GOVERNMENT OF MAHARASHTRA
MEDICAL EDUCATION AND RESEARCH

Dated: 07.10.2022

AMENDMENT No.– I

Project Name: **Tender for "**Construction of Medical College, Jalgaon at Chin Choli, Jalgaon Maharashtra and their Maintenance during Defect Liability Period on Comprehensive Design, Engineering, Procurement and Construction (EPC) basis**"**

Tender No. **HSCC/GMC/Jalgaon/EPC/2022**

This has reference to subject work, the following Amendment-I may be noted, which shall be treated as a part of the contract to be uploaded along with tender/ bid:

(1) Reply to Pre-bid Queries raised by bidders during pre -bid meeting held on 27.09.2022 at HSCC, Head Office, Noida are attached at Annexure – I.
(2) Annexure-IIAmended Schedule of Stage Payment- Annexure-A
(3) Annexure-III Geotech Report.
(4) Annexure-IV Survey Drawings

All other terms & Conditions of the Tender shall remain unchanged.

Prospective bidders are advised to regularly scan through HSCC e-tender portal **http://www.tenderwizard.com/HSCC**& HSCC website http://www.hsccltd.co.in as corrigendum/amendments etc., if any, will be notified on this portal only and separate advertisement will not be made for this.

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CGM
HSCC (India) Ltd.

Annexure-I

Pre-Bid Queries for Construction of Medical College, Chin Choli at Jalgaon Maharashtra on Comprehensive Design, Engineering, Procurement and Construction (EPC) basis

S. No.	Bidder's Queries	Bidder's Queries	Clarifications
1	Annexure - I /Memorandum / Sr. 4- Earnest Money Deposit - Rs.5,02,00,000/-(Rs. Five Crores & Two Lakhs only)	We requests for exemption of EMD	As per tender condition
2	Annexure - I /Memorandum / Sr. 8 - Interest Rate of Mobilization Advance - Simple Interest Rate of 10.00%(Ten Percent only) Per Annum	We request for interest free advance	As per tender condition
3	Annexure - I /Memorandum / Sr. 18 - Defect Liability Period - 60 months from the date of taking over the works by the HSCC or clients whichever is later	We request for Defects liability period to be 12 months from the date of taking over the works by the HSCC or clients	As per tender condition
4	ITT / Cl. 9.0 - ACCEPTANCE OF TENDER HSCC reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. HSCC does not bind itself to accept the lowest tender. The HSCC reserves the right to award the work to a single party or split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The Contractor is bound to accept the part work as offered by HSCC after split up at the quoted/negotiated rates.	Please modify the clause as follows: HSCC reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. HSCC does not bind itself to accept the lowest tender. The HSCC reserves the right to award the work to a single party or split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The Contractor ~~is~~ **shall not be** bound to accept the part work as offered by HSCC after split up at the quoted/negotiated rates.	As per tender condition
5	ITT / Cl. 21.2 - The efforts will be made by the HSCC to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor, the HSCC shall only consider suitable extension of time for the execution of the work. It should be clearly understood that the HSCC shall not consider any revision in contract price or any other compensation whatsoever viz. towards idleness of Contractor's labour, equipment etc.	Contractor request to modify the clause as "in case of any delay in handing over of the site to the Contractor, the HSCC shall consider suitable extension of time and cost compensation for the execution of the work"	As per tender condition
6	ITT / Cl. 19.0 - Before tendering, the tenderers are advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach roads to the site, availability of water & power supply, application of taxes, duties and levies as applicable & any other relevant information required by them to execute complete scope of work. The tenderer may obtain all necessary information as to risks, weather conditions, contingencies & other circumstances (insurgencies etc.) which may influence or affect their tender prices. Tenderer shall be deemed to have considered site conditions whether he has inspected it or not and to have satisfied himself in all respect before quoting his rates and no claim or extra charges whatsoever in this regard shall be entertained / payable by the HSCC at a later date.	Please amend the clause as below: Before tendering, the tenderers are advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach roads to the site, availability of water & power supply, application of taxes, duties and levies as applicable & any other relevant information required by them to execute complete scope of work. The tenderer may obtain all necessary information **available at the time of tendering** as to risks, weather conditions, contingencies & other circumstances (insurgencies etc.) which may influence or affect their tender prices. Tenderer shall be deemed to have considered site conditions **at the time of tendering** whether he has inspected it or not and to have satisfied himself in all respect before quoting his rates and no claim or extra charges whatsoever in this regard shall be entertained / payable by the HSCC at a later date.	As per tender condition
7	CC / Cl. 2.2 - 2.2 HSCC reserve the right of forfeiture of the one or more performance guarantee(s) on the pro-rata basis of the elapsed contract period in the event of the contractor's failure to fulfill any of the contractual obligations i.e. defaults in commencing the work, fails to maintain the required progress in terms of relevant clause of GCC & SCC, in case of bad work or work not done as per specifications etc. or all performance guarantees in the event of termination of contract as per terms and conditions of contract.. If the Contractor commits any default as aforesaid, the HSCC shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee(s) absolutely (not withstanding and/or without prejudice to any other provisions in the contract) by giving the notice in writing in addition to action taken under other provisions contained in this contract or otherwise	Contractor requests to delete this clause	As per tender condition
8	CC / Cl. 3.1- SECURITY DEPOSIT/ RETENTION MONEY 3.1 The Security deposit or the retention money shall be deducted from each running/ final bill of the contractor @ 2.5% (two point five per cent only) of the gross value of the Running Account/ final bill.	Contractor request for allowing submission of Retention BG in lieu of cash retention.	As per tender condition

9	CC / Cl. 8 - i) Compensation for delay of work @ 0.5% per week Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with HSCC	We request for following 1. Compensation for delay of work @ 0.25% per week 2. total amount of compensation for delay to be paid under this Condition shall not exceed 5% of the Tendered Value of work	As per tender condition
10	CC / Cl. 14 b SUSPENSION OF WORKS (b) If the suspension is ordered for reasons (ii) and (iii) in sub-para (a) above. i)The contractor shall be entitled to an extension of the time equal to the period of every such suspension plus 25% for completion period. No adjustment in contract price will be allowed for reasons of such suspension.	We request to amend the clause as below: i)The contractor shall be entitled to an extension of the time equal to the period of every such suspension plus 25% for completion period **and associated cost compensation in ful**l. ~~No adjustment in contract price will be allowed for reasons of such suspension.~~	As per tender condition
11	CC / Cl. 23.2 - It is clearly agreed and understood by the Contractor that notwithstanding anything to the contrary that may be stated in the agreement between HSCC and the contractor; the contractor shall become entitled to payment only after HSCC has received the corresponding payment(s) from the client/Owner for the work done by the contractor. Any delay in the release of payment by the client/ Owner to HSCC leading to a delay in the release the corresponding payment by HSCC to the contractor shall not entitle the contractor to any compensation/ interest from HSCC	We request to amend the clause as below: Contractor shall be entitled for interest at bank rate plus 5% for delayed payment from HSCC	As per tender condition
12	CC / Cl. 26.3- LIEN IN RESPECT OF CLAIMS IN OTHER CONTRACTS	We request to delete this clause	As per tender condition
13	CC / Cl. 26.3 - FORECLOSURE OF CONTRACT BY HSCC/OWNER If at any time after the commencement of the work the HSCC shall for any reason whatsoever is required to abandon the work or is not require the whole work thereof as specified in the tender to be carried out, the Engineer-in-Charge shall give notice in writing of the fact to the contractor, who shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the foreclosure of the whole or part of the works.	Please amend the clause as follows: FORECLOSURE OF CONTRACT BY HSCC/OWNER If at any time after the commencement of the work the HSCC shall for any reason whatsoever is required to abandon the work or is not require the whole work thereof as specified in the tender to be carried out, the Engineer-in-Charge shall give notice in writing of the fact to the contractor, who shall have **entitlement to** ~~no~~ claim ~~to~~ any **associated** payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the foreclosure of the whole or part of the works.	As per tender condition
14	CC / Cl. 39 - The sub-contracting, excluding design work shall be limited to 40% of the contract value.	Contractor request to remove the limit to subcontracting	As per tender condition
15	CC / Cl. 41 - NO COMPENSATION CLAUSE The contractor shall have no claim whatsoever for compensation or idle charges against HSCC on any ground or for any reason, whatsoever.	We request to delete this clause in its entirety	As per tender condition
16	SCC / Cl.10.1 - The efforts will be made by the HSCC pursuing with Client to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor by the Client then HSCC shall only consider suitable extension of time for the execution of the work. It should be clearly understood that the contractor will not be entitled for any extra claim on such account and HSCC shall not consider any revision in contract price or any other compensation whatsoever. The contractor shall be responsible to obtain statuary approval for commencement of work from all statuary authority/Departments	Please amend the clause as follows: 10.1 The efforts will be made by the HSCC pursuing with Client to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor by the Client then HSCC shall ~~only~~ consider suitable extension of time for the execution of the work. It should be clearly understood that the contractor will ~~not~~ also be entitled for ~~any~~ **associated** extra claim on such account ~~and HSCC shall not consider any revision in contract price or any other compensation whatsoever. The contractor shall be responsible to obtain statuary approval for commencement of work from all statuary authority/Departments~~	As per tender condition

17	SCC / Cl. 12 - Order of Precedence of Documents: In case of difference, contradiction, discrepancy with regard to conditions of contract specifications, drawings, bill of quantities and rates quoted by the contractor and other documents forming part of the contract, the following shall prevail in order of precedence: In case of Construction Contracts (EPC): i. The letter of Award along with statement of agreed variations and its enclosures, if any ii. Amendments to tender documents iii. Stage Payment Schedule (Annexure-A) iv. Special conditions of contract (SCC) v. Design Basis Report (DBR) & Schedule of Finishes vi. Technical specifications vii. Drawings – between the written description on the Drawings and the Specifications and Standards, the latter shall prevail and between the dimension scaled from the Drawings and its specific written dimension, the latter shall prevail; viii. The General Conditions of Contract (GCC) ix. CPWD/MORTH specifications x. Relevant BIS Codes xi. Between two or more Clauses of this Contract, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other clauses;	We request to amend the order of precedence as follows: In case of Construction Contracts (EPC): i. The letter of Award along with statement of agreed variations and its enclosures, if any ii. Amendments to tender documents iii. Pre- Bid clarifications iv. Special conditions of contract (SCC) viii. The General Conditions of Contract (GCC) iii. Stage Payment Schedule (Annexure-A) v. Design Basis Report (DBR) & Schedule of Finishes vi. Technical specifications vii. Drawings – between the written description on the Drawings and the Specifications and Standards, the latter shall prevail and between the dimension scaled from the Drawings and its specific written dimension, the latter shall prevail; ix. CPWD/MORTH specifications x. Relevant BIS Codes xi. Between two or more Clauses of this Contract, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other clauses;	As per tender condition
18	Sr.no. -16, Annexure-I- MEMORANDUM; CC / 10.0 - **Applicable as per Cl. 10 CC- Price adjustment for works-** If the prices of materials and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the condition that such compensation for escalation in prices and wages shall be available only for the work done during the stipulated period of the contract including the **justified period extended under the provisions of clause 8 of the contract without any action under clause 16**. Such compensation for escalation in the prices of materials and labour, when due, shall be worked out based on the provisions in Cl 10 CC.	We request you Correct the Underlined part as: justified period extended under the provisions of **clause 16** of the contract without any action under **clause 8**.	Clause 10CC (Price adjustment for works) under subhead "10.0 - Escalation" Section -3 (Clasues of Contract) of Vol.-II (GCC) - **Shall be read as follows :** If the prices of materials and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the condition that such compensation for escalation in prices and wages shall be available only for the work done during the stipulated period of the contract including the justified period extended under the provisions of **clause 16** of the contract without any action under **clause 8**. Such compensation for escalation in the prices of materials and labour, when due, shall be worked out based on the following provisions: .....
19	Pt. 15 - Vol-II-SCC - Deviation/Variation extent and pricing" -The Engineer-in-Charge shall have power (i) to make any alterations in, omissions from, additions to or substitutions for, the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and (ii) **to omit part. of the works in case of non-availability of a portion of the site** or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions, or substitutions shall form part of the contract as if originally provided therein **and any altered, additions or substituted works which the contractor may be directed to do in the manner specified above as part of the work, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereunder provided:** (i) The time for the completion of the work shall in the event of any deviations resulting in additional cost over the tendered value sum being ordered be extended, if requested contractor, as follows: (a) in the proportion which the additional cost of the altered, additional or sum bears to the original tendered value plus (b) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge .	In case of omission of part of the works or delay in handing over of site, we request that the Contractor shall be compensated for time and cost.	As per tender condition

20	Pt. 11.1 (h) - Vol-II-SCC - Scope of works - The activities to be carried out for the completion of the Project shall include the following and any additional activities incidental to these: a. Buildings and all services design and execution as specified. **b. Getting all approvals / permissions / planning permits of the statutory / local / governmental agencies as required incidental to Preconstruction, Construction and completion.** c. Submission of the completion (i.e. 'as-built') drawings and other related documents, both a hard copy and the soft copy in Auto CAD or any other IT application used for the purpose.	Any delay in getting approvals from Authorities shall not be attributable to the Contractor and shall entitle Contractor for time and cost.	As per tender condition
21	Pt. 10.1- Vol-II-SCC - Site handing over Pt. 11.2 - Vol-II-SCC - Approvals Required Pt. 20- Vol-II-SCC - The efforts will be made by the HSCC pursuing with Client to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor by the Client then HSCC shall only consider suitable extension of time for the execution of the work. It should be clearly understood that **the contractor will not be entitled for any extra claim on such account and HSCC shall not consider any revision in contract price or any other compensation whatsoever.**	We request you that, delay which are not only attributable to us, then we Shall be compensated for Time & Cost (Delay in site handover, delay in statutory approval, delay in tree cutting approval)	As per tender condition
22	Pt. 16- B- Vol-II-SCC - Milestones - The Tentative milestone for the execution of the project is given as under; however, the contractor shall finalize the milestone in consultation with the Engineering in charge (EIC) after award of the work without changing the project duration (phase wise as given in Clause 1 above). **The decision of EIC shall be final and binding on the contractor in this regard.**	Any dispute arising in connection with the Contract shall be arbitrable if the decision is not acceptable to the Contractor."	As per tender condition
23	Pt. 16- B- Vol-II-SCC - Priority Building - In Priority Building - Dining block is Included	Dining block is not under priority building. Kindly Confirm.	As per tender condition
24	Pt. 16- B- Vol-II-SCC - Milestones - In Priority Building - Dining block is Included	Kindly Confirm that Dining Block & Mess Block are the same Building. As we couldn't find the dining block in Master Plan drawing	As per tender condition
25	Pt. 16- B- Vol-II-SCC - Milestones -Substantial Completion of RCC works for all Priority buildings (Medical College including Animal Hold, Boys & Girls Hostel, Director Bungalow etc.)	Kindly Confirm, Animal hold block is not under priority building	As per tender condition
26	Pt. 16- B- Vol-II-SCC - Milestones- At milestone no. 3, along with Hospital buildings, which remaining buildings has to be completed in 6 months?	Kindly clarify the remaining Buildings (which building to be included)	As per tender condition
27	Pt. 16- B- Vol-II-SCC - Milestones - Substantial Completion of RCC works for all Priority buildings (Medical College including Animal Hold, Boys & Girls Hostel, Director Bungalow etc.)	At milestone 4, substantial completion of RCC works for priority buildings need to be specific building wise and stage/floor to be achieved.	As per tender condition
28	Pt. 16- B- Vol-II-SCC - Area Statement	Any increase in area due to MCIA Compliance over & above +/-2% shall be paid extra at actual.	As per tender condition
29	Pt. 17-A- Vol-II-SCC - Payments A. Stage Payment Statement for Works i) The Employer/HSCC shall make interim payments to the Contractor as certified by the Employer's/HSCC's Engineer, as specified and valued in accordance with the proportion of the Contract Price assigned to each item and its stage in Schedule of Stage Payment as per attached Annexure separately. **ii.....The basis of payment on "Pro rata basis" shall be worked out on the percentage of work done of total scope of work under their activity/item for the respective Cost Centre/Stage payment schedule.....**	The basis of payment on "Pro rata basis" means that Contractor and EIC upon verification and assessment of actual progress of respective item shall mutually agree on the percentage of progress achieved in every item and the payments in that proportion of progress achieved shall be released from the percentage defined under sub-group of the schedule of stage payment in Annexure A of SCC.	Ammended "Annexure A - Schedule of Stage payment of works" are attached at **Annexure - II**
30		Please provided all drawings in cad file format for precise quantification.	Concept drawings in PDF format are available with tender
31	21.6 The contractor shall be responsible to obtain necessary approval from the General Conditions of Contract - Section - 2 HSCC (India) Limited Sign of Contractor 18 HSCC respective authorities for shifting/ re-alignment of existing public utilities. HSCC shall only assist the contractor for liasioning in obtaining the approval from the concerned authorities.	Please share existing services drawings	Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
32	72.0 Providing plantation of trees at project site and maintenance of the same up to defect liability period	Please share plant varieties to be considered with quantity since landscape design not shared.	Landscape and trees plantation are to be designed by contractor as per local environment and relevant norms
33	Bidders are required to complete the work in a phased manner. The phase wise completion period are mentioned below:	Start of work shall be considered after approval of GFC from client for Architectural, structural & MEP design for Priority buildings (15 months) & Other buildings (21 months).	As per tender condition
34	Tender Document	GRIHA word mentioned in the document on page 338, 355, 573, 600 for various purpose. GRIHA rating which shall be considered not clarified in the documents.	Green building certification shall be considered as per NIT & PQ (Volume-1) and Special Condition of Contract (SCC)

35	Scope of AERB	Please clarify on approval of AERB in whose scope. Please share approval scope matrix.	Approval of AERB is in the scope of contractor. HSCC/Client may, at the written request of the Contractor, assist him in obtaining the approvals from relevant authorities. However any such request by the Contractor shall not bind the HSCC in any manner.
36	Building to be designed as per contour & as per norms/standards of local building bye	Please share site contour survey with existing trees, spot levels and site features available with location of the available tap off services. in PDF & cad file format.	Topographical survey and other relevant details are in the scope of contractor. Indicative Topographical survey plan is attached at Annexure-IV for reference only. No claims whatsoever shall be considered on account of change in contour profile at any extent.
37	Existing structures	Please share details of existing structure at site	Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
38	Traffic and Parking plan	If traffic analysis has been done for this site?	It is in the scope of contractor
39	Landscape Design	Landscape Design Intent Package for External Development is not provided. Please provide.	Landscape and trees plantation are to be designed by contractor as per local environment and norms
40	Interior furniture	Please clarify on interior furniture in scope in EPC contractor?	Supply and installation of interior furniture are not in the present scope of work, however the contractor will plan and design the buildings considering the furniture planning.
41	Tree cutting	Please clarify on tree cutting in whose scope.	Tree cutting are in the scope of contractor. Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
42		SPCPL would review the design for code conformity as per NBC, UDCPR and GRIHA Guidelines. Please propose if any other statutory guidelines are to be adhered to.	As per tender condition
43		Turnstiles/Flap Barriers are to be considered at Entry gate on ground level. Also, where would activity of frisking check and issue of access control cards is located. Please clarify.	As per tender condition
44	Traffic and Parking plan	Parking provided on master plan as per approval & traffic analysis, please confirm if no further increase will be required by EPC.	As per tender condition
45	Hospital block – Area Statement (Numbers of Beds)	Total 690 numbers of beds are written in the area statement document. But if we do the calculation of the bed than it comes 691 numbers . Kindly confirm the numbers of bed.	Total No. of Beds are 690
46	Utility Block, Bus Stand & Signages	Kindly provide the Plan, Elevation & Section drawings for the Utility Block, Bus Stand & Signages.	As per tender condition
47	Façade - DBR - Clause No. 4.4 Glazing glass	Please clarify the scope of external cladding & structural glazing with supporting drawings for precise quantifications.	As per tender condition
48	Façade - External finish- Aluminium Louvers & GRC	Please provide detail drawings and specifications of Aluminium Louvers and GRC in order to calculate precise qty .	As per tender condition
49	Façade - Hospital Block-30mm thick stone dry cladding supported with MS structure	Please specify type of stone .	30 mm thick Sand stone dry cladding supported with MS structure @10 Kg/Sqm (minimum)
50	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	We assume that the given plans are final in terms of footprint, floor Plate areas and Built Up Area. If there is scope for the contractor to propose design interventions & value additions, kindly confirm.	Within the area mentioned at page no. 16-17 of Architecture DBR. The contractor may propose design and value additions to meet the requirements of relevant norms.

51	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	We Assume that all the Architectural drawings are as per codal requirements of NBC 2016 , local byelaws, NMC guidelines and all prevalent and applicable codes/norms. In case of any major deviation due to change in because of codal/Statutory requirements shall be considered by change order, kindly confirm.	Concept drawings are available with the tender. Within the area mentioned at page no. 16-17 of Architecture DBR, the detailed planning and design as per relevant norms is in the scope of contractor.
52	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Do we have to consider provision of future expansion in any of the building, please clarify and share the brief to provision overall areas as per NMC.	The columns, foundations and other relevant structural elements of Hospital block, Medical college block, Residences and Hostels shall be designed for future vertical expansion of additional two (02) floors.
53	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share the tender drawings of all Arch. General Details to be considered for the project.	As per tender condition
54	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share a detailed scope Matrix wrt the Project wrt approvals, interiors, fixed and removable furniture, signages etc.	As per tender condition
55	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	We understand the areas provided in the SBD are only indicative, actual area provisioning shall be as per NMC guidelines only. Kindly Confirm.	As per tender condition
56	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Is there any separate requirement for infectious block or trauma center? If yes kindly provide the requirements.	As per tender condition
57	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Is there any scope for expansion of intake capacity for future to be considered, If yes kindly provide the design brief.	Future expansion is not in the scope of work, however the columns, foundations and other relevant structural elements of Hospital block, Medical college block, Residences and Hostels shall be designed for future vertical expansion of additional two (02) floors.
58	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Kindly confirm that any change in design wrt during the ongoing process shall de dealt as variation in scope and the additional design charges shall be payable to the contractor.	As per tender condition
59	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share detailed requirements for any Artwork to be considered and indicate the spaces for the same.	Glass mosaic tile Artwork at external facade and internal lobby with area 200 Sqm (approx.). Metal and/or stone sculpture at four (02) locations of campus of height 2.0m (approx.) over pedestal as per design
60	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please confirm the design requirements for PMR (Physical Medicine & Rehab), Burns Ward & ART Centre as they are mandatory for NMC.	As per tender condition
61	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please clarify on the consideration of Rural Health training center area provision as per NMC guidelines.	As per tender condition
62	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please clarify/ share consideration of child care facility provision in teaching block / hospital.	As per tender condition
63	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Request you to share the traffic management study if any with respect to parking and Vehicular circulation.	As per tender condition
64	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Request you to share the lift traffic analysis done for the building design.	As per tender condition
65	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share the documents with drawings of preliminary approvals already in place or applied for like AAI, pre fire NOC, EIA etc.	To be taken by contractor

66	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Also confirm if any existing particular site feature which is required to be relocated such as HT /overhead lines, electrical poles, water pumps, telephone cables, network cables, underground piping etc/ religious structure.	Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
67	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share the detailed fire analysis report prepared by the concept architect showcasing the compliance to Part-4, NBC 2016 requirements wrt compartmentation planning, egress width, travel distances, fire tower planning etc.	As per tender condition
68	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share the comprehensive detailed area statement of the project as per NMC guidelines considered and parking calculations in excel format.	As per tender condition
69	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	As per NMC, there shall be BMWM (bio medical waste management) facility inline with BMWS rules, whereas the scope of work does not mention the same. Understand that the same is not part of bidder scope.	As per tender condition
70	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Details of space planning provision for Service blocks for Pneumatic tube system to be shared.	As per tender condition
71	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Details of space planning provision for Service blocks for Chiller Plant Room to be shared.	As per tender condition
72	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Details of space planning provision for Service spaces i.e. AWLS system to be shared.	As per tender condition
73	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Details of space planning provision for Service spaces i.e. MGPS system to be shared.	As per tender condition
74	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Details of space planning provision for Service spaces i.e. Central Pharmacy to be shared.	As per tender condition
75	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Please share the flood level data for nearest dam & river for clear understanding of site final level w.r.t. current site level	Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
76	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	As per NMC, PSA/VSA is mandatory. Currently the same is not in scope. Location of the same and space provision and planning to be shared in the masterplan	As per tender condition
77	Volume – I NOTICE INVITING eTENDER (Arch. DBR)	Lift shaft sizes, staircase positioning, planning of departments & allied services and shaft provision in current design would need changes for statutory approval and better functional planning. We understand that the bidder is allowed to change the design for the same.	As per tender condition
78	Medical College Drawing - Third Floor - In Drawing of Medical College - third Floor - Future Expansion shown.	Kindly clarify the scope of Future Expansion for third floor	Future expansion is not in the present scope of work, however the columns, foundations and other relevant structural elements of Hospital block, Medical college block, Residences and Hostels shall be designed for future vertical expansion of additional two (02) floors.
79	Lift mentioned in drawing- (Pg- 265 & 267) for Type-2 & Type 3- however, no lift mentioned in Lift Detail for Type-2 & type 3(Pg-403)	Lift mentioned in drawing- (Pg- 265 & 267) for Type-2 & Type 3- however, no lift mentioned in Lift Detail for Type-2 & type 3(Pg- 403)- Kindly clarify.	Only Lift well to be provided in Type 2 and Type 3 residences
80	Future Lift - Type 2 & Type 3 Residences	SITC of future lifts is in scope of contractor, Kindly Clarify	Only Lift well to be provided in Type 2 and Type 3 residences

81	DESIGN BASIS REPORT (DBR) (STRUCTURE) : 5.2 Structural System - Roof slabs, Floor slabs, Walkways, Balconies, Canopies, Waste slab etc. – 150mm	We shall consider minimum slab thickness of 125mm upto 2hour fire rating as per IS456 code (Clause 21,FIG. 1, page no. 34)	As per tender conditions
82	1 1 . 1 Conditions of Contract - Clause 22 - Scope of works: (b) A model, 3D view and walkthrough will be prepared & presented to HSCC & Client within 15 days from award of work as per conceptual plan released by HSCC. The latest software of design engineering Including STAADPRO, AutoCAD/BIM etc. will be used for design & Engg. Purpose. All softcopies shall be made available	We shall also use ETABS and SAFE software for design. We shall also use spread sheets for structural elements design.	Accepted
83	1 1 . 1 Conditions of Contract - Clause 22 - Scope of works: (c) The soil investigation report will be provided by HSCC to Contractor for reference purpose only. However, they are required to get it done independently to satisfy themselves as per design requirements.	Please provide soil investigation report	Geotechnical investigation and other relevant details are in the scope of contractor. Indicative soil report is attached at Annexure-III for reference only. No claims whatsoever shall be considered on account of change in soil strata and Safe Bearing Capacity (SBC) at any extent.
84	DBR - Section A - 5.1 - The rainwater from the terraces, open surface areas, as per design, shall be collected in the clay brick masonry chambers with RCC NP-2 and NP-3 pipes, collection chambers and shall be ultimately connected to the main storm-water drainage system.	Kindly clarify the piping MOC for rain water downtakes from the roof till the first catch basin. Is there natural storm water connection available on site ?	As per tender conditions
85	DBR - Section A - 2.1.2 - Laying of these pipe lines up to building shafts shall be underground and in shafts, supported with standard clamps up to the overheads tanks complete as per specification. These G.I Pipe line shall be used for domestic flushing and HVAC water supply system.	MOC of water supply down take in shafts is not clear. Shall we consider G.I. C class pipes for same.	As per tender conditions
86	DBR - Section B - 2.7.1 Under Ground/Overhead Water Storage - Tube well water supply is collected in underground storage reservoirs with firefighting storage capacity.	Kindly clarify the main source of water is through state water supply network as mentioned in Sec - B, clause 2.2, OR through tube well. Also clarify the scope of tube well construction & pumping.	As per tender conditions
87	DBR - Section B - 2.1, Water Treatment Plant - Water supply/lifting Pumps/filter feed pumps/Non Clogging type submersible sump pumps etc. – MoC preferably should be -SS-304/C.I casing, SS-304 /Brass /Bronze impeller & SS shaft	The MOCs of pumps need to be specific as the Stainless steel, Cast Iron & Bronze materials will have cost variations.	As per tender conditions
88	DBR - Section B - 2.2, Source of water supply - Irrigation water requirements for entire campus & HVAC Cooling Tower make up & Flushing water requirements shall be met with STP treated water.	STP water can be used for residential, Hostels, college and other blocks. But as per practice the flushing water for Hospital block needs to be normal Raw water due to hygienic issues of the patients. Kindly clarify whether to STP water or Normal supply water for Hospital block?	As per tender conditions
89	DBR - Section C -Design Basis Report of Reverse Osmosis Plant (RO Plant). Point 2 - High pressure side piping from the RO high pressure pumps to the rejects stream control valves shall be of SS 316 using all SS fittings ball valves of suitable pressure rating shall be used till 50 mm size, above 50 mm, flanged globe / water butterfly valves in SS construction shall be used.	R O Water distribution piping MOC is not clear. Shall be consider S.S. 304 piping for distribution network to Hospital and other blocks as required.	As per tender conditions
90	Catch Basin Grating	MOC of Gratings for catch basin are not clear in DBR. Kindly suggest.	As per tender conditions
91	DBR - PHE section B 2.0 - As per page no 337 hot water system for hostel by solar but as per page no 346 required through Heat pump.	Kindly clarify the hot water generation through Solar OR Heat pump for hostel blocks.	As per tender conditions
92	Fire NOC	Kindly share Provisional Fire NOC if available.	As per tender conditions
93	TenderDocument_DG Set for Backup Supply - 2.3.4 DG Set for Backup Supply DG Backup Supply shall be consider as followings Hospital Block ,Medical College & allied service Buildings-internal lighting & Fan load, Power, Computer Power, LV equipment's, Ventilation Load,HVAC load, Medical equipment load , UPS, Gas manifold, Kitchen, CSSD, Water supply and other essential load will be on DG Backup.	a) The DG set rating requirement (post award of contract) shall be assessed based on the areas exclusively mentioned in the DBR (only)and limited to the sever ices/ loads specifically mentioned therein. b) Please inform specific loads with load details categorized under "other essential loads" which have been accounted for in the assessment of mentioned ratings & quantities of DG sets. c) Please share the load sheet indicating areas, their loads and various factors viz. demand factor/ diversity factor/ etc.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
94	TenderDocument_DG Set for Backup Supply - 2.3.4 DG Set for Backup Supply DG Backup Supply shall be consider as followings Hostel- Lighting & Fan Load, LV, water pumps on DG. Dining Block- Light , fan, power, LV etc. on DG. Residential- Light, Power, Lifts, LV, Water pumps on DG		
95	TenderDocument_DETAIL LOAD REQUIREMENT - 2.3 ELECTRIC SUB-STATIONS	Please share the load sheet indicating areas, their loads and various factors viz. demand factor/ diversity factor/ etc.	As per comprehensive design by EPC contractor based on DBR & Concept drawings

96	TenderDocument_SOURCE OF SUPPLY - Electricity supply on 33kV for meeting electrical load requirements shall be provided by State Electricity Board. RMU and 33KV HT cable upto the meter room is provided by state electricity board/client.	a) We understand Our (EPC Vendor) scope will start from HT Meter (O/G terminals of metering CT/PT cubicle) onwards. SITC & Liasoning of upstream system is beyond the scope of SPCPL. Please confirm. B) Please share Key/ overall/ Block SLD depicting the battery limit and envisaged distribution system in SPCPL scope.	As per tender condition
97	TenderDocument_RISING MAINS - In Hospital and Medical College Block, the separate distribution system shall be provided for Lighting load, Power, AHU & UPS load. Separate rising main shall be provided for Light Load, Power Load, AHU Load.	We understand Rising main are required for Hospital & Medical college. only not other block and only for the specified services, Kindly confirm.	As per tender condition
98	TenderDocument_Boom barrier PIR sensor and DALI control system(General) - Occupancy/ Movement sensors and light dimmers shall be provided for automatic lighting control in Office rooms/ Consultant rooms/ Common toilets, Stores room and other areas as required under NBC/ECBC /Green Building Rating. Dimmer with dimmable light fixtures will be provided in ICU, Pre-OT, Post-OT and Day Lighting area of Buildings as per Green Building Rating.	Occupancy/ Movement sensors and light dimmers shall be provided for automatic lighting control shall be provided only for the areas needed as per Platinum Green Building rating.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
99	TenderDocument_LT, MV Panels & Fabricated Distribution board - 2.3.3SUBSTATION GUIDELINES- All LT and MV Panels shall have 30% spare outgoing feeders for different rating of feeders	We understand 30% spare feeders are required only for main LT panel (and not for others)	As per tender condition
100	TenderDocument_HSD (High Speed Diesel) UG Storage Tank - 2.3.6 HSD (High Speed Diesel) UG Storage Tank(at Service Block-1 only):Underground Diesel storage tank of 1 X 20 KL capacity	We are considering 1no. Underground HSD Tank capacity limited to 20KL(max.)in service block-1 to cater to all the DG sets in the complex.	As per tender condition
101	TenderDocument_ELECTRICAL POWER DISTRIBUTION - 2.4 ELECTRICAL POWER DISTRIBUTION - Minimum Bus bar size of MV/ Floor Panels shall be 300A & 36KA.	We are considering minimum Bus bar size of 300A with 36KA in MV/ Floor Panels only, for other small DB's busbar size shall be as per calculation / manufacturer standard, Kindly confirm?	As per tender condition
102	TenderDocument_ELECTRICAL POWER DISTRIBUTION - 2.4 ELECTRICAL POWER DISTRIBUTION - e. Cable selection shall be done as per feeder rating of Panels. k. The power cabling shall be sized so that the distribution losses do not exceeds 3% of the total power uses in buildings. Voltage drop for feeders shall not exceed 2% at design load and for branch circuit; it shall not exceed 3% at design load.	The feeder and its cable shall be sized as per the expected maximum demand of the load (i.e. connected load x demand factor= 80% max.)	As per comprehensive design by EPC contractor based on DBR & Concept drawings
103	TenderDocument_ELECTRICAL POWER DISTRIBUTION - 2.4 ELECTRICAL POWER DISTRIBUTION - n. 100% neutral shall be used for electronic equipment power distribution	We understand "electronic equipment" under discussion are limited to all equipment connected on UPS & lighting, limited to Hospital areas	As per comprehensive design by EPC contractor based on DBR & Concept drawings
104	2.7 INTERNAL ELECTRIFICATION, LV & ALLIED WORKS: xvii. SS Raceways (SS 304 or SS 316) with all accessories shall be provided various buildings as per requirements.	we understand that SS Raceways are envisaged only where they are embedded in floor. Rest all shall be Hot dip GI Raceways. Kindly confirm? Please inform "various rooms" where SS raceways are envisaged.	As per tender condition
105	2.7 INTERNAL ELECTRIFICATION, LV & ALLIED WORKS: xxiv. Two way Switch Control for Staircase, Ramp shall be provided as per directions of Engineer-In-Charge unless otherwise stated..	we are considering two way Switch Control for Staircase, Ramp area only, Kindly confirm	As per comprehensive design by EPC contractor based on DBR & Concept drawings
106	2.7 INTERNAL ELECTRIFICATION, LV & ALLIED WORKS: xxv. Separate power DB to be provided for Lab. 2.14 UPS: UPS units suitable for 3-phase power supply shall be provided. Suitable capacity of Centralized UPS shall be installed for OTs, ICU, Pre-OT, Post OT, Emergency Beds, labs equipments, Emergency Lighting, Fire Alarm Panel, PA system, CCTV, BMS, AV System and other essential loads as required in the Hospital, Medical College Building & services buildings.	Please clarify the total number of UPS system for various specified services, their configuration and back up time.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
107	TenderDocument_Lift Quantity(General) - Passenger cum Bed lifts, Passenger lifts, service lifts for shall be provided, as per details given below which is indicative:- LIFT DETAIL	We understand the maximum number of lifts shall not exceed the indicated quantities under "LIFT DETAIL"	As per tender condition
108	TenderDocument_ELECTRICAL POWER DISTRIBUTION	Please share the Electrical Substation location in master plan & tentative layout with room sizes.	Reref architecture drawings Master Plan Substation-1 at Service Block-1 Substation-2 at Service Block-2
109	Gas Flooding system for LT panel	We have considered CO2 flooding system as per NBC for Main LT panel, DG panel, Fire fighting power distribution panel & Lift panel only.	As per NBC and local Fire Norms to be considered
110	**TenderDocument_6.2 MOULDED CASE CIRCUIT BREAKERS. - 6.2.1 Technical Specifications** - The breaking capacity of MCCB shall be minimum 35KA / 50 KA or as specified in DBR	The breaking capacity of MCCB shall be as per calculated short circuit rating (minimum 35KA) or as specified in DBR	As per tender condition

111	Site conditions	Site conditions like Mean Sea level, min./ max./ design ambient temperature (indoor & outdoor), design wind pressure, avg rain fall, design Relative humidity to be followed for designing the electrical distribution system.	All site condition to be consider for comprehensive design by EPC contractor based on DBR & Concept drawings
112	earth resistivity	Please share earth resistivity for assessing the earthing system design.	Will be shared to L-1 Bidder
113	Short circuit rating of main 33kV panel	Please inform the Short circuit rating of main 33kV panel & short circuit level to be considered for 33kV cable	As per comprehensive design by EPC contractor based on DBR & Concept drawings
114	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - IPABX System: Telephone socket outlets with suitable Telephone instruments IP, Digital, Analog shall be provided in all blocks / buildings at convenient locations, as required. Wiring shall be provided in recessed/surface conduits / raceways from each telephone point.	We understand that the telephone instruments are not in the scope of work. Please confirm	Telephone instrument part of scope as per tender conditions
115		If the telephone instruments are to be considered then please provide the nos. for different type of telephone instruments with their locations.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
116	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Fire Alarm Repeater panels shall be provided in various buildings as required.	Please advice the location of Fire alarm repeater panel. Hence as per RFP Independent fire panel for Hospital Building, Medical College , Residential, Hostels and Allied Blocks, etc.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
117	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Fire Alarm System: Cabling shall be with Fire Survival Armoured copper cable or Fire survival Unarmoured cable in MS conduit wherever required due to non false ceiling.	Please advice fire alarm cable shall be FRLS or FS. Please confirm.	As per DBR Armourd Fire Survival Copper Cable in Flase Ceiling area Unarmourd Fire Survival Copper Cable in MS conduit in Non-Flase Ceiling area
118	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Fire Alarm System: Cabling shall be with Fire Survival Armoured copper cable or Fire survival Unarmoured cable in MS conduit wherever required due to non false ceiling.	If the FRLS / FS cable, we shall consider 2C x 1.5Sq.mm armoured cables for complete fire alarm system of false ceiling & non false ceiling area. Please confirm	As per comprehensive design by EPC contractor based on DBR & Concept drawings
119	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Public Address System: Digital PA System shall be provided in Hospital Block Medical College & other buildings as required. Speakers in the Ceiling/Wall shall be provided in corridors, lift lobbies and other common areas as per NBC 2016/relevant IS codes. a. Box type speaker shall be provided in the entrance lobby. b. Horn type speaker are suggested in the basement. c. Recessed speakers in the false ceiling areas. d. Landscape Garden Speaker of high frequency to be installed in outdoor Hospital and Medical College area.	Please share PA speaker technical Specification.	As per PWD- Maharashtra /CPWD specifications
120	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Public Address System: Landscape Garden Speaker of high frequency to be installed in outdoor Hospital and Medical College area.	Please share the drawings with mark the location where landscape garden speaker are required.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
121	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Proper zoning are to be done considering the user requirement, critical areas & floor etc.	Please share the PA system zoning details.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
122	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - CCTV System: The CCTV surveillance system shall also be provided to cover complete outdoor areas including complete boundary wall, Roads and controls for all external coverage shall be from security room in the main gate	Please share the drawings with mark the CCTV Camera location on external area for our reference.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
123	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - LED Display Monitor:- The sufficient no. of Full HD LED Monitors with high resolutions screen size of 40” (Diagonal) are to be provided for viewing all live/ recorded camera proceedings.	Please advice the no. of LED display quantity.	As per comprehensive design by EPC contractor based on DBR & Concept drawings

124	General CCTV System: The CCTV surveillance system shall also be provided to cover complete outdoor areas including complete boundary wall, Roads and controls for all external coverage shall be from security room in the main gate	The storage capacity shall be for 30 days of recording with recording parameters of 720p resolution, 15fps. Please confirm.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
125	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM MATV: The system shall include supply and installation of Centralized MATV System in various areas like Hospital Medical College Building, Hostels, and Residential as directed by Engineer-In-Charge. The system comprises of a shared coaxial cable network that transmits analog television signals to downstream subscribers	We shall not consider any headend equipment, Setup BOX & other active components in our Part of scope. Please confirm	Setup box for Hospital block in the scope of work
126	Infrastructure	We shall consider only infrastructure in the part of scope. Please confirm	As per tender conditions
127	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - Boom Barriers shall be provided at all Entry and Exit Gates of all buildings of the Complex.	Boom barrier shall be considered in main Complex entry & exit. Please confirm	Considered for all entry& Exit gate of complex
128	DESIIGN BASIIS REPORT ELECTRICAL, ELV SERVICES& IBMS SYSTEM - AV System shall be provided for all lectures Theaters/conference hall of institute head in Medical College Block/Hospital block	Please provide the room list where AV system is required.	As per tender conditions
129	DESIIGN BASIIS REPORT IT INFRASTRUCTURE HMIS, PACS, LAN & Wi-Fi System, QMS, LMS, EMS and Computer Hardware - DESIGN BASIS REPORT OF IT INFRASTRUCTURE WORKS	Please confirm the IT requirement for all ELV systems are serviced through local IT/Data voice converged/structure network as per IT scope of work documents.	Conduiting, Cabling, Network Switches and all the other Networking equipment for LAN & Wi-Fi defined under the scope of IT works shall be entirely separate from all the other ELV services.
130	Technical Specification - Guard Tour	Please share the drawings with mark the Check point of Guard tour system.	As per tender conditions
131	Technical Specification - Access Control System	We shall consider In reader & out push button. Please confirm	As per comprehensive design by EPC contractor based on DBR & Concept drawings
132	Technical Specification - Access Control System: III. Proximity Card: Access cards shall be used with access readers to gain entry to access controlled areas / zones(e.g.; doors, gates, etc.) and to hold information specific to the user. Provide (specify quantity) (badge protectors with clips or other accessories), of a type acceptable to the Architect.	Please advice the no. of proximity Card	As per comprehensive design by EPC contractor based on DBR & Concept drawings
133	Technical Specification - Token Dispensing Kiosk	Please share the location drawings for Token Dispensing Kiosk.	Token Dispensing Kiosks shall be installed near the Registration counters and Pharmacy counters. Minimum requirement of the same has been given in the DBR for IT works.
134	Technical Specification - Indoor Wi-Fi Access Points (AP)	Please share the location drawings for Indoor/ Outdoor Wi-Fi Access Points (AP)	The Location of Wireless Access Devices shall be obtained from OEM by generating heat maps according to the make and model meeting the constarint of 100% Wi-Fi coverage.
135	Approved Make list	Please share the ELV & IT services make list	No change. Tender Conditions prevail.
136	MEP drawings	Please share the ELV & IT services drawings in Autocad format.	No change. Tender Conditions prevail.
137	HVAC DBR - DG Room Ventilation Supply 30CFM/KVA with Air washer	DG room Fresh air to be supplied with Air Washer. Kindly Confirm?	As per tender condition
138	HVAC DBR -Variable air volume boxes with digital display thermostat for individual room temperature control	Kindly Clarify Areas to be served with VAVs for individual room control ?	As per tender condition
139	HVAC DBR - Kitchen Exhaust shall be through wet scrubber based on exhaust air quantity shall be as per kitchen hood requirement	Kindly clarify Kitchen exhaust shall be through wet scrubber or dry scrubber	As per tender condition
140	HVAC DBR - Winter Heating/Monsoon Reheat shall be provided through Hot water generator in Hospital Medical College only in all areas	kindly provide winter heating KW for all areas with configuration.	As per tender condition
141	HVAC DBR - variable speed secondary chilled water pump (@2.4GPM/TR) – For Medical college, Hospital	We understand that there are separate secondary chw pumps for Med College & Hospital. No Plate heat Exchanger is provided. Kindly Confirm	As per tender condition

142	HVAC DBR - centrifugal chillers using R134a/1233zd refrigerant.	**Kindly note that Trane doesn't manufacture Centrifugal Chillers with R-134a refrigerant. However, Trane can offer R-514A chillers with a Global Warming Potential of less 2 to offer for your prestigious project.** Kindly note that R-514A is also included in National Building Code 2016 released on 15th March, 2016 and also approved by CPWD via office memorandum number. DG/AMENDMENT SPECIFICATIONS (E&M)/01 DATED 10.10.2017. These refrigerants are also approved in multiple government projects like, World Trade Centre (10,800 TR), WTC Nauroji Nagar (NBCC), Delhi; ITPO, Pragati Maidan (9475 TR), Delhi; 2400 Seater Auditorium (1900 TR), Kolkata; AIIMS, Kalyani(6,000 TR), AIIMS, Guntur (6,000 TR), AIIMS, Nagpur (6,000 TR), AIIMS, Delhi(1,275 TR), etc. . **Request you to kindly incorporate R-514A in your project and amend the clause to "Refrigerant of chiller shall be CFC free & low ODP,(preferably zero ODP) or as per OEM standards"..**	As per tender condition
143		Please mention the areas to be provided with pan humidifier?	As per tender condition
144		Kindly Specify Cold Storage AC Scope?	As per tender condition
145		kindly specify the mortuary AC Scope?	As per tender condition
146		Kindly specify the server room AC requirements?	As per tender condition
147	11.2_Statutory Approvals required - All Statutory approvals are in contractor scope	We presume the all other approvals other than AERB approval will be in contractor scope as this scope is taken care by Client.	As per tender condition
148	Special Packages _OT integration scope - INTEGRATION AND DATA MANAGEMENT SYSTEM-Scope of Works : Complete plan, design, supply construction, testing and commissioning of Integration and data management system for two (2) Modular Operating Theatre in accordance with the technical specifications.	We understand out of Total 9 Major OT's only 2 OT's are to be Integrated as per the DBR.	Out of Total 9 Modular OT's only 2 Modular OT's are to be Integrated as per the DBR
149	DBR-Special Services_Approved Make - General	We understand that in absence of the Approved list of Make for Medical and Other Special packages like Kitchen, LPG, We can propose makes for these systems.	As per tender condition
150	DBR-Special Services_MGPS system - General	Please share the Point Matrix for the MGPS gas outlets system for the better understanding of the requirement.	As per DBR , drawing and technical specification.
151	Drawings-Special Services _CSSD,Mortuary,Biomedical Waste,Kitchen,Laundry system - General-Drawings	Please provide services Drawings for the Medical and Special Packages for better understanding of the system requirement.	Bidder has to design and submit the shop drawings on the basis of DBR & technical specification.
152	Master Plan Drawing _MGPS system - General-Drawings	As per Master layout the location of Hospital building is opposite side of MGPS Plant Room/LMO Tank location with Road in between the two buildings. Thus MGPS piping needs to be carried through Trenches. It is not advisable to keep MGPS plant room far from Hospital Building. Please suggest.	As per tender condition
153	Green Building - Memorandum Sr. no 19 Green Building Rating	**Platinum Rated Green Building Certification** Clarification required on the type of rating system i.e. IGBC LEED or USGBC LEED. Along with the typology under NEW buildings or Healthcare facilities rating system. Kindly share feasibility checklist of available.	Platinum Rated Green Building certification as per norms
154		Clarification required on the scope of the project for registration under green rating system.(i.e., Phase wise or single registration for whole project)	Platinum Rated Green Building certification as per norms
155		Information required on Last 5 years rainfall data from IMD (Indian meteorological department) and under ground water table survey report. Or Kindly share Geo technical Soil and Under ground water survey report if available.	Topographical survey and other relevant details are in the scope of contractor. Indicative Topographical survey plan is attached for reference only. No claims whatsoever shall be considered on account of change in contour profile at any extent.
156		Clarification required on scope for E- charging stations and vehicle parking reservations in parking areas.	As per tender condition
157	Green Building - General	Clarification required on scope for waste management system organic non-organic type, it's scope and area demarcation for central waste collection and diversion on site to be specified.	As per tender condition

158	Green Building - General	Information required on existing trees, waterbodies, buildings and infrastructure survey data / report.	Tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
159		clarification required on tree cutting permission, forest clearance, Environmental clearance and EIA –Environmental Impact assessment report and its scope under.	As per tender condition
160		Information required on Topsoil fertility test report by ICAR - Indian council of Agricultural Research lab report if available.	As per tender condition
161		Renewable energy generation system and it's scope and area demarcation on site to be specified.	As per tender condition
162		Roof glazing / façade glass specification as per green building requirement to be provided.	As per tender condition
163	GCC Cl. No. 2 - Performance Guarantee - 3 No. of Performance Bank Guarantee each equivalent to 1% (One point two five percent only)	Kindly Correct figure in words	Cl. No. 2.1 under subhead "2 .0- Performance Guarantee" Section -3 (Clasues of Contract) of Vol.-II (GCC) - **Shall be read as follows :** Within 30 (Thirty) days from the date of issue of letter of Award or within such extended time as may be granted by HSCC in writing, the contractor shall submit to HSCC 3 nos. irrevocable performance bank guarantee in the form appended or Fixed Deposit Receipt (FDR) pledged in favour of HSCC, from any Nationalized Bank or all Commercial schedule bank, each equivalent to 1.00% **(one per cent only**) of the contract value thereby totaling to 3% of the contract value for the due and proper execution of the Contract. In case FDR of any bank is furnished by the contractor to HSCC as Performance Guarantee(s) and the bank is unable to make payment against the said FDR, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to HSCC to make good the deficit. All the Performance Guarantees shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of works gets extended, the contractor shall get the validity of
164	GCC Cl. No. 11.2 - Approvals required - Environment clearance (EIA) & tree cutting approvals are in Contractor's Scope	We request you to please consider Environment clearance (EIA) & tree cutting approvals are in Client's Scope	As per tender condition
165	Land Acquisition	Please confirm the land acquisition for site /plot has been done & there is no Hindrance for the site.	Land Acquisition for plot is available. However, tenderers are advised to inspect and examine the site including its surroundings and get the information by themselves before submitting their tender
166	Autocad drawing	Kindly provide the all Architectural drawings in Autocad format for quantification purpose.	Concept drawings in PDF format are available with tender
167	Contour Plan	Kindly provide the Contour Plan in Autocad Format.	Topographical survey and other relevant details are in the scope of contractor. Indicative Topographical survey plan is attached for reference only. No claims whatsoever shall be considered on account of change in contour profile at any extent.
168	GCC Cl. No. 4 - Mobilisation Advance - The mobilization advance bear simple interest at the rate 10% per annum	We request you to provide the interest free Mobilisation advance in single instalment	As per tender condition
169	GCC Cl. No. 4 - Mobilisation Advance - Bank Guarantee valid for contract period of an amount 1.1 times of the mobilization advance	Please allow us to submit reduced amount advance bank Guarantee on Quarterly Basis for balance work.	As per tender condition
170	GCC Cl. No. 17 - Stage Payment terms	Please confirm that contractor can submit RA Bill for the executed quantities in that particular month & payment will be done on pro-rata basis of stage payment statement.	As per tender condition

171	GCC Cl. No. 8 -Liquidated damages - total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work	We request to Maximum Liquidated damages should be limited to 5% of contract Value	As per tender condition
172	GCC Cl. No. 8 -Liquidated damages - Liquidated damages are 0.5% of contract Value per week of delay	We request to Liquidated damages should be 0.25% of contract Value per week of delay	As per tender condition
173	Affidavit - Form H - Point No. 4 - bidder shall fully comply with the DIPP's PPP-MII order no P-45021/2/2017/EII dated 15.06.17	Document is Not provided Kindly Share the Document	As per tender condition
174	Affidavit - Form H - Point No. 4 - Note: In case of procurement for value in excess of Rs 10 crore, above undertaking shall be provided from a statutory auditor	Please provide the undertaking format which is not provided in tender document	As per tender condition
175	GCC Cl. No. 5 -Secured Advance - Secured advance against non perishable Material	Kindly provide list of Non Perishable material for which secured advance is payable	As per tender condition
176	Drawings approval from Client - duration for approval from Client after drawing vetting from IIT is not mentioned	We request you to Please approved the Design & drawing within 10 days from submission	As per tender condition
177	List of approved Makes	Please confirm Contractor can choose any one from List of approved make at the time of execution.	As per tender condition
178	Future Blocks	Please provide clarity on Scope of Future blocks	Future expansion is not in the scope of work, however the columns, foundations and other relevant structural elements of Hospital block, Medical college block, Residences and Hostels shall be designed for future vertical expansion of additional two (02) floors.
179	Boundary wall / Compound wall	Please provide the Scope of Boundary wall/ compound wall for plot as well as individual buildings.	Boundary wall for the plot is not in the scope of work. Compound wall with gate are to be provided around the Director/Dean residence and Girl Hostels.
180	Annexure A - Schedule of Stage payment of works - External Development - Point No. 4-A-I & 4-B-xi - Both Points Includes Signage works i.e. duplication of signage works	Kindly remove signage works from Civil & architectural Works	As per tender condition
181	GCC Cl. No. 18 - Taxes & Duties - The contract price is inclusive of all taxes, duties, cess	Kindly provide the bifurcation / percentage of GST & Labour Cess (Basic Price + GST% + labour cess %)	As per tender condition
182	NIT - Period of Completion - Overall 21 Months	We request you to consider additional timeline for statutory approvals such as environmental Clearance, tree cutting etc,	As per tender condition
183	SCC Cl. 23 - A reasonably furnished of site office of area about 150 sqmt. having a sample room, A.C. meeting room, A.C. staff rooms with file storage facility along with computers & printers and its consumables, a telephone with STD facility, Fax Machine, internet and toilets & pantry and vehicle(s) 02 nos. (Swift Dzire or equivalent) complete with driver, fuel and consumables shall be provided for Executing agency/HSCC by the Contractor at his own cost for the **duration of the Contract.**	We presume Duration of contract mentioned under this clause means till virtual completion of Project i.e. 21 months from the date of LOI. Kindly confirm	As per tender condition
184	Land for Labour Huts/ Site office & storage accomodation - The contractor may construct temporary office, storage, accommodation and labour huts within the site premises where the space is available at site…..	Request you to provide demarcated areas for labour accomodation, stores, batching plant, QAQC lab, stacking yard and offices and other establishments within the site.	As per tender condition
185	Approvals Required - The Contractor shall obtain all pre & post construction clearances/approvals from Environmental Authority, Municipal and other relevant statutory authorities/local bodies including Water supply agencies concerned, Electric Supply and inspectorate…The approvals shall include the following in addition to any other approval which may be required for the project. □ Construction Permit if required □ NOC from Chief Fire Officer □ NOC from Lift Inspector where lifts are provided □ Occupancy certificate □ Platinum Rated Green Building Certification Minimum for the building	We persume that the necessary permits, licenses, registration and other Environment / Planning related clearances required for construction of this work will be arranged by you. Please confirm	As per tender condition
186	Built up area - General	We request you to provide floor wise built up area statement of each building.	Area shall be as per Page no. 16 and 17 of Architectural Design Basis Report (DBR)
187	CAD Drawings - General	Request to provide CAD files of the PDF drawings provided.	Concept drawings in PDF format are available with tender
188	Date of commencement of work - The date of start of contract shall be reckoned from 10 days after the date of issue of letter of Award.	We request you to consider date of commencement as 15 days after the date of issue of letter of Award or site handing over or environment approval, whichever is later	As per tender condition

189	Milestone 1. Submission and approval of GFC drawings for Priority buildings (Architecture and Structure Drawings) duly vetted by IIT/NIT for Structure Drawings	Since this is a Design EPC tender, we request you to provide more time for design stage and submission and approval of GFC drawings.	As per tender condition
190	Milestone Table	We understand the given milestones are tentative and shall be finalised post award of work, keeping the overall completion duration same as 21 Months.	As per tender condition
191	Handing Over & Clearing of Site - The information about the public utilities (whether over ground or underground) like electrical/ telephone/ water supply lines, OFC Cables, open drain etc. is the responsibility of contractor to ascertain the utilities that are to be affected by the works through the site investigation....	We request you to provide the layout of the existing utilities.	As per tender condition
192	DEFECTS LIABILITY PERIOD - The contractor shall be responsible for the rectification of defects in the works for a period sixty (60) months from the date of taking over of the works by the HSCC or clients whichever is later. Any defects discovered and brought to the notice of the contractor forthwith shall be attended to and rectified by him at his own cost and expense.	We accept to rectify any genuine defects attributable to us pertaining to our scope of work and notified within the defects Liability Period from the date of completion of Individual Buildings, at our cost. The maintenance and upkeep of the structure against damages, losses, etc. is Employer responsibility. We also request to consider the defects Liability Period as 2 years instead of 5 years.	As per tender condition
193	Compensation for delay of work @ 0.5% per week subjected to maximum limit of 10% of contract value.	We request to consider the compensation for delay of work @ 0.25% per week subjected to maximum limit of 5% of contract value.	As per tender condition
194	Payments - It is clearly agreed and understood by the Contractor that notwithstanding anything to the contrary that may be stated in the agreement between HSCC and the contractor; the contractor shall become entitled to payment only after HSCC has received the corresponding payment(s) from the client/Owner for the work done by the contractor.	We execute the work based on the contract between us and HSCC. We request you to release the payment for the workdone as per the monthly interim bill raised as per the payment terms (clause no 23.1)stated in SCC page 14 of 22 irrespective of corresponding payments from the Client and HSCC.	As per tender condition
195	Payments - The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/ adjustment of advances for material collected, if any, since the last such payment is less than (a) Rs.5 Crores for 1st three R/A Bills and (b) Rs.15 crores for all intermediate bills (except 1st three R/A Bills and the final Bill),	Since the initial interim bills for the fisrt three month and last three months may be lesser than 5 Crores. Kindly consider no minimum bill value is applicable for first 3 months and last 3 months.	As per tender condition
196	WORK ON SUNDAYS, HOLIDAYS AND DURING NIGHT - For carrying out work on Sunday and Holidays or during night, thecontractor will approach the Engineer-in-Charge or his representative atleast two days in advance and obtain his permission. The Engineer-in-Charge at his discretion can refuse such permission. The contractor shall have no claimon this account whatsoever.	Duration for completion of present scope of work provided is very stringent. We have planned works taking into account working round the clock including on Sundays and Holidays. We request to provide your cooperation without any delay.	As per tender condition
197	WATER AND ELECTRICITY - The contractor shall make his own arrangement for Water & Electrical Power for construction and other purposes at his own cost and pay requisite electricity and water charges. The contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply	If boring is permissible, we shall be allowed to dig Bore wells for Construction water without any additional cost. Distribution within the site is in our scope	As per tender condition
198	Format for Power of Attorney for Authorized Signatory - ..... Bid for the Project and submission of all documents and providing information / responses to __**1**___ _____, representing us in all matters before __**2**__ _____, and generally dealing with ____**3**_____ in all matters in connection with our proposal for the said Project.	We request you to kindly provide us details to be filled in blank spaces as mentioned 1, 2 & 3.	As per tender condition

199	Proforma of Bank Guarantee in lieu of EMD (Tender Bond) - General	We request you to kindly confirm addition of Notwithstanding clause as given below in Bank Guarantee towards EMD (Tender Bond). These are standard bank clauses for issuance of bank guarantee from any bank. Notwithstanding anything to the contrary contained hereinabove: - 1. Our Liability under this Bank Guarantees shall not exceed …….. 2. The Bank Guarantee shall be valid up to …… .; and 3. We are liable to pay up to the guarantee amount only and only if we receive from you a written claim or demand not later than dd/mm/yyyy ---------- , at our Branch, …… All your rights as well as our liability under this bank guarantee shall stand extinguished unless a written claim or demand is made under this guarantee not later than ----------	As per tender condition
200	2.0 Minimum Eligibility Criteria: Page No.2 (III) Additional qualifying criteria:- The bidder should have successfully completed one work (either part of (I) or (II) above or a separate one) as mentioned below during the last 7 years ending previous day of last date of submission of tenders: "Hospital Project of minimum capacity of 500 beds"	(III) Additional qualifying criteria:- should have successfully completed one work (either part of (I) or (II) above or a separate one) as mentioned below during the last 7 years ending previous day of last date of submission of tenders: "Hospital Project of minimum capacity of 300 beds"	As per tender condition
201	SPEC Page E-23 R0 ACTIVE HARMONIC FILTER - AHF Shall have 3 level topology (12 IGBTs) to ensure low losses & higher quality voltage output (ripple should be very low).	All the approved OEMs are not offering for 3 Level topology. Hence please confirm shall we consider 2 Level topology (6 IGBT) as per approved OEMs offering since Level 2 aslo keeps harmonics levels within IEC limits.	Standard design of manufacturer as per approved make list is acceptable.
202	SPEC Page E-53 R0 BUS TRUNKING/ RISING MAINS - Standard of Compliance IS: 8623/ 1993 I & II and IEC 60439/ I & II.	Latest Standard for Sandwitch Busbas trunking is IEC 61430-I &VI	As per latest Standard for Sandwitch Busbas trunking is IEC 61430-I &VI
203	SPEC Page E-53 R0 BUS TRUNKING/ RISING MAINS - Sandwich" construction and the conductors will be individually insulated with halogen free, fire retardant class–B or better insulation.	Class F insulation has better temprature withstand of 155 degree C whereas class B suitable for only 135 degree C. Kindly consider Class F insutation for better safety.	Class F insullation to be consider.
204	List of approved make- HSCC/ HVAC Page 1 LIST OF APPROVED MAKES - HVAC WORKS - Variable Frequency Drive	List of makes for VFD is missing in the make list.	As per tender condition
205		You are requested to provide the Audocad Drawing for tender working purpose.	Concept drawings in PDF format are available with tender
206	07_Technical_Specs - IS:8623	Please specify Main LT, Main LT Panel/ APFC panels / Active Harmonic Filter (AHF), Main AC panels shall be Type tested as per IEC61439 1 & 2 and rest all panels shall be IS8623/IEC60439, Kindly Confirm	As per tender condition
207	06_Design_Basis_Report_DBR_and_Schedule_of_Finishes - ELECTRICAL, ELV& IBMS DBR Dumb Weighter 0.5MPS 2 Nos (1200 x 1500) (B+G+6)	The capacity of Dumb Weighter is not mentioned, Kindly provide.	Dumb weighter capacity is 250 Kg
208	07_Technical_Specs - 8.00 BUS TRUNKING/ RISING MAINS 8.4 Construction: The enclosure will be made from 16 SWG GI/ CRCA sheet steel powder coated of approved shade.	The enclosure is manufactured as per standard practice of manufacturer i.e Al/GI/CRCA etc, please allow the same, Kindly Confirm.	Standard design of manufacturer as per approved make list is acceptable.
209	Compliances & Data Sheet	We shall submit all the technical compliance / Equipment data sheet where ever mentioned in the tender after award of work before supply of material , Kindly Confirm.	Accepted as per tender condition
210	Drawings & SLD	We request you to provide the all Drawings & SLD(HT &LT Panels) in autocad format. Kindly Confirm.	As per comprehensive design by EPC contractor based on DBR & Concept drawings
211	TYPE TEST	We shall submit type test report for same or higher rating equipment conducted earlier on any other equipment, Kindly Confirm.	Accepted as per tender condition
212	Order of Precedence	If there is any discrepancy between the DBR, Technical Specification & Drawings, please confirm the order of precedence of documents.	As per tender conditions
213	HT VCB Panel Board/ RMU - Siemens / L&T / ABB / Schneider	We request you to approve System Integrator / Channel parters of the approved makes also, Kindly Approve.	As per tender conditions
214	Main LT Panel / APFC Panels / Active Harmonic Filter (AHF) - Siemens / L&T / ABB / Schneider / Legrand	We request you to approve System Integrator / Channel parters of the approved makes also, Kindly Approve.	As per tender conditions
215	Automatic Battery Charger - Max Power / Amar Raja/Chabbi Electrical/ Statcom Power	We request you to approve Volstat make also, Kindly Approve.	No change. Shall be as per tender conditions
216	Moulded Case Circuit Breaker - L &T – (D sine/DL) / Siemens-VA/ ABB-TMA / Schneider – (NSX) /Legrand-DPX/ GE- Entelliguard	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
217	MCB distribution Boards - L &T / Hager / Legrand / Siemens / Schneider / GE / ABB-Itus / Philips / Havells	Kindly remove model ITUS for ABB make DB as for other makes model is not specified. You are requested to approve Anchor by Panasonic make also, Kindly remove & Approve.	ABB-Itus to be read as ABB

218	RCCB / MCB - L & T / Legrand-DX3/ Siemens / Schenider –Acti 9 / GE / Hager / Philips / Havells / ABB-SB	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
219	Copper Control cable - CCI / Universal-Unistar / Finolex / Rallison / Polycab / Havells / RR Kabel / KEI	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
220	LED Light fitting & Fixture - Philips / GE / Crompton / Wipro / Bajaj / Havells	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
221	PVC conduit & Accessories (ISI Marked) - Supreme / Prince / Finolex / BEC / Precision	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
222	Solar Power system (PV Cell) - TATA Power Solar, CEL, BHEL, BEL / Inter Solar	You are requested to approve MNRE approved vendor, Kindly approve.	No change. Shall be as per tender conditions
223	Copper conductor PVC insulated wires, Co-axial, Telephone wires & LV cables - L&T / Havells / Rallision / RR Kabel / Finolex / Skytone / Polycab / KEI	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
224	Metal clad Socket outlets With boxes - L&T / Hager / Siemens / Schneider / ABB / Legrand	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
225	UPS system- Schneider- APC / Eaton Power ware / Vertiv / Numeric / Socomec	We request you to approve ABB make also, Kindly Approve.	No change. Shall be as per tender conditions
226	Ceiling fans - Crompton Greaves/ Orient/ Usha/ Havells / Bajaj	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
227	BMS, field devices etc - Honeywell-Trend / L&T-Atmos / Siemens / Schneider	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
228	Lighting Control - Lutron / Philips / ABB / Schneider / Legrand / Honeywell	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
229	CAT 6 UTP, CAT 6A UTP/STP, Optical Fibrecable - Molex / Systimax / Panduit / Belden	We request you to approve Anchor by Panasonic make also, Kindly Approve.	No change. Shall be as per tender conditions
230	IT Infrastructure - HMIS, PACS, LAN & Wi-Fi System, QMS, LMS, EMS and Computer Hardware	We request you to provide us approved make of the IT Infrastructured items as the same is not provided with the Tender Documents, Kindly provide.	As per tender conditions
231	Approved Makes - Audio Visual System	We request you to provide makes for AV System, Kindly Provide.	As per tender conditions

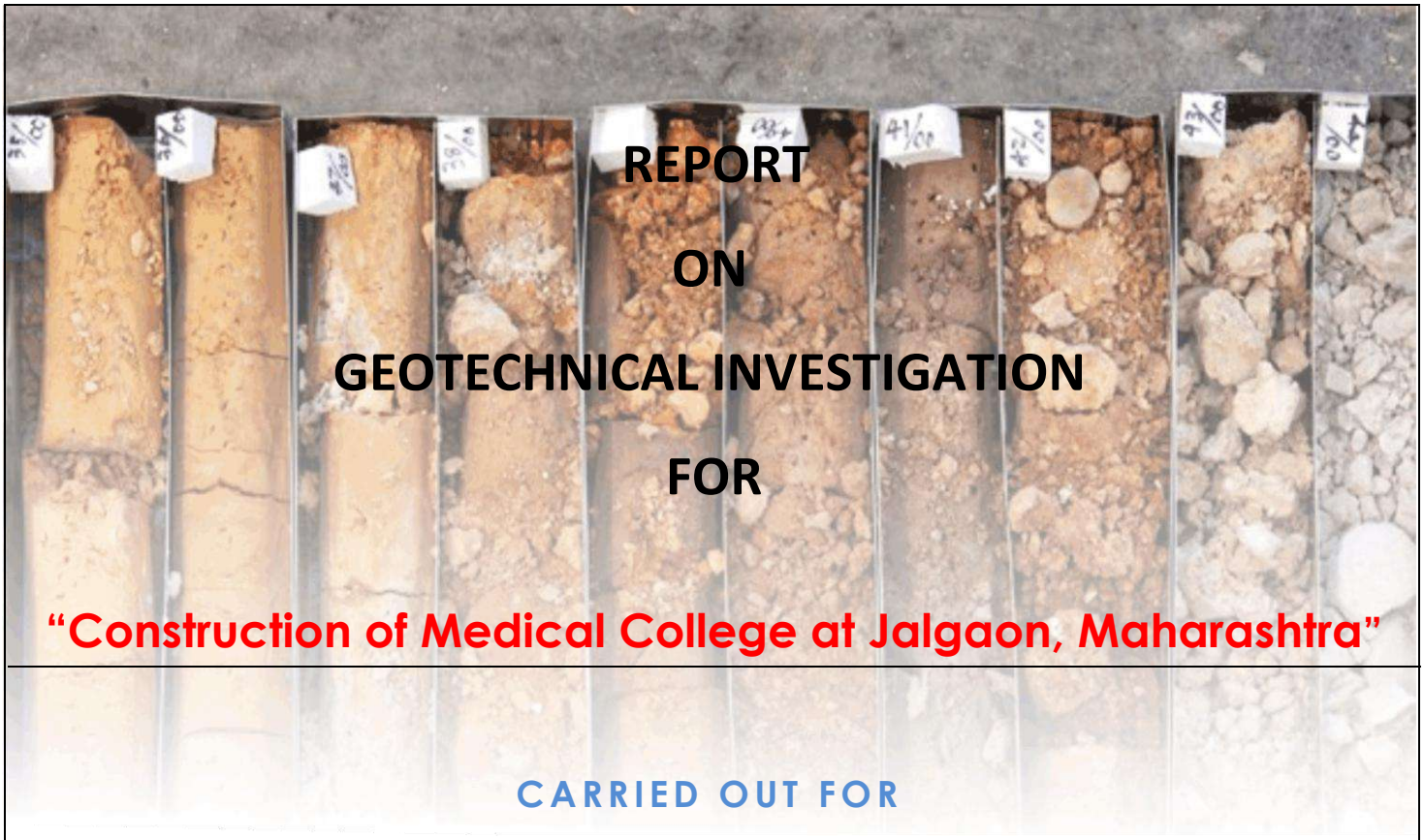
Project :- Construction of Government Medical Collage & Hospital at Chincholi Jalgaon , Maharashtra					
Client :- Medical Education and Drugs Department, Maharashtra					
SCHEDULE OF STAGE PAYMENT					
S/N	Particulars	Break-up of Total % Payable Cost			% of Payable Cost
		Item	Subgroup		
1	**HOSPITAL COMPLEX: Planning, Designing, and Construction on EPC Basis of Hospital Complex including Basement, Service Block (1&2), Mortuary with support services & allied facilities by incorporating stipulated specifications, all services including handing over complete as per scope of work and directions of Engineer In charge**				
1-A	**Approved Drawing & Design Deliverables Good for the construction**				
1-A-i	Civil Architectural, Structure, flooring & finishing & sinage works	50.00%	1.00%		
1-A-ii	MEP & Other Services drawing & Design Deliverables	35.00%			
1-A-iii	IT & Special Services drawing & Design Deliverables	15.00%			
1-B	**Construction: Civil Works**				
1-B-1	**Foundation Work**:On completion of foundation and substructure up to plinth level	12.00%	22.00%		
1-B-2	**Super Structure RCC Work** of the entire building from ground floor to stair roof, overhead tank, LMR etc.	37.00%			
1-B-3	Walls & Partion :Brickwork & partitioning work including brick work	6.00%			
1-B-4	Doors & Windows i/c windows to meet Acoustical requirement.	6.00%			
1-B-5	Flooring, skirting, dado, wall lining work	15.00%			
1-B-6	False Ceiling , terracing , water prooofing etc.	8.00%			
1-B-7	Finishing work :Internal & External Plaster & Painting	5.00%			
1-B-8	External Structure ,Glazing, GRC Jali, External Cladding etc	8.00%			
1-B-9	SS/MS Railing /Grills/domes etc	1.50%			
1-B-10	Other Works:Signages (Internal & External),Internal Courtyard – Hard landscaping	1.50%			
1-C	**SERVICES-MEP**				
1-C-1	Fire Alarm System & Public Address System, CCTV	8.00%	5.00%		
1-C-2	Lifts	18.00%			
1-C-3	**Internal Electrical works**				
1-C-3-i	MCB ,DB, Conduiting, Wiring, switch socket and aceessories etc	18.00%			
1-C-3-ii	Submain , Internal LT cabling, cable tray and other acessories	12.00%			
1-C-3-iii	Rising Mains , MV panels , floor panels ,metering panels & earthing etc.	18.00%			
1-C-3-iv	Light Fixtures, fans and acessories & IBMS etc.	26.00%			
1-C-4	**Fire fighting System works**				
1-C-4-i	Wet Riser System /Down Comer System	35.00%	0.50%	**42%**	
1-C-4-ii	Automatic Sprinkler System	25.00%			
1-C-4-iii	Fire Extinguishers	10.00%			
1-C-4-iv	Fire Hydrant Installation as per DBR/Specification	30.00%			
1-C-5	**Internal PHE works** including water supply and sewarage system including fittings and fixtures				
1-C-5-i	Laying & Fixing of Internal water Supply & Seweargae Pipe Lines	35.00%	1.00%		
1-C-5-ii	Installation of Fitting & fixtures	65.00%			

S/N	Particulars	Break-up of Total % Payable Cost		% of Payable Cost
		Item	Subgroup	
1-C-6	**HVAC -Works**			
1-C-6-i	Highside Equipment	25.00%	5.50%	
1-C-6-ii	Low Side Equipment	20.00%		
1-C-6-iii	Piping & Fittings	12.00%		
1-C-6-iv	Ducting with Insulation	16.00%		
1-C-6-v	Air registers & Duct Accessories	12.00%		
1-C-6-vi	HVAC Electrical works	15.00%		
1-D	**IT SERVICES**			
1-D-i	HMIS	15.00%	2.00%	
1-D-ii	PACS	10.00%		
1-D-iii	Server Hardware & System Software	14.00%		
1-D-iv	Lan & Wifi Components	30.00%		
1-D-v	Computer Hardware	10.00%		
1-D-vi	QMS	8.00%		
1-D-vii	Education Management System	4.00%		
1-D-viii	5 years Network & Application Support Engineer	9.00%		
1-E	**Special Services**			
1-E-i	Modular & Minor OT	22.00%	5.00%	
1-E-ii	Integration & Data Management System	5.00%		
1-E-iii	CSSD	18.00%		
1-E-iv	Laundary	8.00%		
1-E-v	MGMS	25.00%		
1-E-vi	Kitchen	5.00%		
1-E-vii	PTTS	10.00%		
1-E-viii	BMWMS	5.00%		
1-E-ix	Mortuary	2.00%		
2	**MEDICAL COMPLEX : Planning, Designing, and Construction on EPC Basis of Medical Complex including Medical College, Animal Hold, Sports Complex, Dinning-1 & 2 with support services & allied facilities by incorporating stipulated specifications, all services including handing over complete as per scope of work and directions of Engineer In charge**			
2-A	Approved Drawing & Design Deliverables Good for the construction			
2-A-i	Civil Architectural ,Structure, flooring &finishing & sinage works	60.00%	0.25%	
2-A-ii	MEP & Other Services drawing & Design Deliverables	35.00%		
2-A-iii	IT & Special Services drawing & Design Deliverables	5.00%		
2-B	**Construction: Civil Works**			
2-B-i	**Foundation Work**:On completion of foundation and substructure up to plinth level	12.00%	10.00%	
2-B-ii	**Super Structure RCC Work** of the entire building from ground floor to stair roof, overhead tank, LMR etc.	37.00%		
2-B-iii	**Walls & Partion** :Brickwork & partitioning work including brick work	6.00%		
2-B-iv	**Doors & Windows** i/c windows to meet Acoustical requirement.	6.00%		
2-B-v	Flooring, skirting, dado, wall lining work	15.00%		
2-B-vi	False Ceiling , terracing , water prooofing etc.	8.00%		
2-B-vii	**Finishing work** :Internal & External Plaster & Painting	5.00%		
2-B-viii	External Structure ,Glazing, GRC Jali, External Cladding etc	8.00%		
2-B-ix	SS/MS Railing /Grills/domes etc	1.50%		
2-B-x	Other Works:Signages (Internal & External),Internal Courtyard – Hard landscaping	1.50%		
2-C	**SERVICES-MEP**			

S/N	Particulars	Break-up of Total % Payable Cost			% of Payable Cost
		Item	Subgroup		
2-C-1	**Internal Electrical Works**				
2-C-1-i	Fire Alarm System & Public Address System, CCTV	8.00%	3.00%	**17%**	
2-C-1-ii	Lifts	18.00%			
2-C-1-iii	Internal Electrical works				
2-C-1-iv	MCB, DB, Conduiting, Wiring, switch socket and aceessories etc	18.00%			
2-C-1-v	Submain , Internal LT cabling, cable tray and other acessories	12.00%			
2-C-1-vi	Rising Mains , MV panels , floor panels ,metering panels & earthing etc.	18.00%			
2-C-1-vii	Light Fixtures, fans and acessories etc.	26.00%			
2-C-2	**Fire fighting System works**				
2-C-2-i	Wet Riser System /Down Comer System	35.00%	0.50%		
2-C-2-ii	Automatic Sprinkler System	25.00%			
C-2-iii	Fire Extinguishers	10.00%			
2-C-2-iv	Fire Hydrant Installation as per DBR/Specification	30.00%			
2-C-3	**PHE Works: Internal PHE works including water supply and sewarage system including fittings and fixtures**				**90%**
2-C-3-i	Laying & Fixing of Internal water Supply & Seweargae Pipe Lines	35.00%	1.25%		
2-C-3-ii	Installation of Fitting & fixtures	65.00%			
2-C-4	**HVAC -Works**				
2-C-4-i	Highside Equipment	25.00%	1.50%		
2-C-4-ii	Low Side Equipment	20.00%			
2-C-4-iii	Piping & Fittings	12.00%			
2-C-4-iv	Ducting with Insulation	16.00%			
2-C-4-v	Air registers & Duct Accessories	12.00%			
2-C-4-vi	HVAC Electrical works	15.00%			
2-D	**IT SERVICES**				
2-D-i	Server Hardware & System Software	20.00%	0.50%		
2-D-ii	Lan & Wifi Components	26.00%			
2-D-iii	Computer Hardware	24.00%			
2-D-iv	LMS	15.00%			
2-D-v	Education Management System	15.00%			
3	**Residential Complex: Planning, Designing, and Construction on EPC Basis of Residential Complex including Boys Hostel-I,II&III, Girls Hostel-I&II, Nurses Hostel, Resident Hostel-I &II, Director Bunglow, Type-II, Type-III, Type-IV, Type-V & class-4 Residences with support services & allied facilities by incorporating stipulated specifications, all services including handing over complete as per scope of work and directions of Engineer In charge**				
3-A	Approved Drawing & Design Deliverables Good for the construction				
3-A-i	Civil Architectural ,Structure, flooring &finishing & sinage works	50.00%	0.50%		
3-A-ii	MEP & Other Services drawing & Design Deliverables	35.00%			
3-A-iii	IT & Special Services drawing & Design Deliverables	15.00%			
3-B	**Construction: Civil Works**				
3-B-i	**Foundation Work**:On completion of foundation and substructure up to plinth level	12.00%	13.50%		
3-B-ii	**Super Structure RCC Work** of the entire building from ground floor to stair roof, overhead tank, LMR etc.	37.00%			
3-B-iii	Walls & Partion :Brickwork & partitioning work including brick work	6.00%			
3-B-iv	Doors & Windows i/c windows to meet Acoustical requirement.	6.00%			
3-B-v	Flooring, skirting, dado, wall lining work	15.00%			

S/N	Particulars	Break-up of Total % Payable Cost			% of Payable Cost
		Item	Subgroup		
3-B-vi	False Ceiling , terracing , water prooofing etc.	8.00%			
3-B-vii	Finishing work :Internal & External Plaster & Painting	5.00%			
3-B-viii	External Structure ,Glazing, GRC Jali, External Cladding etc	8.00%			
3-B-ix	SS/MS Railing /Grills/domes etc	1.50%			
3-B-x	Other Works:Signages (Internal & External), Internal Courtyard – Hard landscaping	1.50%		**19%**	
3-C	**SERVICES-MEP**				
3-C-E-i	**Electrical Works (Internal)**				
3-C-E-i	Fire Alarm System & Public Address System, CCTV	8.00%			
3-C-E-i	Lifts	18.00%			
3-C-E-i	Internal Electrical works				
3-C-E-i	MCB, DB, Conduiting, Wiring, switch socket and aceessories etc	18.00%	4.00%		
3-C-E-i	Submain , Internal LT cabling, cable tray and other acessories	12.00%			
3-C-E-i	Rising Mains , MV panels , floor panels ,metering panels & earthing etc.	18.00%			
3-C-E-i	Light Fixtures, fans and acessories etc.	26.00%			
3-C-FF	**Fire fighting System works**				
3-C-FF-i	Wet Riser System /Down Comer System	65.00%	0.15%		
3-C-FF-ii	Fire Extenguisher	35.00%			
3-C-PHE	**Internal PHE works including water supply and sewarage system including fittings and fixtures**				
3-C-PHE	Laying & Fixing of Internal water Supply & Seweargae Pipe Lines	35.00%	0.75%		
3-C-PHE	Installation of Fitting & fixtures	65.00%			
3-D	**IT SERVICES**				
3-D-i	Lan & Wifi Components	100.00%	0.10%		
4	**External Development: Planning, Designing, and Construction on EPC Basis of External Development including various infrastructure required and as specified in the approved Master plan including Roads Street Lighting, Tree Plantation Horticulutre, Landscaping etc. with support services & allied facilities by incorporating stipulated specifications, all services including handing over complete as per scope of work and directions of Engineer In charge**				
	Infrstraucture Work :				
4-A	Approved Drawing & Design Deliverables Good for the construction				
4-A-i	Civil Architectural ,Structure, flooring &finishing & sinage works	50.00%	0.50%		
4-A-ii	MEP & Other Services drawing & Design Deliverables	35.00%			
4-A-iii	IT & Special Services drawing & Design Deliverables	15.00%			
4-B	Construction				
4-B-ii	On completion of foundation and substructure up to plinth level	6.00%			
4-B-iii	RCC works up to terrace including mumty & machine room	10.00%			
4-B-iv	Walls & Partion	1.00%			
4-B-v	Doors & Windows	0.50%			
4-B-vi	Flooring,Skirting & Dado	2.00%			
4-B-vii	False Ceiling, terracing, water prooofing etc.	2.00%			
4-B-viii	Plaster & Painting	1.50%	5.50%		
4-B-ix	External Cladding & Structure glazing	1.00%			
4-B-x	Railing /Grills/domes etc	0.50%			
4-B-xi	Signage	0.50%			
4-B-x	Horticulture Operations including 30cm earth filing , grassing , tree plantations/shurbs and potted Plants etc.	5.00%			
4-B-xi	Roads, Footpaths & Parking	70.00%			
4-C	**External Electrical :**				
4-C-i	HT substatsion	30.00%			

S/N	Particulars	Break-up of Total % Payable Cost			% of Payable Cost
		Item	Subgroup		
4-C-ii	Main LT Panels	16.00%			
4-C-iii	DG-Set & accessories	12.00%			
4-C-iv	MV panels	8.00%			
4-C-v	MCB Distribution Boards	2.00%			
4-C-vi	Point Wiring	2.00%			
4-C-vii	Switch, Socket, PVC Box, Grid Plate,Conduit,	1.00%			
4-C-viii	Sub Main & Wires	1.00%			
4-C-ix	Fans & Exhaust Fan	1.00%	4.00%	**12%**	
4-C-x	Light Fixtures etc.	1.00%			
4-C-xi	CCTV Surveillance System	1.00%			
4-C-xii	LT cables	12.00%			
4-C-xiii	Earthing	2.00%			
4-C-xiv	Solar Photvoltaic Power generation	4.00%			
4-C-xv	External Lighting	6.00%			
4-C-xvi	MATV, Fire alarm & Public address System	1.00%			
4-D	**External PHE works**				
4-D-i	Underground Tank	12.00%			
4-D-ii	Domestic Terrace Tank	9.00%			
4-D-iii	Fire Terrace Tank	1.00%			
4-D-iv	Solar Hot water System	3.00%			
4-D-v	Sewage & Effluent Treatment Plant (STP & ETP)	14.00%			
4-D-vi	Borewell	1.00%			
4-D-vii	Hydropneumatic system/WTP/Softner/RO/water cooler	1.00%	2.00%		
4-D-Vii	Water curtain /Gas flooding system	2.00%			
4-D-viii	External Sewer & Drainage	9.00%			
4-D-ix	Filter Water Supply (Distribution Lines & Perpherial Grid)	14.00%			
4-D-x	Unfiltered Water Supply Distribution Lines	9.00%			
4-D-xi	Storm Water Drainage pipelines	11.00%			
4-D-xii	Rain water harvesting	14.00%			
5	**Testing, Commissioning & Handover**				
5-A	Testing & Commissioning	50.00%	5.00%	**10%**	**10%**
5-B	Handing over	50.00%	5.00%		
			100%	**100%**	**100%**
For Equipment 75% is payable on supply and 25% on installation.					



REPORT

ON

GEOTECHNICAL INVESTIGATION

FOR

"Construction of Medical College at Jalgaon, Maharashtra"

CARRIED OUT FOR

HSCC India Limited

SUBMITTED BY

BECQUEREL INDUSTRIES PVT. LTD.
Testing & Calibration Laboratory

Becquerel Industries Pvt. Ltd. (BIPL)
NABL Accredited Laboratory
H/O: 3, New Trimurti Co.Op. Hsg Society, Ingole Nagar,
Wardha Road, Nagpur - 440005.MAHARASHTRA, INDIA.
H/O: +91 9822 565 879 | Fax. :0712-228666
Lab Add.: A-36, MIDC Industrial Area, Butibori, Nagpur - 441108
Lab Phone: (07104) 265587 | +91 9689 909 304
E-mail: spectro@biplndt.com, Web Site: www.biplndt.in

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REPORT

Report No. 1507
Report Date. 15.07.2022

CUSTOMER	:	**HSCC India Limited**	ADDRESS	:	205,Eastend Plaza, Plot No. 4 D.D.A.-L.S.C., Centre-II, Vasundhara Enclave, Delhi
CUSTOMER REFERENCE No.	:	HSCC/D&E/Jalgaon/Geotech_ Survey/WO/2022 Dt. 29.04.2022	SAMPLED BY	:	Becquerel Industries Pvt. Ltd.
PROJECT	:	**"Construction of Medical College at Jalgaon, Maharashtra"**	MATERIAL IDENTIFICATION	:	SPT , Soil & Rock From 22 Locations
DATE OF FIELD TEST	:	13.06.2022 to 20.06.2022	TEST PERFORMED	:	SPT & Lab Test on Soil samples.
DATE OF LAB TEST	:	From 27.06.2022 onwards	METHOD OF TEST	:	As Per Indian Standard

SUB SOIL EXPLORATION & ANALYSIS REPORT

1.0 OBJECT

Conducting detailed Subsoil Investigation for proposed **"Construction of Medical College at Jalgaon, Maharashtra"** The present report consists of detailed engineering services carried out at the above mention site location.

2.0 INTRODUCTION

2.1 PROJECT DESCRIPTION

Exploratory drilling and other geotechnical instigations work is carried out for "**HSCC India Limited**" for the Project of **"Construction of Medical College at Jalgaon, Maharashtra".** Investigation was intended to evaluate bearing capacity of available soil/rock stratum and other physical parameters necessary for the design of suitable foundation for proposed construction. The scope of work includes in this project is explain briefly below. The main text of the report includes description of field explorations, laboratory testing, subsurface conditions, conclusions and recommendations based upon review of existing data, engineering studies and analysis. M/s. **Becquerel Industries Pvt. Ltd.** has been appointed by **HSCC India Limited** for carrying out geotechnical investigation at the project site.

3.0 SCOPE OF WORK

The overall scope of work was to investigate the stratigarphy at the site and to develop preliminary geotechnical recommendations for the initial planning to accomplished these purposes, the work is being conducted in the following phases.

1) Drilling 22 boreholes to specified depth in order to evaluate the stratigarphy at the site, and to collect soil samples for laboratory testing's.
2) Testing selected soil and groundwater samples in the laboratory to determine index and engineering properties; and
3) Analyzing all the field and laboratory data to develop geotechnical recommendations for foundation design and construction.

SR. No	STRUCTURE /LOCATION/ CHAINAGE	B.H No	CO-ORDINATES		REDUCED LEVEL (M)	DEPTH OF G.W.T (M)	TERMINATION/TEST DEPTH (M)
			EASTING	NORTHING			
1	Propose Medical College	BH-1	56°54'86.63"	231 ° 37'03.76"	283	NE	10.50
2	Medical College Block	BH-2	56 ° 54'75.64"	231 ° 37'79.18"	282	6.00	10.50
3	Proposed Medical College Block	BH-3	56 ° 54'26.74"	231 ° 37'26.92"	291	6.00	10.50
4	Proposed Hospital Block	BH-4	56 ° 54'49.66"	231 ° 39'81.80"	285	5.00	13.50
5	Proposed Hospital Block	BH-5	56 ° 54'59.84"	231 ° 39'22.02"	271	4.00	13.50
6	Proposed Hospital Block	BH-6	56 ° 55'18.30"	231 ° 39'40.52"	295	4.00	13.50
7	Indore Sports Block	BH-7	56 ° 52'85.93"	231 ° 37'49.64"	301	6.00	6.00
8	Near Mortuary Autopsy Block	BH-8	56 ° 53'91.08"	231 ° 39'30.85"	305	NE	6.00
9	Transformer Generator Space	BH-9	56 ° 56'52.57"	231 ° 38'94.67"	304	5.00	6.00
10	Back Side Indore Sports Block	BH-10	56 ° 51'81.86"	231 ° 36'51.72"	294	6.00	6.00
11	BIR RESO	BH 11	56 ° 52'56.1033"	231 ° 40'04.344"		NE	9.0
12	Near Type 2	BH 12	56 ° 51'38.034"	231 ° 39'73.369"		NE	9.0
13	Near Type 5	BH 13	56 ° 52'26.3537"	231 ° 40'89.59"		NE	9.0

14	Between Type -3 & Resident Hostel 1	BH 14	56 ° 50'47.6612"	231 ° 40'46.973"		NE	9.0
15	Between Resident & Hostel 1 & 2	BH 15	56 ° 50'99.2837"	231 ° 40'88.159"		NE	9.0
16	In Front of Dinning Hall	BH 16	56 ° 51'59.6731"	231 ° 41'25.092"		NE	9.0
17	In between Girls Hostel 1 & 2	BH 17	56 ° 49'41.8858"	231 ° 41'30.746"		NE	9.0
18	In between Interns and Nurse Hostel	BH 18	56 ° 50'30.4611"	231 ° 42'28.871"		NE	9.0
19	Near Interns Boys Hostel	BH 19	56 ° 49'59.7781"	231 ° 42'53.488"		NE	9.0
20	Near Boys Hostel 2	BH 20	56 ° 48'94.1299"	231 ° 43'09.772"		NE	9.0
21	In between Boys Hostel 1 & 2	BH 21	56 ° 49'87.0412"	231 ° 43'55.442"		NE	9.0
22	Future Construction	BH 22	56 ° 49'04.0026"	231 ° 43'76.68"		NE	9.0

4.0 METHODOLOGY OF FIELD INVESTIGATION

The investigation was planned to obtain the subsurface stratification in the proposed project site and collect soil samples for laboratory testing to determine the engineering properties such as shear strength, along with basic engineering classification of the subsurface stratum to arrive at the foundation design parameters.

4.1 BOREHOLES

For Geotechnical investigation work, drilling rig was installed at the specified borehole location. The boreholes were progressed using Rotary Drilling machines. Boring was advanced at selected / specified borehole locations. This rig is coupled with diesel engine and has tripod and all drilling accessories. Drilling rig deployed is suitable for and has arrangement for driving as well as extracting casing, boring drilling by mud circulation method, conducting Standard Penetration Test (SPT) collection of Undisturbed Soil Sample (UDS) and Disturbed or wash Soil Sample (DS). Fig.1 illustrates a standard rotary drilling rig

The following precautions were taken;

1) Diameter of Borehole was 150mm in soil and NX size in rock, all field work was supervised by well trained / experienced persons.

2) Borehole was properly cleaned before taking any sample in soil.

3) Casing was used as per the prevailing soil conditions / rock, to stabilize the borehole.

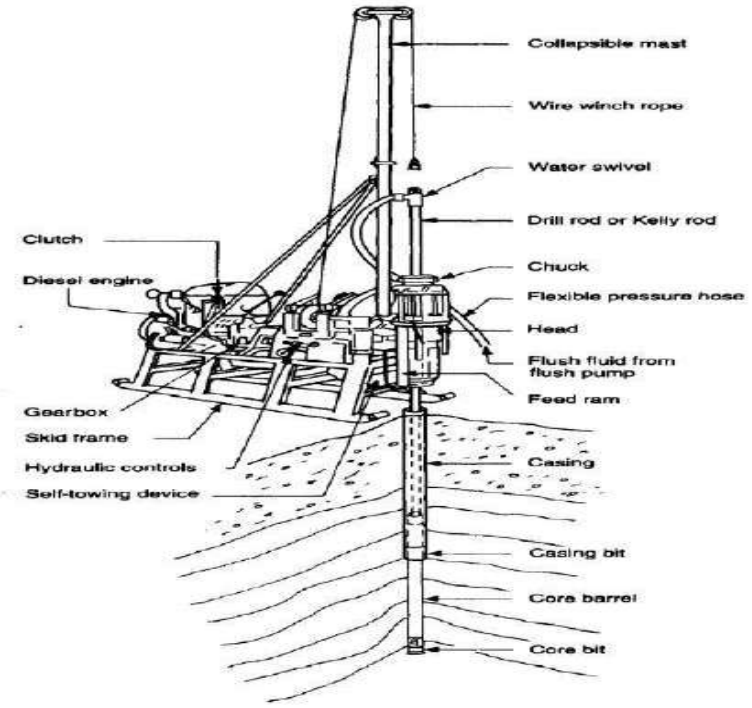

Figure 1: Layout for a Small Rotary Drilling Rig

4) Required field tests i. e, Standard Penetration Tests and collection of undisturbed / disturbed samples was conducted as per requirements and specified depths / levels, the same has been discussed in detail in sampling and tests in a borehole clause.

5) Rock core drilling was advanced using double tube core barrels with diamond bits.

4.2 STANDARD PENETRATION TESTS (SPT)

Standard Penetration Tests (SPT) was conducted as per IS specifications. SPT split spoon sampler of standard dimensions was driven into the soil from the borehole bottom using 63.5 kg Hammer falling from 75 cm height. The SPT weight was mechanically lifted to the specified height and allowed to fall freely on the anvil with the use of cat-head winch with one to one and half turn of the drum. Blow counts for the penetration of every 15 cm were recorded and the N is reported as the blow counts for 30 cm penetration of the sampler leaving the first 15 cm penetration as seating drive.

When the number of blows exceeded 50 to penetrate the first or second 15 cms length of the sampler, the SPT N is regarded as more than 100. The test is terminated in such case and a record of penetration of the sampler under 50 blows or more is made. SPT refusal is recorded when there is no penetration of the sampler at any stage and also when a rebound of the sounding system is recorded. SPT 'N' values are correlated with relative density of non-cohesive stratum and with consistency of cohesive stratum. SPTs were taken at 1.50 m interval. Fig.2 Illustrates general arrangement for SPT.

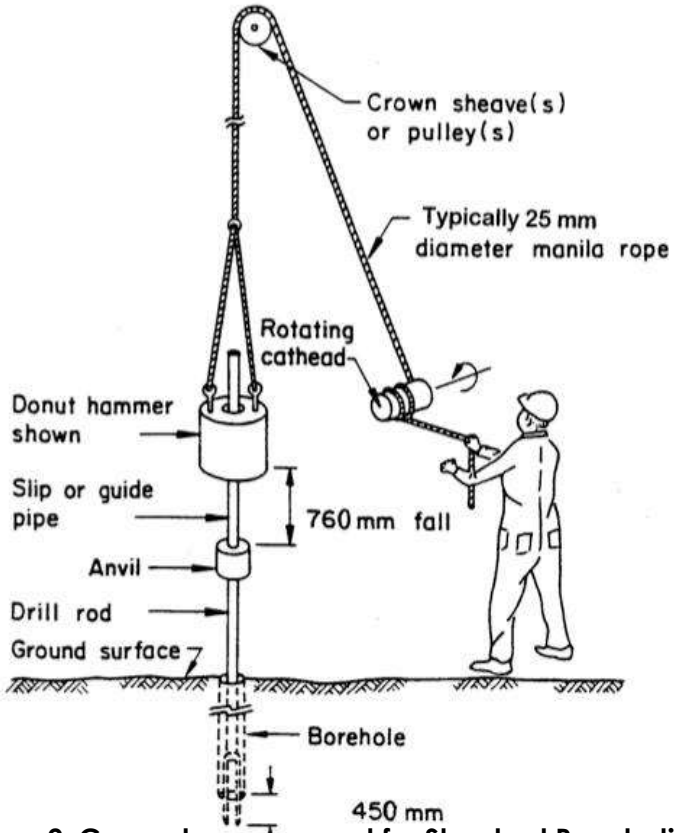

Figure 2: General arrangement for Standard Penetration Test

Correlation for Clayey/ Plastic Silt		Correlation for Sand / Non-Plastic Silt	
Consistency	**Penetration Value**	**Relative Density**	**Penetration Value**
Very Soft	0 to 2 Blows	Very loose	0 to 4 Blows
Soft	3 to 4 Blows	Loose	5 to 10 Blows
Medium Stiff	5 to 8 Blows	Medium	11 to 30 Blows
Stiff	9 to 16 Blows	Dense	31 to 50 Blows
Very Stiff	17 to 32 Blows	Very Dense	Above 50
Hard	Above 32		

4.3 DISTURBED SAMPLING (SOIL) IN BOREHOLES

Disturbed soil collected in the SPT sampler was preserved in polythene covers and transported to the laboratory. One more polythene cover was provided to prevent the loss of moisture during the transit period.

4.4 UNDISTURBED SAMPLING (SOIL) IN BOREHOLES

Undisturbed samples were collected using 100 mm dia and 450 mm long MS tubes with Area ratio as specified in BIS provided with sampler head with ball check arrangement, before taking any sample tubes were properly greased. Immediately after taking an undisturbed sample in a tube, the adopter head was removed along with the disturbed material. The visible ends of the sample shall each be trimmed off any wet disturbed soil. The ends will then be coated alternately with four layers of just molten wax. More molten wax will then be added to give a total thickness of not less than 25 mm.

Undisturbed samples were collected by light hammering, all precautions were taken to prevent disturbance in transport also. If in laboratory, density is not found in order in comparison of N values, that sample was treated as disturbed sample, and tests were conducted on remoulded samples and recorded in laboratory data sheet as UDS/DS-S. Collection of undisturbed samples in very hard cohesive soils / dense granular soils / gravels / cobbles / pebbles / boulders, refusal strata is practically not possible and such collected samples will not truly represent the undisturbed conditions.

4.5 ROCK CORE SAMPLES

Drilling was advanced by rotary core drilling method using double tube core barrels as per the guidelines of IS: 6926-1996. A core barrel and NX sized bits are used for drilling and recovering rock cores. Recovered rock cores were numbered serially and preserved in good quality sturdy core boxes as specified in IS: 4078-1980 as shown in fig. 3. Rock core recovery and Rock Quality Designation (RQD) were computed for every run length drilled as shown in fig. 4

Rock classification in terms of weathering and state of fractures and strength is carried out in the following manner. Tabulations given in below explain it briefly

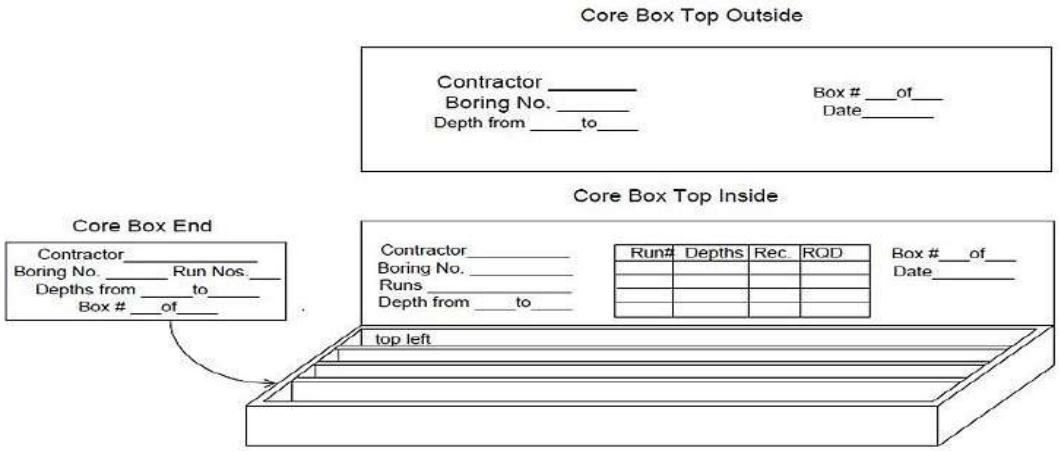

Figure 3: Figure 4: Core Box Captioning

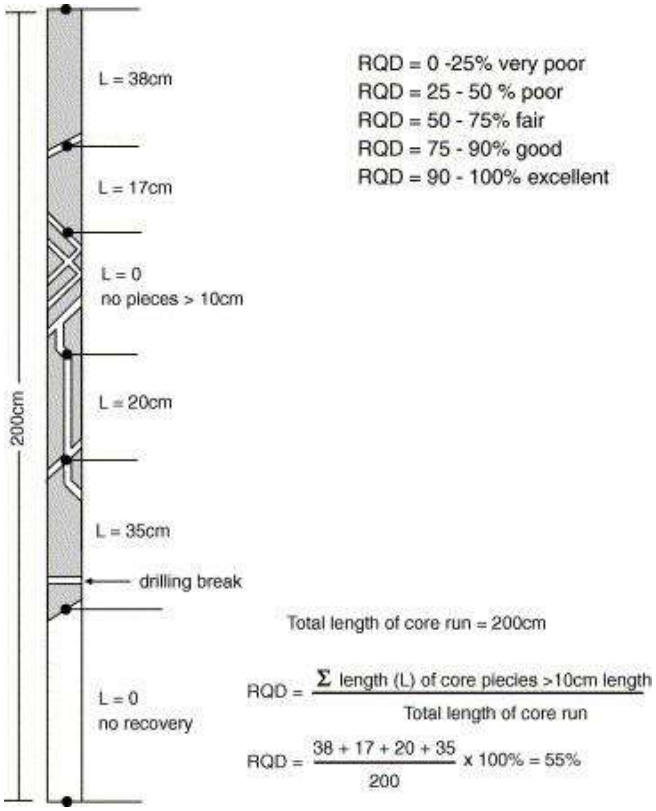

Figure 4: Percentage Core Recovery and Rock Quality Designation

SCALE OF WEATHERING GRADES OF ROCK MASS

Item	Description	Grade	Geologist Interpretation
Fresh	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces	I	CR > 90%
Slightly Weathered	Discolouration indicates weathering of rock material & discontinuity surfaces. All the rock material may be discoloured by weathering & may be somewhat weaker externally than in its fresh condition.	II	CR in between 70% to 90%
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discoloured rock is present either as a continuous framework or as core stones.	III	CR in between 50% to 70%
Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolured rock is present either as a discontinuous framework or as core stone.	IV	CR in between 10% to 50%
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	V	CR in between Zero to 10%
Residual Soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.	VI	No Core Recovery But N > 50 (Refusal)

As per IS 4464 It should be understood that all grades of weathering may not be seen in a given rock mass and that in some cases a particular grade may be present to a very small extent. Distribution of the various weathering grades of rock material in the rock mass may be related to the porosity of the rock material and the presence of open discontinuities of all types in the rock mass.

CLASSIFICATION OF ROCK WRT COMPRESSIVE STRENGTH

Rock is also classified by strength of intact rock cores collected during drilling. Rock Unconfined Compressive strength (UCS) is used to define strength of rock. Classification of rocks given in c1s 8, Table 2 of Appendix-2 of IRC: 78-2014 is reproduced below;

Rock Type	Description	Unconfined Compressive Strength (UCS) in MPa
Extremely Strong	Cannot be scratched with knife or sharp pick. Breaking of specimen could be done by sledge hammer only.	> 200
Very Strong	Cannot be scratched with knife or sharp pick. Breaking of specimens requires several hard blows of geologists pick.	100 to 200
Strong	Can be scratched with knife or pick with difficulty. Hard blow of hammer required to detach hand specimen.	50 to 100
Moderately Strong	Can be scratched with knife or pick, 6 mm deep gouges or grooves can be made by hand blow of geologists pick. Hand specimen can be detached by moderate blow.	12.5 to 50
Moderately Weak	Can be grooved or gouged 1.5 mm deep by firm pressure on knife or pick point. Can be broken into pieces or chips of about 2.5 mm maximum size by hard blows of the points of geologists pick.	5 to 12.5
Weak	Can be grooved or gouged easily with knife or pick point. Can be break down in chips to pieces several cm's in size by moderate blows of pick point. Small thin pieces can be broken by finger pressure.	1.25 to 5
Very Weak	Can be carved with knife. Can be broken easily with point of pick. Pieces 25 mm or more in thickness can be broken by finger pressure. Can be scratched easily by finger nail.	< 1.25

4.6 GROUND WATER

Ground water table was observed after waiting for time gap of 24 hours after completion of borehole. The measured Ground water levels are recorded on the individual soil profiles.

5.0 GEOTECHNICAL LABORATORY TESTING.

The laboratory testing on collected soil and rock samples had been carried out in our NABL accredited laboratory as per relevant IS codes to determine their physical and engineering properties.

5.1 SOIL SAMPLES

Sr. No.	Tests	IS Codes
1	Bulk Density	By calculations
2	Natural Moisture Content	IS:2720 Part 2-1973, RA-2015
3	Specific Gravity	IS:2720 Part 3-1980, RA-2016
4	Grain Size Analysis	IS:2720 Part 4-1985, RA-2015
5	Liquid Limit(LL), Plastic Limit (PL), Plasticity Index (PI)	IS:2720 Part 5-1985, RA-2015
6	Direct Shear Test (DST)	IS:2720 Part 13 1986 (RA 2016)
7	Consolidation Test Results	IS:2720 Part 15-1986, RA-2016
8	Free Swell Index (FSI)	IS:2720 Part 40-1977 RA-2016
9	Swelling Pressure	IS:2720 Part 41 1977 (RA 2016)

5.2 ROCK CORE SAMPLES

Sr. No.	Tests	IS Codes
1	Preparation of Rock specimen for Laboratory Testing	IS : 9179- 1979 RA-2016
2	Point Load Strength tests	IS : 8764-1998 RA 2014
3	Uniaxial/Unconfined Compressive Strength	IS : 9143-1979 RA 2016
4	Density, Water Absorption, Porosity, Sp. Gravity	IS : 13030-1991 RA-2016 / IS : 1124-1974 RA 2017

6.0 ENGINEERING ANALYSIS OF FOUNDATION SUPPORT

A suilable foundation for any structure should have an adequate factor of safety against exceeding the bearing capacity of the supporting soil. also the vertical movements due to compression of the soils should be within tolerable limits for the structure. we consider that foundtion designed in accordance with the recommendations given herein will satisfy these criteria.

Considering the nature of sub-surface strata, type of proposed structures, expected scour and loads on foundations, Open foundation is recommended;

For satisfactory performance of a foundation, the following criteria must be satisfied;

(i) The foundation must not fail in shear.

(ii)The foundation must not settle by an amount more than the permissible settlement.

The smaller of the bearing pressure values obtained according to (i) and (ii) above, is adopted as the allowable bearing capacity.

Design Considerations for Open Foundations

Permissible settlement in soil (Non Plastic / Plastic)	50 mm / 75 mm
Permissible settlement in rock	12 mm
Water Table correction factor	0.50
Average Design Parameters	as per clause 5.2 to 5.6.

Depth of Open Foundation in Soil

A foundation must have an adequate depth from considerations of adverse environmental influences. It must also be economically feasible in terms of overall structure.

Depth of foundations in soil shall be decided as per clause 7 of IS: 1904 for special cases like; where volume change is expected / scour is expected / foundations on sloping ground / foundation on made or filled up ground / frost action is expected etc. All foundations shall extend to a depth of at least 0.5 m below natural ground level. Where filled up materials are encountered, foundations should rest either on natural ground or engineered fill. Where filled material is exposed at the founding level, excavation should be carried out up to the level of natural soils. Backfill of granular materials should be placed in layers and compacted thoroughly. In case of small bridges / culverts, top of bottom slab shall extend 0.3 m depth below bed level as per IRC: SP-13.

Depth of Open Foundation in Rock

The founding levels should fix considering an embedment of at least 0.60 m into the sound rock and 1.50 m in to the disintegrated / weathered soft rock.

As per clause 705.2.2 (a) of IRC: 78; for moderately strong to extremely strong rock with an ultimate crushing strength of 125 kg/cm^2 or above or where it is not possible to take core to get the UCS but extrapolated SPT N value is more than 500 the depth of foundation shall be 0.60 m. below rock surface.

However, depth of foundation is 1.50 m. in moderately weak rocks having with an ultimate crushing strength between 125 kg/cm^2 to 25 kg/cm^2 or where it is not possible to take core to get the UCS but extrapolated SPT N value is more than 100 but less than 500. In other cases the embedment of the foundations shall be decided keeping in view the overall characteristics like fissures, bedding planes, cavities, ultimate crushing strength, proposed treatment of foundation strata etc.

7.0 BEARING CAPACITY

7.1 Bearing Capacity for Open Foundations in Soil

Bearing capacity for shallow foundations in soil has been analyzed in accordance with IS: 6403-1981, which is based on, modified Terzaghi's classical approach. The weighted average of shear parameters for various strata up to a significant influence zone of 1.5 B (B = width of the foundation) below the foundation level is used in the analysis. Considering the fluctuation of ground water, it is assumed that water table will be at existing ground level and accordingly the water table correction is applied. A factor of safety of 2.5 is selected based on clause 706.3.1.1.1 of IRC 78-2014 to estimate the net safe bearing capacity from ultimate net bearing capacity.

Standard Penetration Test (SPT) results are also used to determine the safe bearing capacity of shallow foundation in accordance with IS: 6403-1981 for non-cohesive soil, hard clay. While using this approach, the N value was corrected, wherever applicable, below the footing base to at least 1.5B below the base to account for the effects of energy ratio, adopted boring procedure, dilation for submerged Silty fine sands /fine sands as well as that due to the overburden pressure (Reference: IS: 2131-1981, "Foundation Analysis and Design" by J.E.Bowles).

7.1.1 Bearing Capacity as perI.S 6403-1981 R.A.2002from shear failure consideration

- For local shear failure:

Q'd = 2/3*C*N'C*sC*dC*iC + q*(N'q-1)*sq*dq*iq + 0.5*B*Y*N'r*sr*dr*ir*W'

- For general shear failure:

Qd = C*Nc*sc*dc*ic + q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'

Where, Q'd= Net ultimate Bearing Capacity based on local shear failure

Qd= Net ultimate Bearing Capacity based on local shear failure

C=Cohesion.

ϕ=Angle of Internal Friction.

N_c, N_q, N_γ=Bearing Capacity Factors Based on ϕ.

S_c, S_q, S_γ =Shape Factors

d_c, d_q, d_γ =Shape Factors

i_c, i_q, i_γ =Shape Factors

q= Overburden Stress at the Bottom of the Foundation.

γ= Unit weight of subsoil

B= Width of foundation

W'= Correction factor for water table location

Where factors are calculated as follows.

- **Shape Factor**

Shape of Base	Sc	Sq	Sγ
Continuous strip	1	1	1
Rectangle	1 + 0.2B/L	1 + 0.2B/L	1-0.4B/L
Square	1.3	1.2	0.8
Circle	1.3	1.2	0.6

- **Depth factor**

dc =	$1+0.2(D_f/B)(N\phi)^{1/2}$
dq = dγ =	1 for Ø <10^0
dq = dγ =	$1+0.1(D_f/B)(N\phi)^{1/2}$ for Ø>10^0

- **Inclination factor**

Inclination Factor	
$i_c = i_q$ =	$(1-a/90)^2$
iγ=	(1-a/φ)2

Appropriate values have been substituted into the above mention bearing capacity equation to compute the net ultimate bearing capacity. A factor of safety of 2.5 is selected based on clause 706.3.1.1.1 of IRC 78-2014 to estimate the net safe bearing capacity from ultimate net bearing

capacitythe values have been checked to determine the settlement of the foundation under the safe bearing pressure. The allowable bearing pressure has been checked as the lower of the two values computed from the bearing capacity shear failure criteria as well as that computed from the tolerable settlement criteria.

7.1.2 Bearing Capacity as per I.S 6403-1981 R.A.2002 for Cohesionless Soil (When C = 0)

As per clause 5.2.2 of IS:6403-1981 *(Determination of bearing capacity of shallow foundations)*, for cohesion less soil the net ultimate bearing capacity is given based on Standard Penetration Resistance Value as follows

Qd= q*(Nq-1)*sq*dq*iq + 0.5*B*ϒ*Nr*sr*dr*ir*W'

Where φ may be read from Fig. 1,page no11 in I.S 6403-1981 R.A.2002, N_q, N_γ may be read from Table 1,S_q, d_q, i_q, , S_γ d_γ, i_γ *and* W' may be obtained as in clause 5.1 I.S 6403-1981 R.A.2002

Settlement for Open Foundations

The magnitude of settlement, when foundation loads are applied, depends upon the compressibility of the underlying strata and rigidity of the substructure. In cohesive deposition, the post construction settlement is caused by dissipation of pore pressures and hence is time dependent so that consolidation settlement is computed for such soils using Terzaghi's one-dimensional consolidation theory.

The immediate settlements in clays are estimated using the elastic theory considering the effect of a rigid stratum underlying the foundation soils (Reference: "Foundation Analysis and Design" by J.E.Bowles). The immediate settlements in cohesion-less soil are estimated using elastic theory as mentioned above or using SPT value as per IS: 8009 (Part 1).

Settlement analysis has been performed based on S.P.T values in accordance with Clause 9. 1. 4 of I.S 8009 (Part-1) – 1976 RA Fig.9.

If clay is not recompressed

$$Sc = \frac{Ht}{(1+e_0)} Cc \log_{10}\left(\frac{p_0 + \Delta p}{p_0}\right)$$

Where

Sc = consolidation settlement

e_0 =Initial void ratio

C_c = Compression Index

P_0 = initial effective pressure

Δp = Pressure increment.

8.0 GENERALISED CONSIDERATION FOR CONSTRUCTION OF FOUNDATION

Excavation: It is advisable to provide suitable slope protection method to keep sides of deep excavation from sloughing.

Side slopes will depend on actual site condition & extent of ingress of water.

Safe Slopes for excavated surfaces as below:-

Slightly weathered to Fresh Rock	-	0.25 H to 1.0 V
Highly to moderately weathered Rock	-	0.50 H to 1.0 V
Completely disintegrated Rock as Murrum	-	1.00 H to 1.0 V
Silty Clay / sandy clayey silt	-	1.50 H to 1.0 V

Following General values may be adopted for Lateral pressure

K_a = 0.3

K_p = 3.3

Backfill:

The material used for backfilling shall be non-expansive, size of particles shall be <20 mm and preferably confirming to soil groups of SC/GC/SM of IS soil classifications. The material shall be spread and levelled in layers of not exceeding 225 mm. Each layer shall be compacted by vibratory roller of around 10-12 tonnes to 95% of the modified Proctor density.

Special Precautions

It is essential to ensure that trees and other landscaped area will be about 3 m away from the building boundary. Area around the building shall have proper slope so that the water is drained away from the building boundary.

For foundations placed on Weathered Rock / Murrum, excavation up to required depth shall be carried out by Backhoe / hydraulic excavator and the seat of 30 cm desired for the footing in founding strata may be developed manually. This will avoid loosening of founding strata layer by sharp edge teeth of hydraulic excavator.

In case the footing are rested to be rock the excavation may be continued up to that depth by Excavator bucket and a seat of 30 cm for the individual footing in the founding strata may be provided either manual means or by the hydraulic excavator

9.0 CONCLUSION / RECOMMENDATIONS

9.1 Open Foundation (As per IS 6403 : 1981)

9.1.1 Isolated Foundation

SR.NO	LOCATION	BORE HOLE	TYPE OF FOOTING	CONSIDERING SIZE OF FOOTING (m)	FOUNDATION DEPTH (m)	SAFE BEARING CAPACITY (T/m2)
1	Propose Medical College	BH 1	ISOLATED	1.5m x 1.5m	1.50	24.28
					2.00	33.40
				3.0m x 3.0m	1.50	26.21
					2.00	34.36
				4.0m x 4.0m	1.50	28.04
					2.00	35.98
				5.0m x 5.0m	1.50	30.00
					2.00	37.84
2	Medical College Block	BH 2	ISOLATED	1.5m x 1.5m	1.50	23.10
					2.00	37.88
				3.0m x 3.0m	1.50	24.92
					2.00	38.98
				4.0m x 4.0m	1.50	26.63
					2.00	40.88
				5.0m x 5.0m	1.50	28.47
					2.00	43.05
3	Proposed Medical College Block	BH 3	ISOLATED	1.5m x 1.5m	1.50	24.85
					2.00	36.67
				3.0m x 3.0m	1.50	26.83
					2.00	37.74
				4.0m x 4.0m	1.50	28.70
					2.00	39.56
				5.0m x 5.0m	1.50	30.70
					2.00	41.64
4	Proposed Hospital Block	BH 4	ISOLATED	1.5m x 1.5m	1.50	26.07
					2.00	38.32
				3.0m x 3.0m	1.50	28.16
					2.00	39.43
				4.0m x 4.0m	1.50	30.15
					2.00	41.35
				5.0m x 5.0m	1.50	32.27
					2.00	43.54
5	Proposed Hospital Block	BH 5	ISOLATED	1.5m x 1.5m	1.50	25.61
					2.00	36.22
				3.0m x 3.0m	1.50	27.66
					2.00	37.27
				4.0m x 4.0m	1.50	27.26
					2.00	38.54
				5.0m x 5.0m	1.50	29.46
					2.00	39.66
6	Proposed Hospital Block	BH 6	ISOLATED	1.5m x 1.5m	1.50	27.26
					2.00	38.54

				3.0m x 3.0m	1.50	29.46
					2.00	39.66
				4.0m x 4.0m	1.50	31.55
					2.00	41.58
				5.0m x 5.0m	1.50	33.79
					2.00	43.79
7	Indore Sports Block	BH 7	ISOLATED	1.5m x 1.5m	1.50	29.94
					2.00	41.27
				3.0m x 3.0m	1.50	32.44
					2.00	42.56
				4.0m x 4.0m	1.50	34.81
					2.00	41.21
				5.0m x 5.0m	1.50	37.34
					2.00	47.31
8	Near Mortuary Autopsy Block	BH 8	ISOLATED	1.5m x 1.5m	1.50	25.14
					2.00	34.64
				3.0m x 3.0m	1.50	27.14
					2.00	35.63
				4.0m x 4.0m	1.50	29.03
					2.00	37.34
				5.0m x 5.0m	1.50	31.06
					2.00	39.28
9	Transformer Generator Space	BH 9	ISOLATED	1.5m x 1.5m	1.50	27.68
					2.00	37.71
				3.0m x 3.0m	1.50	29.94
					2.00	38.81
				4.0m x 4.0m	1.50	32.07
					2.00	40.68
				5.0m x 5.0m	1.50	34.35
					2.00	42.84
10	Back Side Indore Sports Block	BH 10	ISOLATED	1.5m x 1.5m	1.50	25.51
					2.00	40.00
				3.0m x 3.0m	1.50	27.55
					2.00	41.22
				4.0m x 4.0m	1.50	29.48
					2.00	43.26
				5.0m x 5.0m	1.50	31.55
					2.00	45.60
11	BIR RESO	BH 11	ISOLATED	1.5m x 1.5m	1.50	26.07
					2.00	34.84
				3.0m x 3.0m	1.50	28.16
					2.00	35.84
				4.0m x 4.0m	1.50	30.15
					2.00	37.55
				5.0m x 5.0m	1.50	32.27
					2.00	39.51
12	Near Type 2	BH 12	ISOLATED	1.5m x 1.5m	1.50	24.85
					2.00	33.21
				3.0m x 3.0m	1.50	26.83
					2.00	34.16
				4.0m x 4.0m	1.50	28.70
					2.00	35.78

				5.0m x 5.0m	1.50	30.70
					2.00	37.62
13	Near Type 5	BH 13	ISOLATED	1.5m x 1.5m	1.50	28.01
					2.00	37.45
				3.0m x 3.0m	1.50	30.30
					2.00	38.53
				4.0m x 4.0m	1.50	32.46
					2.00	40.40
				5.0m x 5.0m	1.50	34.78
					2.00	42.54
14	Between Type -3 & Resident Hostel 1	BH 14	ISOLATED	1.5m x 1.5m	1.50	26.55
					2.00	35.49
				3.0m x 3.0m	1.50	28.70
					2.00	36.51
				4.0m x 4.0m	1.50	30.73
					2.00	38.26
				5.0m x 5.0m	1.50	32.90
					2.00	40.27
15	Between Resident & Hostel 1 & 2	BH 15	ISOLATED	1.5m x 1.5m	1.50	27.77
					2.00	37.12
				3.0m x 3.0m	1.50	30.03
					2.00	38.20
				4.0m x 4.0m	1.50	32.17
					2.00	40.04
				5.0m x 5.0m	1.50	34.47
					2.00	42.16
16	In Front of Dinning Hall	BH 16	ISOLATED	1.5m x 1.5m	1.50	28.50
					2.00	38.10
				3.0m x 3.0m	1.50	30.83
					2.00	39.21
				4.0m x 4.0m	1.50	33.04
					2.00	41.11
				5.0m x 5.0m	1.50	35.41
					2.00	43.30
17	In between Girls Hostel 1 & 2	BH 17	ISOLATED	1.5m x 1.5m	1.50	25.58
					2.00	34.19
				3.0m x 3.0m	1.50	27.63
					2.00	35.17
				4.0m x 4.0m	1.50	29.57
					2.00	36.84
				5.0m x 5.0m	1.50	31.64
					2.00	38.76
18	In between Interns and Nurse Hostel	BH 18	ISOLATED	1.5m x 1.5m	1.50	30.41
					2.00	40.64
				3.0m x 3.0m	1.50	32.98
					2.00	41.89
				4.0m x 4.0m	1.50	35.40
					2.00	43.97
				5.0m x 5.0m	1.50	37.98
					2.00	46.36
19	Near Interns Boys Hostel	BH 19	ISOLATED	1.5m x 1.5m	1.50	25.82
					2.00	34.51

				3.0m x 3.0m	1.50	27.90
					2.00	35.50
				4.0m x 4.0m	1.50	29.86
					2.00	37.20
				5.0m x 5.0m	1.50	31.96
					2.00	39.13
20	Near Boys Hostel 2	BH 20	ISOLATED	1.5m x 1.5m	1.50	23.89
					2.00	31.92
				3.0m x 3.0m	1.50	25.77
					2.00	32.82
				4.0m x 4.0m	1.50	27.55
					2.00	34.36
				5.0m x 5.0m	1.50	29.45
					2.00	36.11
21	In between Boys Hostel 1 & 2	BH 21	ISOLATED	1.5m x 1.5m	1.50	27.04
					2.00	36.14
				3.0m x 3.0m	1.50	29.23
					2.00	37.19
				4.0m x 4.0m	1.50	31.30
					2.00	38.97
				5.0m x 5.0m	1.50	33.53
					2.00	41.02
22	Future Construction	BH 22	ISOLATED	1.5m x 1.5m	1.50	28.50
					2.00	38.01
				3.0m x 3.0m	1.50	30.83
					2.00	39.21
				4.0m x 4.0m	1.50	33.04
					2.00	41.11
				5.0m x 5.0m	1.50	35.41
					2.00	43.30

9.1.2 Raft Foundation

SR. NO	LOCATION	BORE HOLE	TYPE OF FOUNDATION	CONSIDERING SIZE OF FOOTING (m)	FOUNDATION DEPTH (m)	SAFE BEARING CAPACITY (T/m2)
1	Propose Medical College	BH 1	RAFT	6.0m x 6.0m	1.50	32.02
					2.00	38.68
					3.00	52.43
2	Medical College Block	BH 2	RAFT	6.0m x 6.0m	1.50	30.37
					2.00	36.72
					3.00	49.83
3	Proposed Medical College Block	BH 3	RAFT	6.0m x 6.0m	1.50	32.77
					2.00	39.60
					3.00	53.66
4	Proposed Hospital Block	BH 4	RAFT	6.0m x 6.0m	1.50	34.47
					2.00	41.60
					3.00	56.33
5	Proposed Hospital Block	BH 5	RAFT	6.0m x 6.0m	1.50	33.81
					2.00	40.83
					3.00	55.31
6	Proposed Hospital Block	BH 6	RAFT	6.0m x 6.0m	1.50	36.10
					2.00	43.54
					3.00	59.00
7	Indore Sports Block	BH 7	RAFT	6.0m x 6.0m	1.50	40.00
					2.00	48.08
					3.00	65.00
8	Near Mortuary Autopsy Block	BH 8	RAFT	6.0m x 6.0m	1.50	33.15
					2.00	40.04
					3.00	54.30
9	Transformer Generator Space	BH 9	RAFT	6.0m x 6.0m	1.50	36.71
					2.00	44.26
					3.00	59.87
10	Back Side Indore Sports Block	BH 10	RAFT	6.0m x 6.0m	1.50	33.70
					2.00	40.67
					3.00	55.10
11	BIR RESO	BH 11	RAFT	6.0m x 6.0m	1.50	34.47
					2.00	41.60
					3.00	56.33
12	Near Type 2	BH 12	RAFT	6.0m x 6.0m	1.50	32.77
					2.00	39.60
					3.00	53.66
13	Near Type 5	BH 13	RAFT	6.0m x 6.0m	1.50	37.18
					2.00	44.81
					3.00	60.60
14	Between Type -3 &	BH 14	RAFT	6.0m x 6.0m	1.50	35.14

	Resident Hostel 1				2.00	42.40
					3.00	57.40
15	Between Resident & Hostel 1 & 2	BH 15	RAFT	6.0m x 6.0m	1.50	36.84
					2.00	44.41
					3.00	60.06
16	In Front of Dining Hall	BH 16	RAFT	6.0m x 6.0m	1.50	37.86
					2.00	45.62
					3.00	61.67
17	In between Girls Hostel 1 & 2	BH 17	RAFT	6.0m x 6.0m	1.50	33.80
					2.00	40.80
					3.00	55.26
18	In between Interns and Nurse Hostel	BH 18	RAFT	6.0m x 6.0m	1.50	36.82
					2.00	45.22
					3.00	61.03
19	Near Interns Boys Hostel	BH 19	RAFT	6.0m x 6.0m	1.50	34.13
					2.00	41.20
					3.00	55.80
20	Near Boys Hostel 2	BH 20	RAFT	6.0m x 6.0m	1.50	31.42
					2.00	38.00
					3.00	51.54
21	In between Boys Hostel 1 & 2	BH 21	RAFT	6.0m x 6.0m	1.50	35.82
					2.00	43.20
					3.00	58.46
22	Future Construction	BH 22	RAFT	6.0m x 6.0m	1.50	37.86
					2.00	45.62
					3.00	61.67

9.1.2 Strip Foundation

SR. NO	LOCATION	BORE HOLE	TYPE OF FOUNDATION	CONSIDERING SIZE OF FOOTING (m)	FOUNDATION DEPTH (m)	SAFE BEARING CAPACITY (T/m2)
1	Propose Medical College	BH 1	STRIP	2.0m x 6.0m	1.50	23.04
					2.00	30.16
2	Medical College Block	BH 2	STRIP	2.0m x 6.0m	1.50	22.16
					2.00	28.86
3	Proposed Medical College Block	BH 3	STRIP	2.0m x 6.0m	1.50	23.31
					2.00	30.34
4	Proposed Hospital Block	BH 4	STRIP	2.0m x 6.0m	1.50	24.74
					2.00	32.18
5	Proposed Hospital Block	BH 5	STRIP	2.0m x 6.0m	1.50	24.02
					2.00	31.43
6	Proposed Hospital Block	BH 6	STRIP	2.0m x 6.0m	1.50	25.44
					2.00	33.27
7	Indore Sports Block	BH 7	STRIP	2.0m x 6.0m	1.50	28.47
					2.00	37.00
8	Near Mortuary Autopsy Block	BH 8	STRIP	2.0m x 6.0m	1.50	23.85
					2.00	30.70
9	Transformer Generator Space	BH 9	STRIP	2.0m x 6.0m	1.50	26.28
					2.00	34.37
10	Back Side Indore Sports Block	BH 10	STRIP	2.0m x 6.0m	1.50	24.20
					2.00	31.14
11	BIR RESO	BH 11	STRIP	2.0m x 6.0m	1.50	24.74
					2.00	32.37
12	Near Type 2	BH 12	STRIP	2.0m x 6.0m	1.50	23.60
					2.00	30.34
13	Near Type 5	BH 13	STRIP	2.0m x 6.0m	1.50	26.60
					2.00	34.60
14	Between Type -3 & Resident Hostel 1	BH 14	STRIP	2.0m x 6.0m	1.50	25.06
					2.00	32.80
15	Between Resident & Hostel 1 & 2	BH 15	STRIP	2.0m x 6.0m	1.50	26.37
					2.00	34.48
16	In Front of Dining Hall	BH 16	STRIP	2.0m x 6.0m	1.50	27.07
					2.00	35.60
17	In between Girls Hostel 1 & 2	BH 17	STRIP	2.0m x 6.0m	1.50	24.27
					2.00	32.00
18	In between Interns and Nurse Hostel	BH 18	STRIP	2.0m x 6.0m	1.50	28.77
					2.00	37.15
19	Near Interns Boys Hostel	BH 19	STRIP	2.0m x 6.0m	1.50	24.08
					2.00	31.16
20	Near Boys Hostel 2	BH 20	STRIP	2.0m x 6.0m	1.50	22.52
					2.00	29.32

21	In between Boys Hostel 1 & 2	BH 21	STRIP	2.0m x 6.0m	1.50	25.37
					2.00	33.40
22	Future Construction	BH 22	STRIP	2.0m x 6.0m	1.50	26.60
					2.00	34.60

Prepared by **Reviewed by** **For Becquerel Industries Pvt. Ltd.**

Mr. Rameez Raza **Mr. Sushant Mallick** **Mr. Jeevan G. Ghime**

(Technical Manager) **(Quality Head)** **(Authorised Signatory)**

- *This report is issued based on the subsoil condition revealed at the location of boreholes and laboratory tests performed on recovered samples. If during construction of foundations it is observed that sub soil conditions vary from those revealed during investigation it is essential that Becquerel Industries Pvt. Ltd. Nagpur shall be contacted so that on confirmation supplementary report shall be issued.*
- *Structural designer should ensure overlap between adjacent foundations is minimum. To minimize overlap minimum clear distance between two adjacent foundations shall not be less than minimum width of the two.*
- If there is lot of variation is observed at different location. Therefore, to maintain the uniformity of safe bearing capacity, a minimum value needs to be considered while designing the structure for the convenience in construction.

10.0 REFERENCES

Sr. No.	IS Codes No	TITLE
1	IS : 1892-1979 RA-2016	Code of Practice for subsurface investigation for foundations.
2	IS : 1498-1970 RA 2016	Classification and Identification of soils for general Engineering Purpose.
3	IS : 2131-1981 RA 2016	Method for Standard Penetration Test (SPT) for Soils.
4	IS : 2132-1986 RA 2016	Code of Practice for Thin - Walled tube sampling of Soils.
5	IS : 4464-1985 RA 2019	Code of Practice for presentation of drilling information and core description in foundation investigation.
6	IS : 5313-1980 RA 2019	Guide for core drilling observations.
7	IS : 4078-1980 RA2019	Code of Practice for indexing and storage of drill cores
8	IS : 6926-1996 RA 2015	Diamond core drilling – Site investigation for river valley projects - code of Practice.
9	IS : 6935-1973 RA 2019	Method of determination of water level in a bore hole
10	IS : 15686:2006 RA 2015	Recommendations for the preparation of Geological and Geotechnical maps for river valley projects
11	IS : 6403 1981 RA 2016	Code of Practice for Determination of Bearing capacity of shallow foundations
12	IS : 8009 (part-1)-1976 RA 2019	Code of practice for calculation of Settlements of Foundations
13	IS : 1893 (part-1) 2016	Criteria for Earthquake resistant design of structures.
14	IS : 456- 2000 RA 2016	Plain and Reinforced Concrete-Code of Practice.
Sr. No.	**BOOK**	**TITLE**
1	N. V. Nayak	Foundation Design Manual
2	Joseph E. Bowles	Foundation Analysis and Design

ANNEXURE

1.0 SAMPLE CALCULATIONS

SBC CALCULATION FOR SPT				
Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-	
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y'*Nr*sr*dr*ir*W'			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				Square
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.50
D_f =	Effective depth of foundation below basement in (m)			1.50
D_t =	Total depth of foundation from E.G.L. in (m)			1.50
Y' =	Submerged Unit Weight of soil in (T/m^3)			1.70
q =	Total Surcharge = (Y' * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			2.55
B =	Width / Diameter of footing in (m)			1.50
L =	Length of footing in (m)			1.50
N_q =	Bearing capacity factors			16.08
N_Y =	Bearing capacity factors			18.97
s_q =	Shape factor			1.20
s_Y =	Shape factor			0.80
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_Y =	1	FOR Ø < 10^0	1.00
d_q =	d_Y =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.17
i_c =	i_q =	(1- α/90)^2		1.00
i_Y =	(1 - α/Ø)^2			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y'*N'_Y*s_Y*d_Y*i_Y*W'$				65.20
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**21.73**
SAFE BEARING CAPACITY IN (T/m^2) =				**24.28**

SBC CALCULATION FOR SPT				
Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-	
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				Square
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.5
D_f =	Effective depth of foundation below basement in (m)			2
D_t =	Total depth of foundation from E.G.L. in (m)			2
Y =	Submerged Unit Weight of soil in (T/m^3)			1.75
q =	Total Surcharge = (Y * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			3.5
B =	Width / Diameter of footing in (m)			1.5
L =	Length of footing in (m)			1.5
N_q =	Bearing capacity factors			16.078
N_Y =	Bearing capacity factors			18.972
s_q =	Shape factor			1.2
s_γ =	Shape factor			0.8
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.680848881
d_q =	d_γ =	1	FOR Ø < 10^0	1
d_q =	d_γ =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.224113184
i_c =	i_q =	$(1- \alpha/90)^2$		1
i_γ =	$(1 - \alpha/Ø)^2$			1
W' =	Water table effect			0.5
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y*N'_\gamma*s_\gamma*d_\gamma*i_\gamma*W'$				89.71268463
CONSIDERING FACTOR OF SAFETY (FOS) =				3
NET SAFE BEARING CAPACITY IN (T/m^2) =				**29.90**

SBC CALCULATION FOR SPT

Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra		
Location :-	Proposed medical College		
Design as per :-	IS :6403-1981 CLAUSE NO 5.2		
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-
Depth of Basement below E.G.L. (m) :-	No Basement		
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'		

Where,

Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**	
Type of footing		Raft(S)
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}	28.50
D_f =	Effective depth of foundation below basement in (m)	1.50
D_t =	Total depth of foundation from E.G.L. in (m)	1.50
Y' =	Submerged Unit Weight of soil in (T/m^3)	1.70
q =	Total Surcharge = (Y' * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below	2.55
B =	Width / Diameter of footing in (m)	6.00
L =	Length of footing in (m)	6.00
N_q =	Bearing capacity factors	16.08
N_Y =	Bearing capacity factors	18.97
s_q =	Shape factor	1.20
s_Y =	Shape factor	0.80

DEPTH FACTORS CALCULATION

√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_Y =	1	FOR Ø < 10^0	1.00
d_q =	d_Y =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.04
i_c =	i_q =	$(1- \alpha/90)^2$		1.00
i_Y =	$(1 - \alpha/Ø)^2$			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y*N'_Y*s_Y*d_Y*i_Y*W'$				88.41
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**29.47**
SAFE BEARING CAPACITY IN (T/m^2) =				**32.02**

SBC CALCULATION FOR SPT				
Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-	
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				Raft(S)
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.50
D_f =	Effective depth of foundation below basement in (m)			2.00
D_t =	Total depth of foundation from E.G.L. in (m)			2.00
Y =	Submerged Unit Weight of soil in (T/m^3)			1.70
q =	Total Surcharge = (Y * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			3.40
B =	Width / Diameter of footing in (m)			6.00
L =	Length of footing in (m)			6.00
N_q =	Bearing capacity factors			16.08
N_Y =	Bearing capacity factors			18.97
s_q =	Shape factor			1.20
s_Y =	Shape factor			0.80
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_Y =	1	FOR Ø < 10^0	1.00
d_q =	d_Y =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.06
i_c =	i_q =	$(1- \alpha/90)^2$		1.00
i_Y =	$(1 - \alpha/Ø)^2$			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y*N'_Y*s_Y*d_Y*i_Y*W'$				105.84
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**35.28**
SAFE BEARING CAPACITY IN (T/m^2) =				**38.68**

SBC CALCULATION FOR SPT				
Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-	
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				Raft(S)
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.50
D_f =	Effective depth of foundation below basement in (m)			3.00
D_t =	Total depth of foundation from E.G.L. in (m)			3.00
Y =	Submerged Unit Weight of soil in (T/m^3)			1.70
q =	Total Surcharge = (Y * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			5.10
B =	Width / Diameter of footing in (m)			6.00
L =	Length of footing in (m)			6.00
N_q =	Bearing capacity factors			16.08
N_Y =	Bearing capacity factors			18.97
s_q =	Shape factor			1.20
s_Y =	Shape factor			0.80
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_Y =	1	FOR Ø < 10^0	1.00
d_q =	d_Y =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.08
i_c =	i_q =	$(1- \alpha/90)^2$		1.00
i_Y =	$(1 - \alpha/Ø)^2$			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y*N'_Y*s_Y*d_Y*i_Y*W'$				141.99
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**47.33**
SAFE BEARING CAPACITY IN (T/m^2) =				**52.43**

SBC CALCULATION FOR SPT				
Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**	-	
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y*Nr*sr*dr*ir*W'			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				strip
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.50
D_f =	Effective depth of foundation below basement in (m)			1.50
D_t =	Total depth of foundation from E.G.L. in (m)			1.50
Y =	Submerged Unit Weight of soil in (T/m^3)			1.70
q =	Total Surcharge = (Y * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			2.55
B =	Width / Diameter of footing in (m)			2.00
L =	Length of footing in (m)			6.00
N_q =	Bearing capacity factors			16.08
N_Y =	Bearing capacity factors			18.97
s_q =	Shape factor			1.00
s_Y =	Shape factor			1.00
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_Y =	1	FOR Ø < 10^0	1.00
d_q =	d_Y =	- (0.1*D_f/B)*√ N	FOR Ø > 10^0	1.13
i_c =	i_q =	$(1- \alpha/90)^2$		1.00
i_Y =	$(1 - \alpha/Ø)^2$			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y*N'_Y*s_Y*d_Y*i_Y*W'$				61.46
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**20.49**
SAFE BEARING CAPACITY IN (T/m^2) =				**23.04**

SBC CALCULATION FOR SPT

Name of project :-	Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra			
Location :-	Proposed medical College			
Design as per :-	IS :6403-1981 CLAUSE NO 5.2			
BH No. :-	BH-01	**ater Table Below E.G.L. (m) :-**		-
Depth of Basement below E.G.L. (m) :-	No Basement			
In Case for SPT Sample	$Qd = q*(Nq-1)*sq*dq*iq + 0.5*B*Y'*Nr*sr*dr*ir*W'$			
Where,				
Q_d =	**NET ULTIMATE BEARING CAPACITY IN (T/m^2)**			
Type of footing				strip
Ø =	Angle of internal friction of soil in (°) {*Considering Minimum Value of Ø}			28.50
D_f =	Effective depth of foundation below basement in (m)			2.00
D_t =	Total depth of foundation from E.G.L. in (m)			2.00
Y' =	Submerged Unit Weight of soil in (T/m^3)			1.73
q =	Total Surcharge = (Y' * D_f) in absence of external surcharge. D_f refers to effective depth of foundation below			3.46
B =	Width / Diameter of footing in (m)			2.00
L =	Length of footing in (m)			6.00
N_q =	Bearing capacity factors			16.08
N_Y =	Bearing capacity factors			18.97
s_q =	Shape factor			1.00
s_γ =	Shape factor			1.00
DEPTH FACTORS CALCULATION				
√NQ =	$\sqrt{\tan^2(\pi/4+Ø/2)}$ =	tan(45 + Ø/2) =	tan(45 + Ø/2) =	1.68
d_q =	d_γ =	1	FOR $Ø < 10^0$	1.00
d_q =	d_γ =	- (0.1*D_f/B)*√ N	FOR $Ø > 10^0$	1.17
i_c =	i_q =	$(1- \alpha/90)^2$		1.00
i_γ =	$(1 - \alpha/Ø)^2$			1.00
W' =	Water table effect			0.50
$Q_d = q*(N_q-1)*s_q*d_q*i_q + 0.5*B*Y'*N'_\gamma*s_\gamma*d_\gamma*i_\gamma*W'$				80.11
CONSIDERING FACTOR OF SAFETY (FOS) =				3.00
NET SAFE BEARING CAPACITY IN (T/m^2) =				**26.70**
SAFE BEARING CAPACITY IN (T/m^2) =				**30.16**

2.0 BORE LOG

BECQUEREL INDUSTRIES PVT. LTD.
Testing & Calibration Laboratory

Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT HSCC INDIA LIMITED

DRILLING AGENCY BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-1 | **Ground Level :** - | **Northing:- 2313703.7667** | **Size Of Bit : NX** | **Started On: 13-06-2022**

Location : BH-1 Propose Medical College | **Collar Elavation :** 283.000 | **Easting :- 565486.6326** | **Size Of Hole : 150mm** | **Completion On: 14-06-2022**

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
13 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Nil	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	43	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.05	0.05	30	0.00	SPT	100/5CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
14 June 2022	3.05	4.50	1.45	50	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	6.00	7.50	1.5	35	0.04	CORE	_	_	_	_	17	11.33	1_5	_	_	_	17	11.33	Highly Wreathered Basalt Rock							
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	23	15.33	6_11	_	_	_	23	15.33	Highly Wreathered Basalt Rock	Grey					IV	
	9.00	10.50	1.5	60	0.03	CORE	_	_	_	_	40	26.67	12_13	2	40	26.67	40	26.67	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 10.50 mtr from EGL as per actual site condition.

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Name:

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-2	Ground Level :	-	Northing:- 2313779.1808	Size Of Bit : NX	Started On: 14-06-2022
Location : BH-2 Medical College Block	Collar Elavation :	282.000	Easting :- 565475.6474	Size Of Hole : 150mm	Completion On: 15-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
14 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	6.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.02	0.02	30	0.00	SPT	100/2CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
15 June 2022	3.02	4.50	1.48	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	6.00	7.50	1.5	55	0.03	CORE	_	_	_	_	21	14.00	1_5	_	_	_	21	14.00	Highly Wreathered Basalt Rock	Grey					IV	
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	47	31.33	6_11	2	25	16.67	47	31.33	Highly Wreathered Basalt Rock							
	9.00	10.50	1.5	30	0.05	CORE	_	_	_	_	65	43.33	12_13	2	65	43.33	65	43.33	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 10.50 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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Name:

BECQUEREL INDUSTRIES PVT. LTD.
Testing & Calibration Laboratory

Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT: HSCC INDIA LIMITED

DRILLING AGENCY: BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-3 | Ground Level : - | Northing:- 2313726.9264 | Size Of Bit : NX | Started On: 13-06-2022

Location : BH-3 Proposed Medical College Block | Collar Elavation : 291.000 | Easting :- 565426.7434 | Size Of Hole : 150mm | Completion On: 14-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
13 June 2022	0.00	1.50	1.5	60	0.03	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	6.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
14 June 2022	3.00	3.06	0.06	20	0.00	SPT	100/6CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.06	4.50	1.44	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	55	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	6.00	7.50	1.5	60	0.03	CORE	_	_	_	_	19	12.67	1_5	_	_	_	19	12.67	Highly Wreathered Basalt Rock	Grey					IV	
	7.50	9.00	1.5	50	0.03	CORE	_	_	_	_	10	6.67	6_8	_	_	_	10	6.67	Highly Wreathered Basalt Rock							
	9.00	10.50	1.5	55	0.03	CORE	_	_	_	_	42	28.00	9_10	2	42	28.00	42	28.00	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 10.50 mtr from EGL as per actual site condition.

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Name:

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Name:

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Testing & Calibration Laboratory

Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-4	Ground Level :	-	Northing:- 2313981.8036	Size Of Bit : NX	Started On: 13-06-2022
Location : BH-4 Proposed Hospital Block	Collar Elavation :	285.000	Easting :- 565449.6676	Size Of Hole : 150mm	Completion On: 14-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
13 June 2022	0.00	1.50	1.5	60	0.03	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	5.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.04	0.04	30	0.00	SPT	100/4CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.04	4.50	1.46	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	60	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
14 June 2022	6.00	7.50	1.5	40	0.04	CORE	_	_	_	_	9	6.00	1_4	_	_	_	8	5.33	Completely Weathered Basalt Rock	Grey					IV	
	7.50	9.00	1.5	45	0.03	CORE	_	_	_	_	19	12.67	5_9	_	_	_	19	12.67	Highly Wreathered Basalt Rock							
	9.00	10.50	1.5	50	0.03	CORE	_	_	_	_	32	21.33	10_13	_	_	_	32	21.33	Highly Wreathered Basalt Rock							
	10.50	12.00	1.5	55	0.03	CORE	_	_	_	_	68	45.33	14	1	68	45.33	68	45.33	Highly Wreathered Basalt Rock							
	12.00	13.50	1.5	60	0.03	CORE	_	_	_	_	45	30.00	15_16	2	45	30.00	45	30.00	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 13.50 mtr from EGL as per actual site condition.

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Name:

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-5	Ground Level :	-	Northing:- 2313922.0256	Size Of Bit : NX	Started On: 14-06-2022
Location : BH-5 Proposed Hospital Block	Collar Elavation :	271.000	Easting :- 565459.8411	Size Of Hole : 150mm	Completion On: 15-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
14 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	4.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.03	0.03	30	0.00	SPT	100/3CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.03	4.50	1.47	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
15 June 2022	6.00	7.50	1.5	30	0.05	CORE	_	_	_	_	5	3.33	1	_	_	_	5	3.33	Completely Weathered Basalt Rock	Grey					V	
	7.50	9.00	1.5	50	0.03	CORE	_	_	_	_	15	10.00	2_3	_	_	_	15	10.00	Highly Wreathered Basalt Rock							
	9.00	10.50	1.5	50	0.03	CORE	_	_	_	_	20	13.33	4_6	_	_	_	20	13.33	Highly Wreathered Basalt Rock						IV	
	10.50	12.00	1.5	55	0.03	CORE	_	_	_	_	43	28.67	7_9	2	36	24.00	43	28.67	Highly Wreathered Basalt Rock							
	12.00	13.50	1.5	40	0.04	CORE	_	_	_	_	43	28.67	10_12	2	39	26.00	43	28.67	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 13.50 mtr from EGL as per actual site condition.

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BECQUEREL INDUSTRIES PVT. LTD.
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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-6	Ground Level :	-	Northing:- 2313940.5225	Size Of Bit : NX	Started On: 10-06-2022
Location : BH-6 Proposed Hospital Block	Collar Elavation :	295.000	Easting :- 565518.365	Size Of Hole : 150mm	Completion On: 11-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
10 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	4.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.00	3.03	0.03	15	0.00	SPT	100/3CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.03	4.50	1.47	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	65	0.02	CORE	_	_	_	_	11	7.33	1_4	_	_	_	16	10.67	Highly Wreathered Basalt Rock	Grey						
11 June 2022	6.00	7.50	1.5	50	0.03	CORE	_	_	_	_	10	6.67	5_6	_	10	6.67	15	10.00	Highly Wreathered Basalt Rock							
	7.50	9.00	1.5	40	0.04	CORE	_	_	_	_	13	8.67	7_8	_	10	6.67	19	12.67	Highly Wreathered Basalt Rock						IV	
	9.00	10.50	1.5	60	0.03	CORE	_	_	_	_	12	8.00	9_10	_	11	7.33	18	12.00	Highly Wreathered Basalt Rock							
	10.50	12.00	1.5	45	0.03	CORE	_	_	_	_	6	4.00	11_12	2	_	_	10	6.67	Highly Wreathered Basalt Rock							
	12.00	13.50	1.5	25	0.06	CORE	_	_	_	_	19	12.67	13	2	29	19.33	29	19.33	Highly Wreathered Basalt Rock							

The bore hole is terminated at depth of 13.50 mtr from EGL as per actual site condition.

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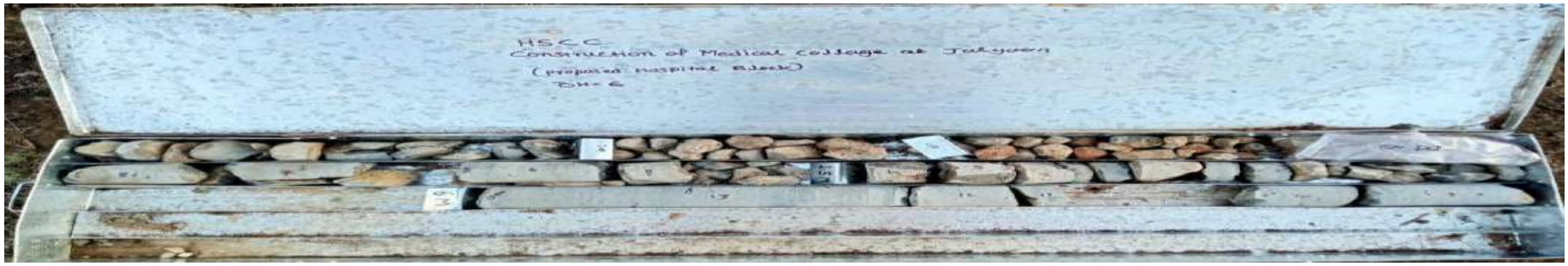

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CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-7	Ground Level :	-	Northing:- 2313749.6498	Size Of Bit : NX	Started On: 15-06-2022
Location : BH-7 Indore Sports Block	Collar Elavation :	301.000	Easting :- 565285.9363	Size Of Hole : 150mm	Completion On: 15-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
15 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	6.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.07	0.07	30	0.00	SPT	100/7CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.07	4.50	1.43	60	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	70	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							

The bore hole is terminated at depth of 6.00 mtr from EGL as per actual site condition.

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-8	Ground Level :	-	Northing:- 2313930.8513	Size Of Bit : NX	Started On: 15-06-2022
Location : BH-8 Near Mortury Autospy Block	Collar Elavation :	305.000	Easting :- 565391.081	Size Of Hole : 150mm	Completion On: 15-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
15 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.05	0.05	30	0.00	SPT	100/5CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.05	4.50	1.45	60	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	70	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							

The bore hole is terminated at depth of 6.00 mtr from EGL as per actual site condition.

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-9	Ground Level :	-	Northing:- 2313894.6763	Size Of Bit : NX	Started On: 14-06-2022
Location : BH-9 Transformer Generater Space	Collar Elavation :	304.000	Easting :- 565652.577	Size Of Hole : 150mm	Completion On: 14-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
14 June 2022	0.00	1.50	1.5	45	0.03	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	5.00 mtr	3.00 mt Casing Used	36 carat diamond bit	V	
	1.50	3.00	1.5	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.00	3.03	0.03	25	0.00	SPT	100/3CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.03	4.50	1.47	60	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	60	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							

The bore hole is terminated at depth of 6.00 mtr from EGL as per actual site condition.

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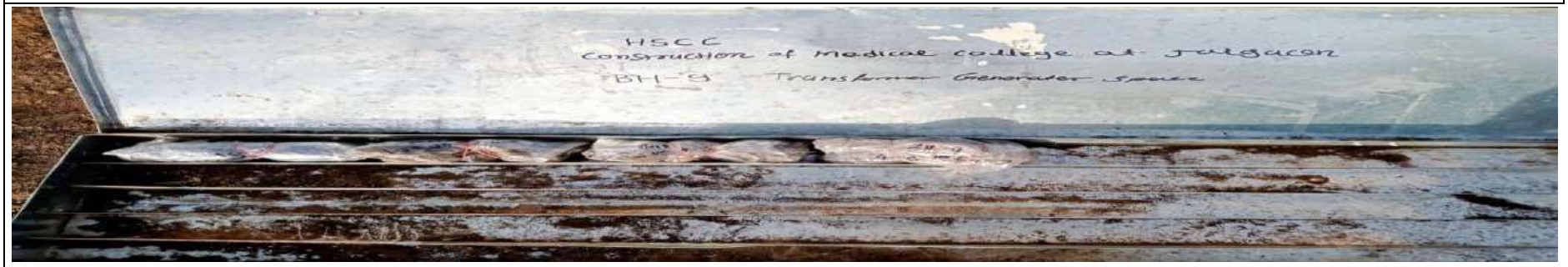

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-10	Ground Level :	-	Northing:- 2313651.7296	Size Of Bit : NX	Started On: 16-06-2022
Location : BH-10 Back Side Indore Sports Block	Collar Elavation :	294.000	Easting :- 565181.8656	Size Of Hole : 150mm	Completion On: 16-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
16 June 2022	0.00	1.50	1.5	45	0.03	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	6.00 mtr	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.08	0.08	25	0.00	SPT	100/8CM	_	_	R	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.08	4.50	1.42	60	0.02	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	4.50	6.00	1.5	60	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							

The bore hole is terminated at depth of 6.00 mtr from EGL as per actual site condition.

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-11	Ground Level :	-	Northing:- 2314004.3438
Location : BH-11 DIS RESD	Collar Elavation :	-	Easting :- 565256.1033

Size Of Bit : NX	Started On: 17-06-2022
Size Of Hole : 150mm	Completion On: 17-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
17 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.05	0.05	20	0.00	SPT	100/5CM	_	_	R	_	_	_	_	_	_	_	_								
	3.05	4.50	1.45	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	60	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	45	0.03	CORE	_	_	_	_	9	6	1_2	_	_	_	9	6								
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	36	24	3_4	1	29	19.33	36	24	Highly Weathered Basalt Rock						IV	

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-12	Ground Level :	-	Northing:- 2313973.3694
Location : BH-12 Near Type-2	Collar Elavation :	-	Easting :- 565138.034

Size Of Bit : NX	Started On: 17-06-2022	
Size Of Hole : 150mm	Completion On: 17-06-2022	

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
17 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit	V	
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	3.00	3.12	0.12	30	0.00	SPT	100/12CM	_	_	R	_	_	_	_	_	_	_	_								
	3.12	4.50	1.38	25	0.06	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	15	0.10	CORE	_	_	_	_	_	_	_	_	_	_	_	_								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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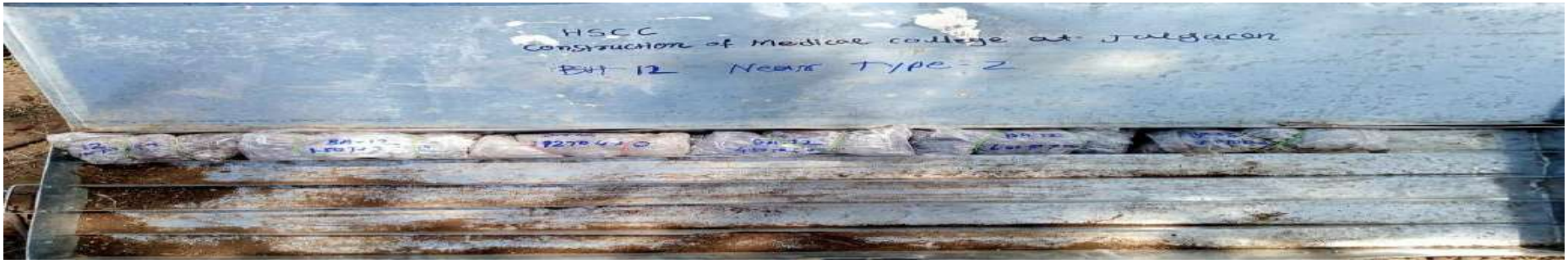

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GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-13	Ground Level :	-	Northing:- 2314089.5897
Location : BH-13 Near Type-5	Collar Elavation :	-	Easting :- 565226.3537

Size Of Bit : NX	Started On: 17-06-2022
Size Of Hole : 150mm	Completion On: 17-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
17 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.08	0.08	30	0.00	SPT	100/8CM	_	_	R	_	_	_	_	_	_	_	_								
	3.08	4.50	1.42	25	0.06	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	20	0.08	CORE	_	_	_	_	9	6	1_2	_	_	_	9	6								
	7.50	9.00	1.5	15	0.10	CORE	_	_	_	_	24	16	3_4	2	36	24	36	24	Highly Weathered Basalt Rock						IV	

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

Name:

Approved by Sign : HSCC

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CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-14	Ground Level :	-	Northing:- 2314046.9734	Size Of Bit : NX	Started On: 18-06-2022
Location : BH-14 Between Type 3 & Resident Hoste	Collar Elavation :	-	Easting :-565047.6612	Size Of Hole : 150mm	Completion On: 18-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
18 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.10	0.1	30	0.00	SPT	100/10CM	_	_	R	_	_	_	_	_	_	_	_								
	3.10	4.50	1.4	25	0.06	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	20	0.08	CORE	_	_	_	_	6	4	1_2	_	_	_	6	4								
	7.50	9.00	1.5	15	0.10	CORE	_	_	_	_	28	18.67	3_5	1	20	13.33333	28	18.6667	Highly Weathered Basalt Rock						IV	

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

Name:

Approved by Sign : HSCC

Name:

BECQUEREL INDUSTRIES PVT. LTD.
Testing & Calibration Laboratory

Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-15	Ground Level :	-	Northing:- 2314046.9734	Size Of Bit : NX	Started On: 18-06-2022
Location : BH-15 Between Resident Hostel-1 & 2	Collar Elavation :	-	Easting :-565047.6612	Size Of Hole : 150mm	Completion On: 18-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
18 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.09	0.09	30	0.00	SPT	100/9CM	_	_	R	_	_	_	_	_	_	_	_								
	3.09	4.50	1.41	25	0.06	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	20	0.08	CORE	_	_	_	_	7	4.666667	1	_	_	_	7	4.66667								
	7.50	9.00	1.5	15	0.10	CORE	_	_	_	_	32	21.33	2_4	1	19	12.66667	32	21.3333	Highly Weathered Basalt Rock						IV	

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-16	Ground Level :	-	Northing:- 2314125.0923	Size Of Bit : NX	Started On: 18-06-2022
Location : BH-16 In Front of Dinning Hall	Collar Elavation :	-	Easting :-565159.6731	Size Of Hole : 150mm	Completion On: 18-06-2022

Date	Drilled Depth (mt) From	To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
18 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit	V	
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	3.00	3.14	0.14	30	0.00	SPT	100/9CM	_	_	R	_	_	_	_	_	_	_	_								
	3.14	4.50	1.36	25	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock							
	6.00	6.17	0.17	41	0.00	CORE	42	100/2CM	_	R	_	_	_	_	_	_	_	_								
	6.17	7.50	1.33	20	0.07	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	15	0.10	CORE	_	_	_	_	_	_	_	_	_	_	_	_								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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BECQUEREL INDUSTRIES PVT. LTD.
Testing & Calibration Laboratory

Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-17	Ground Level :	-	Northing:- 2314130.7459	Size Of Bit : NX	Started On: 19-06-2022
Location : BH 17 Between Girls Hostel 1& 2	Collar Elavation :	-	Easting :-564941.8858	Size Of Hole : 150mm	Completion On: 19-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value 15	15	15	N	Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
19 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.04	0.04	25	0.00	SPT	4CM/100	_	_	R	_	_	_	_	_	_	_	_								
	3.04	4.50	1.46	50	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	55	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	21	14	1_5	_	_	_	21	14	Highly Weathered Basalt Rock						IV	

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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Approved by Sign : HSCC

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-18	Ground Level :	-	Northing:- 2314228.8708	Size Of Bit : NX	Started On: 19-06-2022
Location : BH 18 Between Interns & Nurse Hostel	Collar Elavation :	-	Easting :-565030.4611	Size Of Hole : 150mm	Completion On: 19-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
19 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.05	0.05	25	0.00	SPT	5CM/100	_	_	R	_	_	_	_	_	_	_	_								
	3.05	4.50	1.45	50	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	55	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	8	5.33	1_2	_	_	_	8	5.33								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-19	Ground Level :	-	Northing:- 2314253.4884	Size Of Bit : NX	Started On: 19-06-2022
Location : BH 19 Nera Interance Boy's Hostel	Collar Elavation :	-	Easting :-564959.7781	Size Of Hole : 150mm	Completion On: 19-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
19 June 2022	0.00	1.50	1.5	30	0.05	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	20	0.08	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.04	0.04	25	0.00	SPT	4CM/100	_	_	R	_	_	_	_	_	_	_	_								
	3.04	4.50	1.46	50	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	55	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	60	0.03	CORE	_	_	_	_	8	5.33	1_2	_	_	_	8	5.33								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-20	Ground Level :	-	Northing:- 2314309.7715	Size Of Bit : NX	Started On: 20-06-2022
Location : BH 20 Near Boy's Hostel 2	Collar Elavation :	-	Easting :-564894.1299	Size Of Hole : 150mm	Completion On: 20-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
20 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.07	0.07	30	0.00	SPT	7CM/52	_	_	R	_	_	_	_	_	_	_	_								
	3.07	4.50	1.43	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	6.00	7.50	1.5	40	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	7.50	9.00	1.5	45	0.03	CORE	_	_	_	_	22	14.67	1_5	1	10	6.67	22	14.67								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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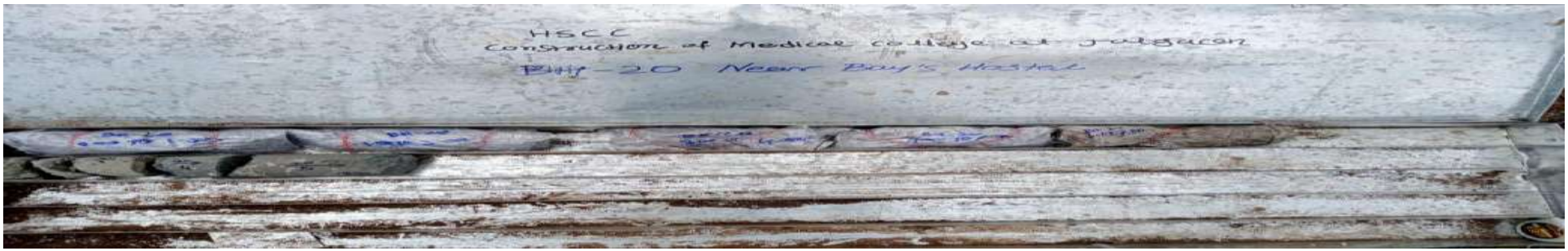

BECQUEREL INDUSTRIES PVT. LTD.
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Geotechnical Investigation for Construction of Medical College at Jalgaon, Maharastra

CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-21	Ground Level :	-	Northing:- 2314355.4416	Size Of Bit : NX	Started On: 20-06-2022
Location : BH 21 Boy's Hostel 1&2	Collar Elavation :	-	Easting :-564987.0412	Size Of Hole : 150mm	Completion On: 20-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
20 June 2022	0.00	1.50	1.5	40	0.04	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.08	0.08	30	0.00	SPT	8CM/100	_	_	R	_	_	_	_	_	_	_	_								
	3.08	4.50	1.42	45	0.03	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	8	5.33	1_2	_	_	_	8	5.33								
	6.00	7.50	1.5	40	0.04	CORE	_	_	_	_	41	27.33	3_6	3	38	25.33	41	27.33	Highly Weathered Basalt Rock						IV	
	7.50	9.00	1.5	45	0.03	CORE	_	_	_	_	47	31.33	7_11	2	27	18.00	47	31.33								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

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CLIENT	HSCC INDIA LIMITED
DRILLING AGENCY	BECQUEREL INDUSTRIES PVT. LTD.

GEOLOGICAL CORE LOG OF DRILL HOLE (IS : 4464 - 2020)

Bore Hole No :- BH-22	Ground Level :	-	Northing:-2314376.6801	Size Of Bit : NX	Started On: 20-06-2022
Location : BH 22 Future Construction	Collar Elavation :	-	Easting :-564904.0026	Size Of Hole : 150mm	Completion On: 20-06-2022

Date	Drilled Depth (mt) From	Drilled Depth (mt) To	Run (mt)	Drilling time in Minutes	Rate of Penetration	Type of sample	SPT N value				Total Core Recovery (cm)	% of Core Recovery	Number of Core Pieces	RQD Pieces more than 10 cm	Total Length of RQD	% of RQD	Total Length of SCR	% of SCR	Geological description	Colour Return water	Water loss	Water level in mtr.	Casing Used	Bit/ Barrel Used	Weathereing grade As per IS 4464:2020	Reamark
							15	15	15	N																
20 June 2022	0.00	1.50	1.5	20	0.08	D S	_	_	_	_	_	_	_	_	_	_	_	_	Gravels	Brown	Partial Water loss	Not Encountered	3.00 mt Casing Used	36 carat diamond bit		
	1.50	3.00	1.5	30	0.05	CORE	_	_	_	_	_	_	_	_	_	_	_	_	Completely Weathered Basalt Rock						V	
	3.00	3.04	0.04	20	0.00	SPT	4CM/100	_	_	R	_	_	_	_	_	_	_	_								
	3.04	4.50	1.46	35	0.04	CORE	_	_	_	_	_	_	_	_	_	_	_	_								
	4.50	6.00	1.5	40	0.04	CORE	_	_	_	_	8	5.33	1_2	_	_	_	8	5.33								
	6.00	7.50	1.5	45	0.03	CORE	_	_	_	_	41	27.33	3_6	3	38	25.33	41	27.33	Highly Weathered Basalt Rock						IV	
	7.50	9.00	1.5	45	0.03	CORE	_	_	_	_	47	31.33	7_11	2	27	18.00	47	31.33								

The bore hole is terminated at depth of 9.00 mtr from EGL as per actual site condition.

Logged by Sign : M/S.Becquerel Industries Pvt. Ltd.

Name:

Approved by Sign : HSCC

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3.0 TEST RESULTS

SUMMARY OF ROCK TEST RESULTS

CLIENT:	HSCC India Limited									Report No.	1507
PROJECT:	"Construction of Medical College at Jalgaon, Maharashtra"										
				Methods:	IS:13030					IS:9143	IS:8764
BH No.	Piece No.	Depth (m)	Sample Type	Condition	Dry Density	Saturated Density	Water Absorption	Porosity	Specific Gravity	Unconfined Compressive Strength	Uniaxial Compressive Strength by Point Load Strength Index
					g/cc	g/cc	%	%	-	Kg/cm²	Kg/cm²
BH 1	2.0	6.0-7.5	ROCK	Soaked	2.656	2.673	0.65	1.73	2.703	-	365.7
BH 1	8.0	7.5-9.0	ROCK	Soaked	2.737	2.758	0.75	2.06	2.795	-	394.1
BH 1	13.0	9.0-10.5	ROCK	Soaked	2.776	2.793	0.63	1.76	2.825	516.89	-
BH 2	2.0	6.0-7.5	ROCK	Soaked	2.708	2.724	0.61	1.66	2.754	-	198.7
BH 2	11.0	7.5-9.0	ROCK	Soaked	2.758	2.782	0.86	2.37	2.825	509.07	-
BH 2	13.0	9.0-10.5	ROCK	Soaked	2.731	2.742	0.44	1.19	2.763	532.74	-
BH 3	2.0	6.0-7.5	ROCK	Soaked	2.710	2.724	0.49	1.32	2.747	-	315.9
BH 3	8.0	7.5-9.0	ROCK	Soaked	2.855	2.867	0.43	1.23	2.891	-	355.2
BH 3	10.0	9.0-10.5	ROCK	Soaked	2.841	2.849	0.30	0.85	2.865	614.69	-
BH 4	3.0	6.0-7.5	ROCK	Soaked	2.517	2.538	0.83	2.08	2.571	-	223.3
BH 4	7.0	7.5-9.0	ROCK	Soaked	2.708	2.726	0.66	1.79	2.757	-	239.1
BH 4	13.0	9.0-10.5	ROCK	Soaked	2.707	2.725	0.64	1.73	2.755	-	433.5
BH 4	14.0	10.5-12.0	ROCK	Soaked	2.778	2.792	0.50	1.39	2.817	662.29	-
BH 4	16.0	12.0-13.5	ROCK	Soaked	2.847	2.858	0.39	1.11	2.879	716.19	-
BH 5	3.0	7.5-9.0	ROCK	Soaked	2.696	2.701	0.20	0.55	2.711	-	436.5
BH 5	5.0	9.0-10.5	ROCK	Soaked	2.871	2.877	0.21	0.60	2.889	-	512.3
BH 5	9.0	10.5-12.0	ROCK	Soaked	2.890	2.898	0.25	0.73	2.912	746.88	-
BH 5	12.0	12.0-13.5	ROCK	Soaked	2.890	2.897	0.26	0.74	2.911	660.27	-

SUMMARY OF ROCK TEST RESULTS

CLIENT:	HSCC India Limited									Report No.	1507
PROJECT:	"Construction of Medical College at Jalgaon, Maharashtra"										
				Methods:	IS:13030					IS:9143	IS:8764
BH No.	Piece No.	Depth (m)	Sample Type	Condition	Dry Density	Saturated Density	Water Absorption	Porosity	Specific Gravity	Unconfined Compressive Strength	Uniaxial Compressive Strength by Point Load Strength Index
					g/cc	g/cc	%	%	-	Kg/cm²	Kg/cm²
BH 6	5.0	6.0-7.5	ROCK	Soaked	2.678	2.685	0.24	0.65	2.696	-	360.3
BH 6	8.0	7.5-9.0	ROCK	Soaked	2.723	2.731	0.28	0.75	2.744	-	314.7
BH 6	10.0	9.0-10.5	ROCK	Soaked	2.767	2.776	0.34	0.94	2.793	-	433.2
BH 6	12.0	10.5-12.0	ROCK	Soaked	2.751	2.762	0.37	1.02	2.780	-	472.9
BH 6	13.0	12.0-13.5	ROCK	Soaked	2.789	2.798	0.32	0.88	2.814	550.32	-
BH 11	2.0	6.0-7.5	ROCK	Soaked	2.653	2.660	0.27	0.73	2.673	-	242.8
BH 11	4.0	7.5-9.0	ROCK	Soaked	2.814	2.825	0.38	1.06	2.844	535.26	-
BH 13	2.0	6.0-7.5	ROCK	Soaked	2.704	2.714	0.36	0.98	2.731	-	300.8
BH 13	4.0	7.5-9.0	ROCK	Soaked	2.730	2.740	0.39	1.06	2.759	467.33	-
BH 14	2.0	6.0-7.5	ROCK	Soaked	2.517	2.530	0.54	1.36	2.551	-	234.8
BH 14	5.0	7.5-9.0	ROCK	Soaked	2.563	2.576	0.51	1.30	2.597	379.64	-
BH 15	1.0	6.0-7.5	ROCK	Soaked	2.652	2.656	0.16	0.44	2.663	-	432.3
BH 15	4.0	7.5-9.0	ROCK	Soaked	2.737	2.741	0.15	0.42	2.749	544.08	-

SUMMARY OF ROCK TEST RESULTS

CLIENT:	HSCC India Limited									Report No.	1507
PROJECT:	"Construction of Medical College at Jalgaon, Maharashtra"										
				Methods:	IS:13030					IS:9143	IS:8764
BH No.	Piece No.	Depth (m)	Sample Type	Condition	Dry Density	Saturated Density	Water Absorption	Porosity	Specific Gravity	Unconfined Compressive Strength	Uniaxial Compressive Strength by Point Load Strength Index
					g/cc	g/cc	%	%	-	Kg/cm²	Kg/cm²
BH 17	2.0	7.5-9.0	ROCK	Soaked	2.661	2.667	0.25	0.65	2.678	-	413.9
BH 18	8.0	7.5-9.0	ROCK	Soaked	2.690	2.697	0.27	0.73	2.710	-	275.9
BH 19	2.0	7.5-9.0	ROCK	Soaked	2.508	2.523	0.61	1.54	2.547	-	195.3
BH 20	4.0	7.5-9.0	ROCK	Soaked	2.527	2.549	0.84	2.12	2.582	-	354.7
BH 21	2.0	4.5-6.0	ROCK	Soaked	2.535	2.551	0.65	1.65	2.578	-	197.1
BH 21	4.0	6.0-7.5	ROCK	Soaked	2.702	2.708	0.23	0.63	2.719	376.05	-
BH 21	11.0	7.5-9.0	ROCK	Soaked	2.643	2.650	0.23	0.62	2.660	449.35	-
BH 22	3.0	6.0-7.5	ROCK	Soaked	2.632	2.643	0.43	1.13	2.662	-	592.0
BH 22	6.0	7.5-9.0	ROCK	Soaked	2.764	2.772	0.31	0.85	2.787	424.11	-