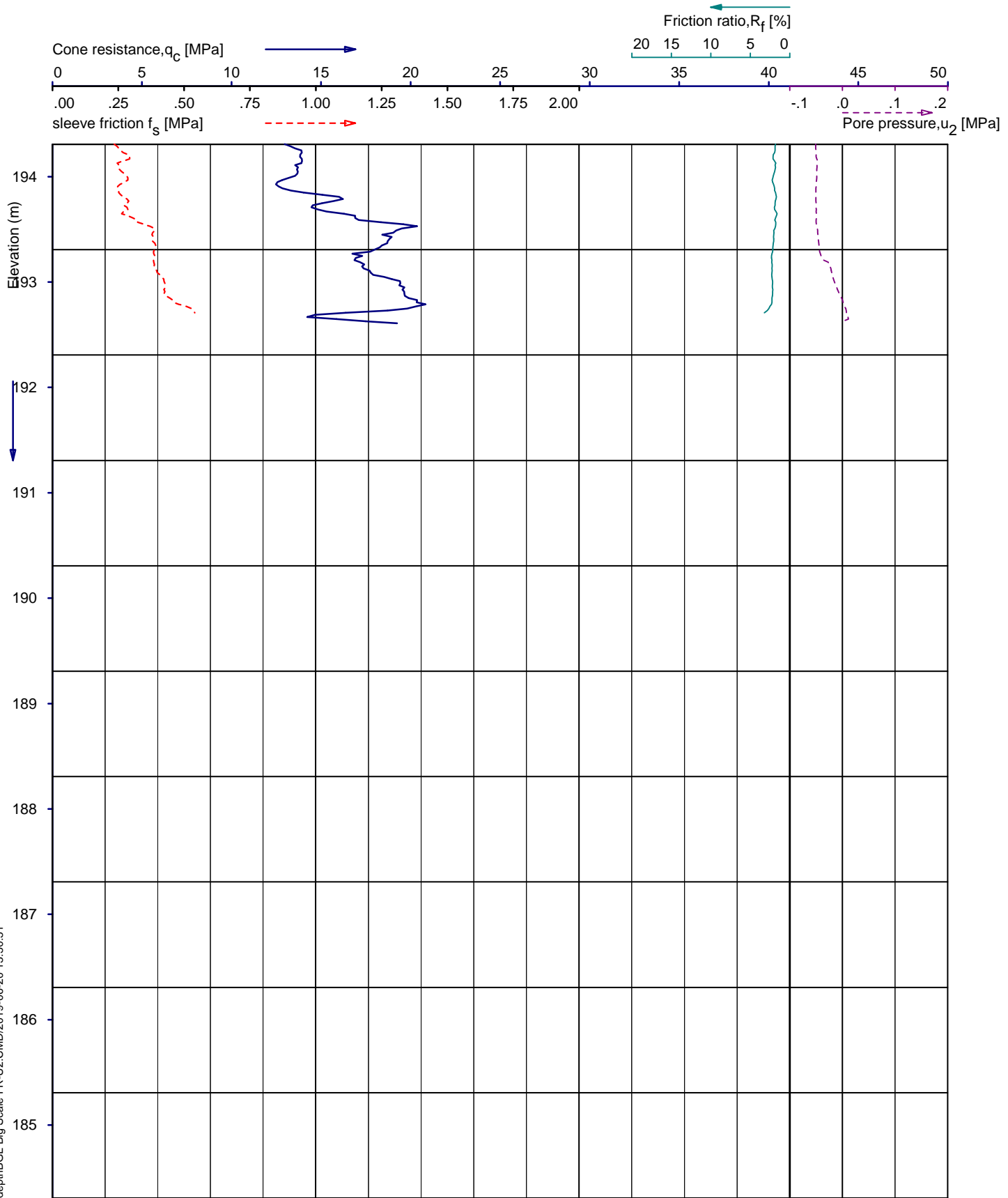


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560962.338	test in accordance with BS 1377/1990
		GL =	+214.31 m	N = 3256820.628	cone type cylindrical electrical

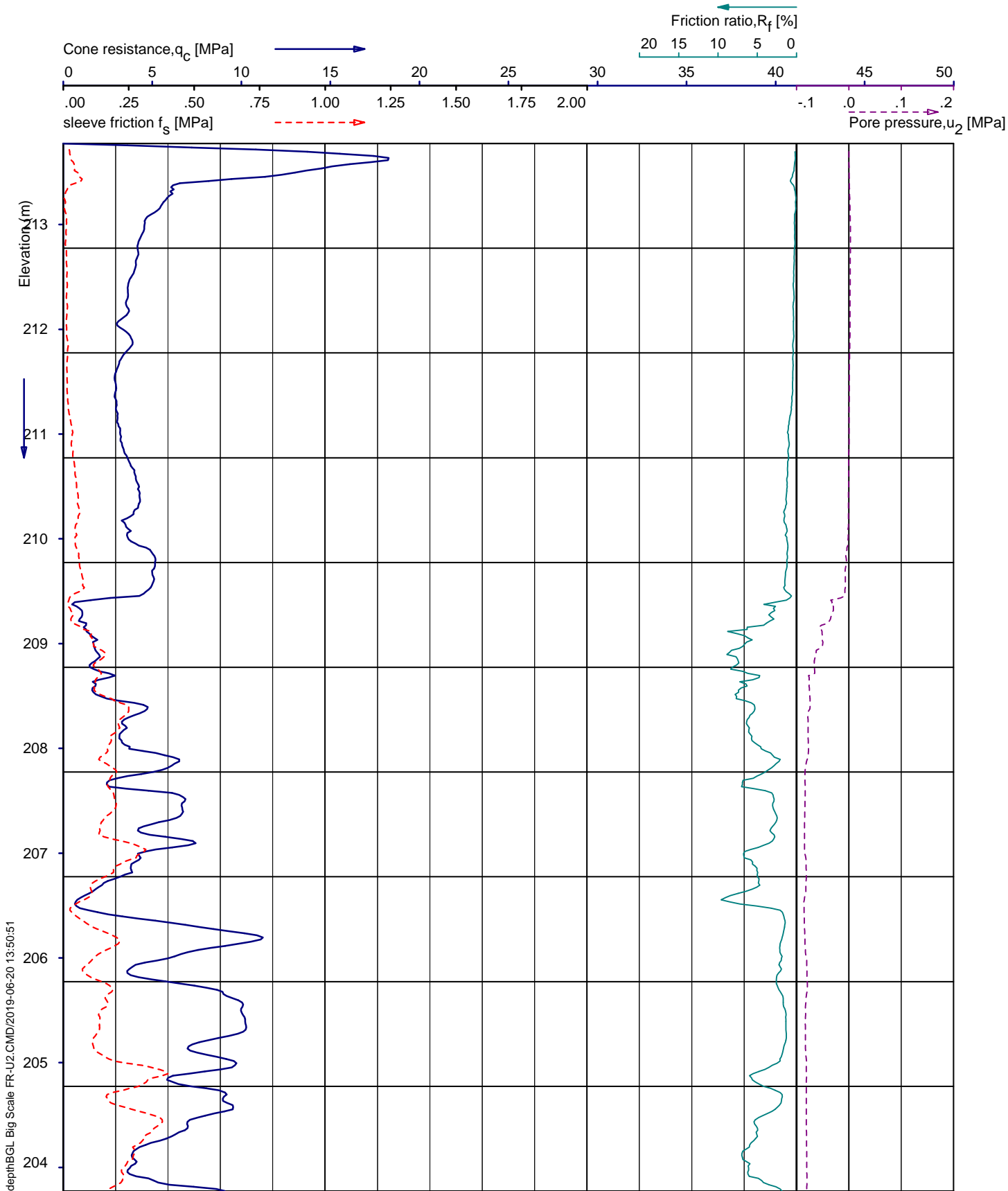
PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT10

UNIPLOT 05.27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:51



d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560962.338	test in accordance with BS 1377/1990
	GL = +214.31 m	N = 3256820.628	cone type cylindrical electrical

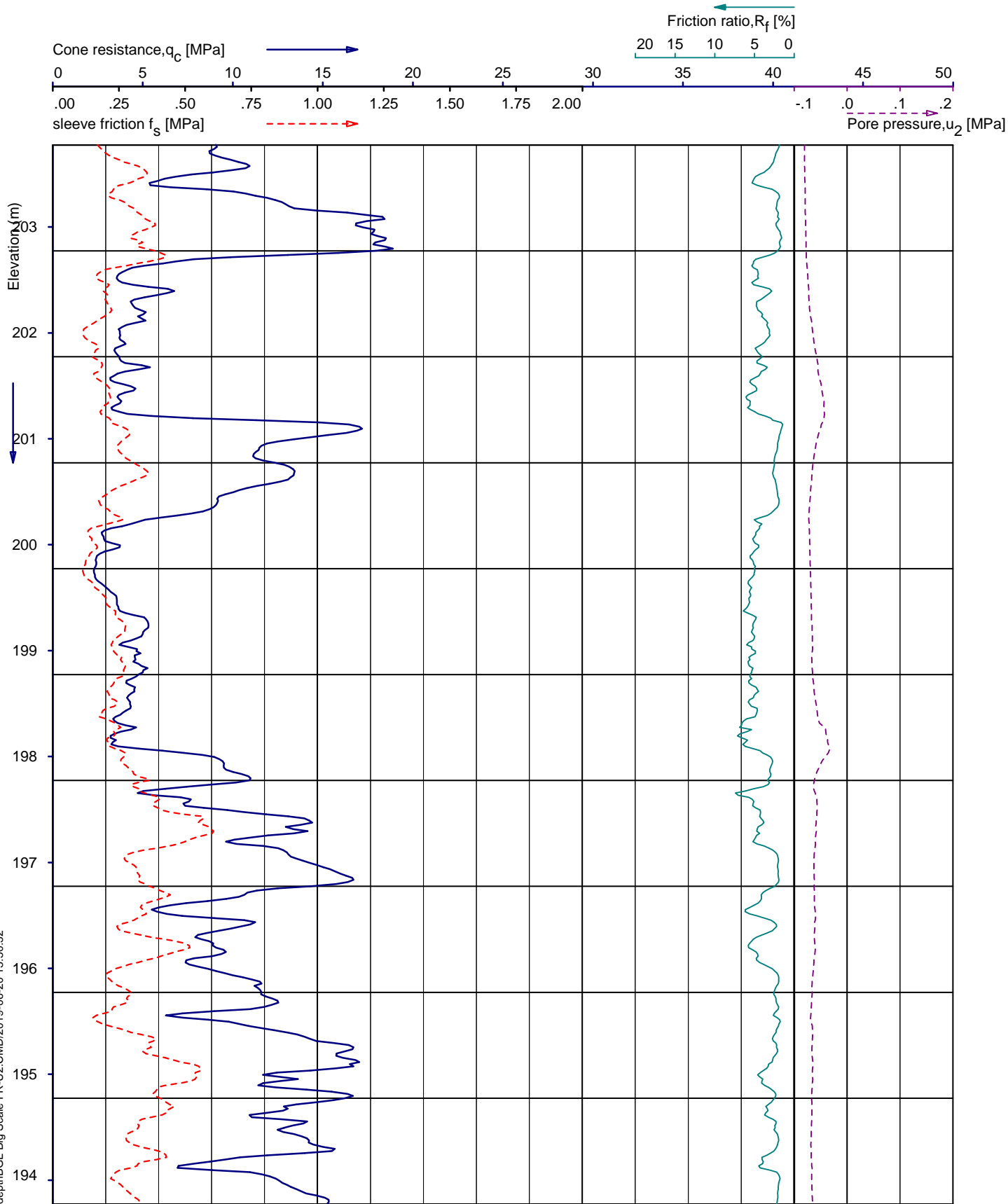


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560785.130	test in accordance with BS 1377/1990
		GL =	+213.77 m	N = 3256887.135	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
 Carrying Out ECPT at NPCIL, Gorakhpur
 DBM

Proj. : 139834
 CPT : CPT11

UNIPLOT 05:27 n/std_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:52

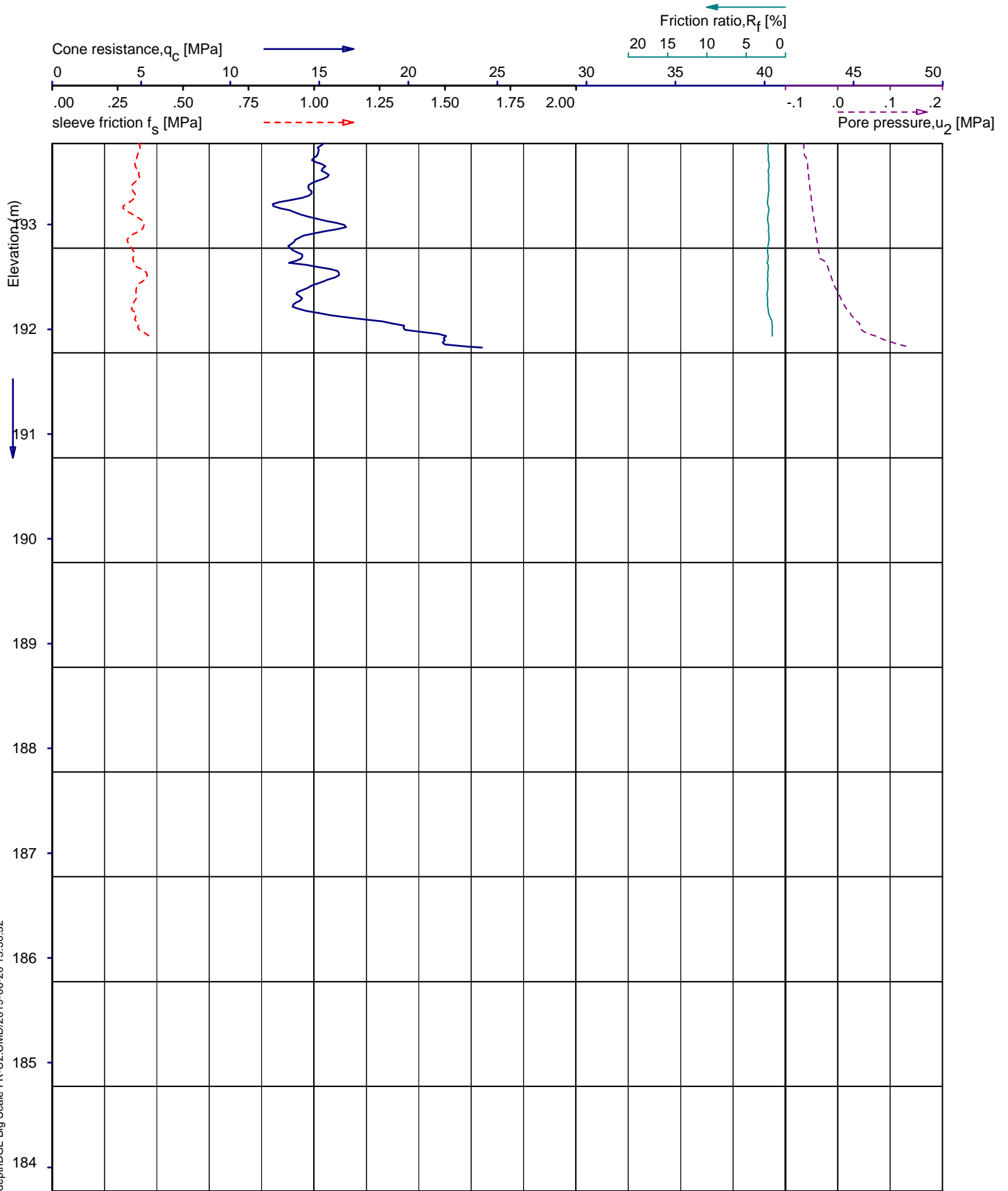


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560785.130	test in accordance with BS 1377/1990
		GL =	+213.77 m	N = 3256887.135	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT11

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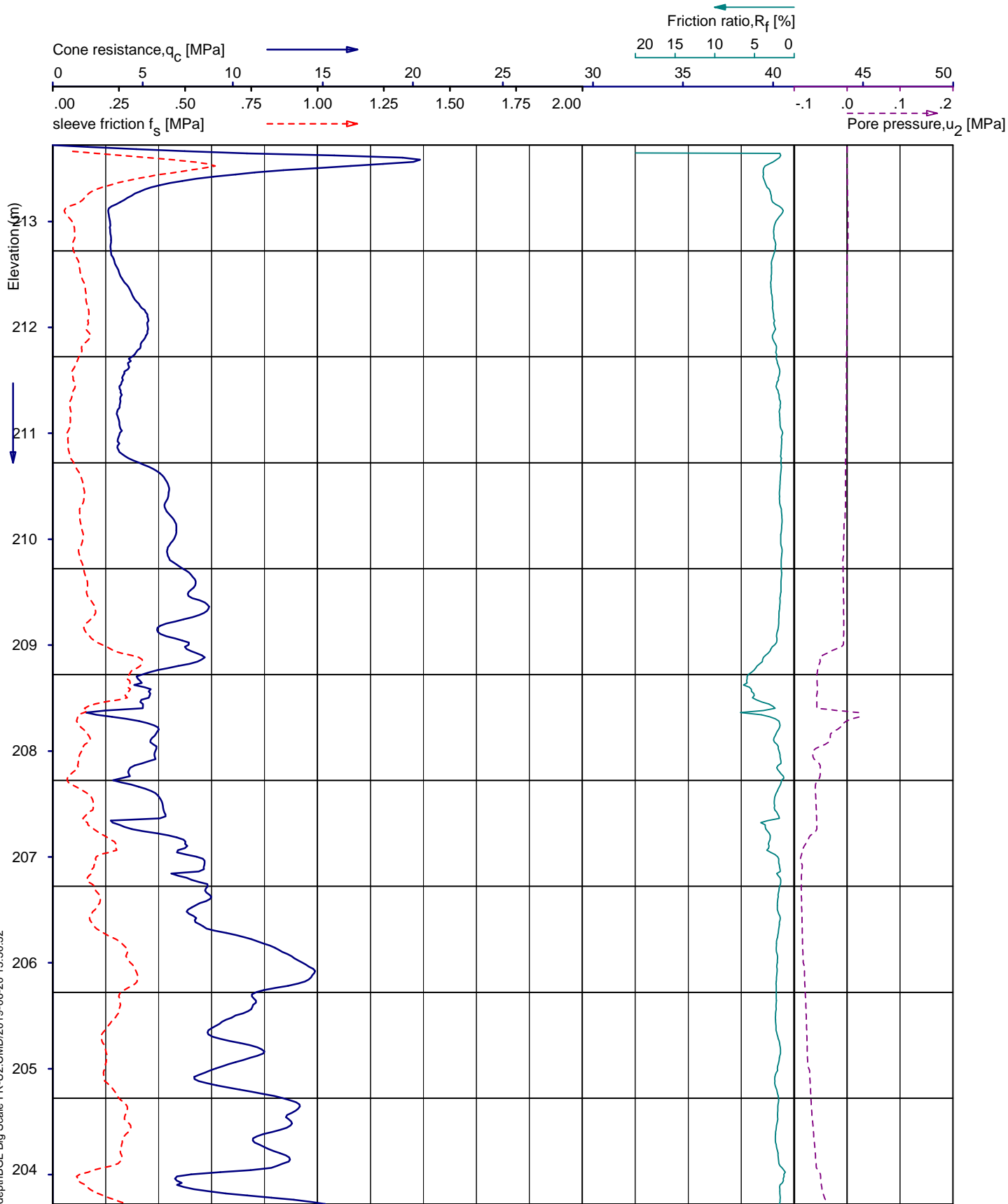


d.d.	14-Jun-2019	cone :	CP10-CF50PB10SN2	E = 560785.130	test in accordance with BS 1377/1990
		GL =	+213.77 m	N = 3256887.135	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT11

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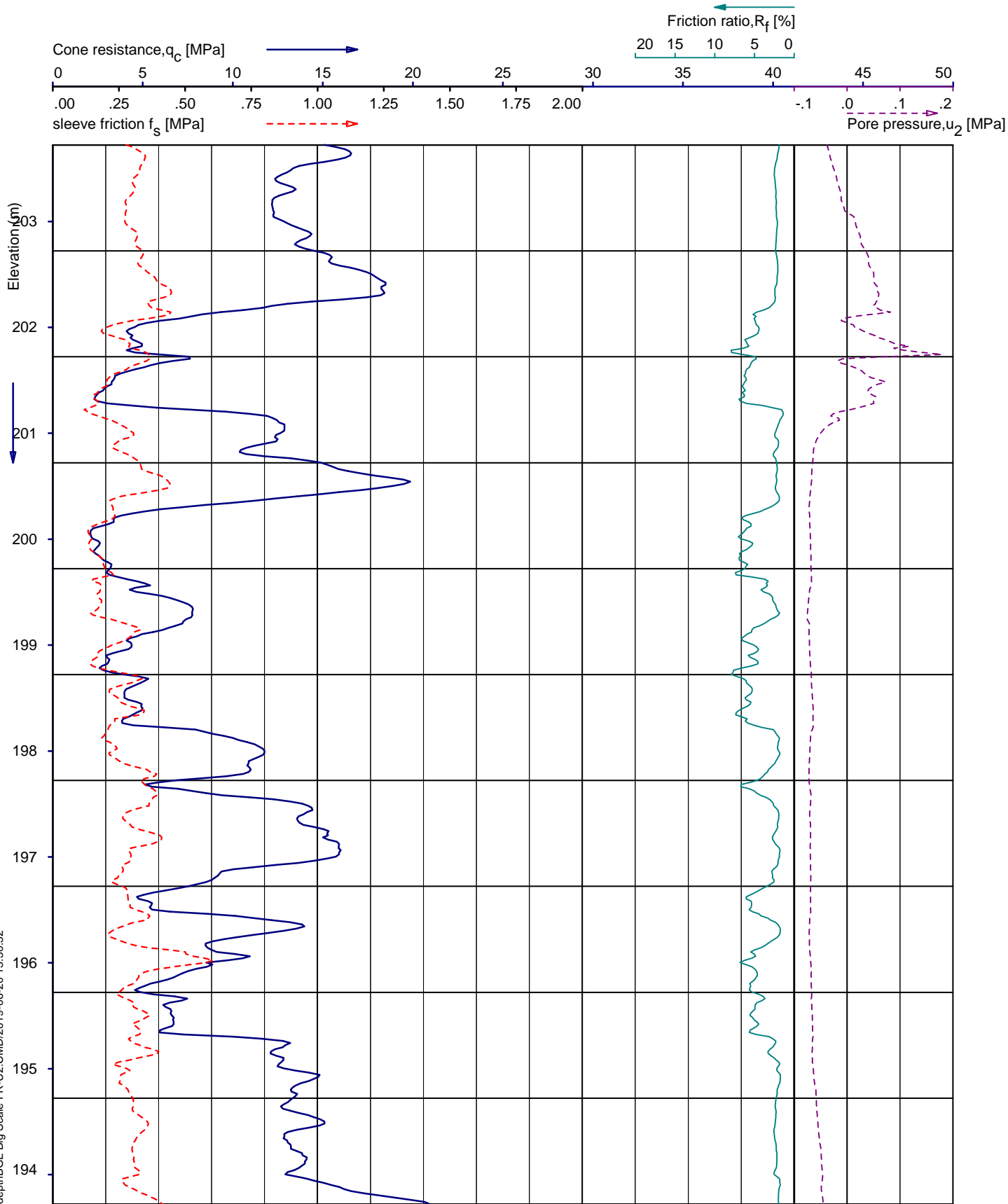


d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560822.950	test in accordance with BS 1377/1990
	GL = +213.72 m	N = 3256795.947	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT12

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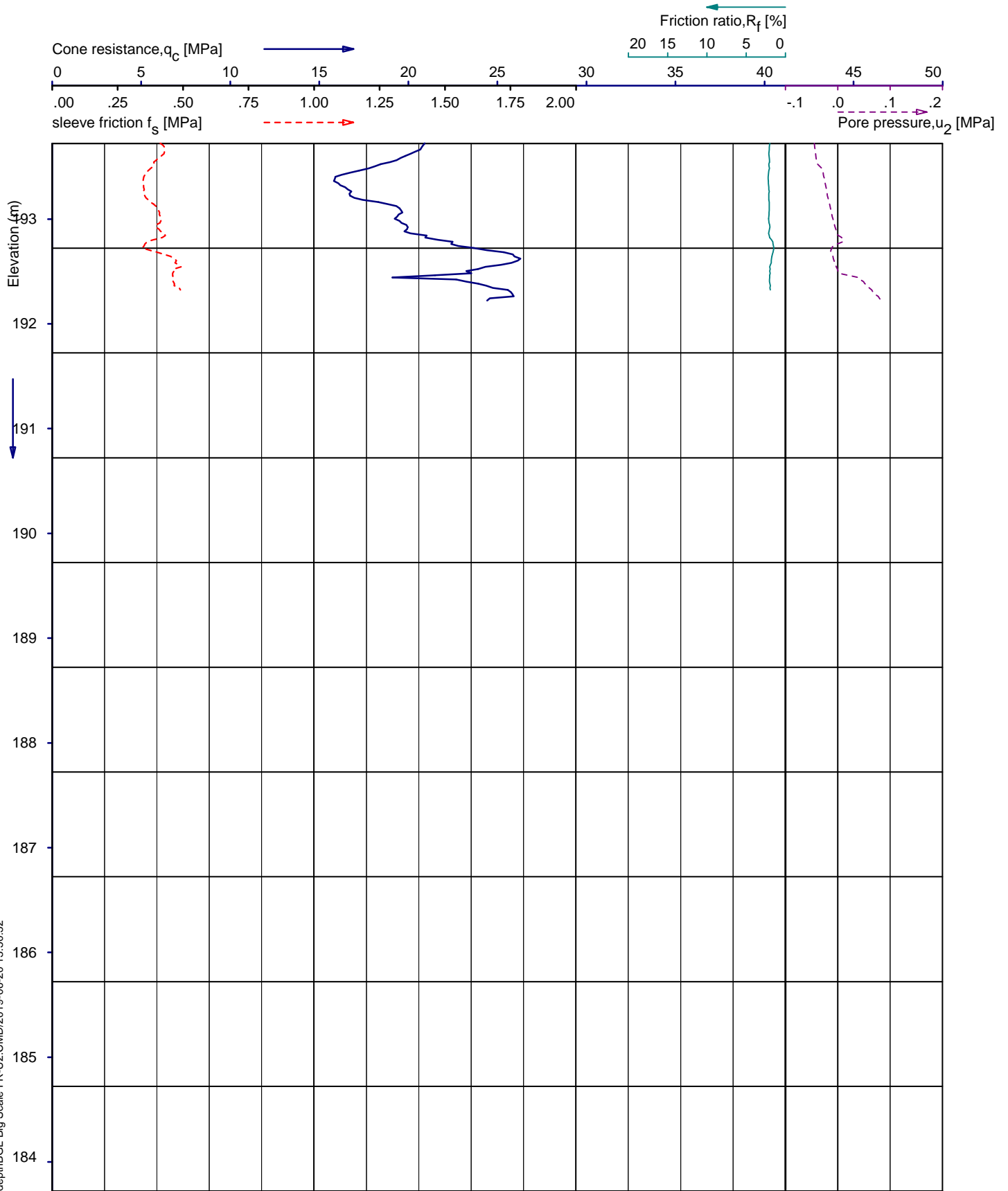


d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560822.950	test in accordance with BS 1377/1990
	GL = +213.72 m	N = 3256795.947	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT12

UNIPLOT 05:27 n/strd_depthBGL Big Scale FR-U2.CMD/2019-06-20 13:50:52



d.d. 14-Jun-2019	cone : CP10-CF50PB10SN2	E = 560822.950	test in accordance with BS 1377/1990
	GL = +213.72 m	N = 3256795.947	cone type cylindrical electrical

PIEZO CONE PENETRATION TEST
Carrying Out ECPT at NPCIL, Gorakhpur
DBM

Proj. : 139834
CPT : CPT12