

TENDER FOR

GEO-TECHNICAL (SOIL) INVESTIGATION

FOR

PROPOSED CONSTRUCTION OF 50 Bedded MCH Block at
THQH Irinjalakuda, Thrissur
Kerala

TENDER CONDITIONS AND SPECIFICATIONS

VOLUME-I

September 2013

Tender No. – HSCC/NRHM/IRINJA/SOIL/2013

HSCC (INDIA) LTD.
(CONSULTANTS & ENGINEERS FOR MEGA HOSPITALS & LABORATORIES)
E-6(A), sector-1, NOIDA (U.P) 201301 (India)

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Govt. of Kerala				
Tender No.HSCC/ NRHM/KRL /Soil/2013			Date: 19.09.2013	
<u>INVITATION FOR TENDER</u>				
Sealed bids are invited from eligible contractors/firms for the following works:				
Name & Description of work:	Estimated Cost:	Completion period of work	Date of issue of tender document from	Last date of submission (at HSCC Office, Noida)
i)Geo-technical (Soil) investigation for 50 Bedded MCH Block at THQH Chengannur, Alappuzha, Kerala	Rs. 70,000	4 Weeks	21.09.2013 to 30.09.2013 upto 13:00 hrs	30.09.2013 upto 15:00 hrs & Opening at 15:30 hrs
ii) Geo-technical (Soil) investigation for 50 Bedded MCH Block at THQH Irinjalakuda, Thrissur, Kerala	Rs. 70,000	4 Weeks	21.09.2013 to 30.09.2013 upto 13:00 hrs	30.09.2013 upto 15:00 hrs & Opening at 15:30 hrs
Tender document may be downloaded from HSCC website www.hsccltd.co.in and submitted at HSCC's office at Plot No. E - 6(A), Sector-1 Noida-201301. HSCC reserves the right to accept or reject any application without assigning any reason or incurring any liability whatsoever. Prospective bidders are advised to regularly scan through HSCC website as corrigendum/amendments etc., if any, will be notified only on the HSCC (India) Ltd. websites and no separate advertisement will be made for the same.				
GM (Projects), HSCC (I) Ltd.				

Name of Work: **Geo-technical (Soil) investigation for 50 Bedded MCH Block at THQH irinjalakuda, Thrissur, Kerala**

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Name of Work: Geo-technical (Soil) investigation for 50 Bedded MCH Block at THQH irinjalakuda, Thrissur, Kerala

Offers are hereby invited by HSCC (India) Ltd. from competent Survey/Soil Investigation Agencies. The agency shall carry out the Geotechnical Investigations Survey for the above sites as per enclosed scope of work, general terms and conditions, time period and mode of payments etc.

The offer shall be submitted in sealed covers marked "Tender for Geo-technical (Soil) investigation for proposed Construction of 50 Bedded MCH Block at THQH, Irinjalakuda, Thrissur, Kerala." as detailed below:

ENVELOPE MARKED NO. 1

Shall contain all documents supplied with the tender **excluding Price bid** duly signed and filled.

ENVELOPE MARKED NO. 2

Shall contain all Price bid duly filled signed & stamped.

All the envelopes marked above to be sealed in a separate envelope and submitted with in due date & time at the following address:

**HSCC (India) Ltd.
E - 6(A), Sector -1, NOIDA, Uttar Pradesh.
Pin- 201301.**

The last date of submission of tender is 30.09.2013 up to 1500 Hrs.

Bids shall be opened in the office of HSCC (India) Ltd, Plot No. 6(A), Block-E, Sector 1, Noida, Distt.Gautam Budh Nagar, Uttar Pradesh, Pin - 201301, half an hour after the prescribed time for tender submission in presence of the bidders representatives who may wish to be present.

Envelope No.1: Shall be opened. Bids of parties who do not accept the conditions laid down in the bid documents may be rejected.

Envelope No. 2: Shall contain the sealed price bid. Whose bids is found to be generally in order and substantially responsive* shall be opened either at the bid opening or at a subsequent date to be intimated in advance to such eligible bidders.

Offers not complete in all respects and/or received without the cost of tender, earnest money, and conditional or not in accordance with our terms and conditions, will be summarily rejected. The decision of HSCC shall be final and binding in this regard. HSCC reserves the right to accept or reject any or all quotations without assigning any reason thereof and also take no responsibility for delay, loss or non-receipt of quotations sent by post either way.

Kindly note that offers shall be valid for (03) Three months from the last date of submission of bids.

GM (Projects), HSCC (I) Ltd.

* as per Pre Qualifying Criteria

LETTER OF APPLICATION

[NOTE : On the letter head paper of the applicant including full postal address, telephone no., fax no., telex no. and cable address]

Date: _____

HSCC (India) Ltd.
Plot No. 6(A), Block(E), Sector-I
NOIDA, U.P.-201301

Sirs,

1. Being duly authorised to represent and act on behalf of
(hereinafter referred to as "the Applicant") and having reviewed and fully understood all the pre-qualification information provided, the undersigned hereby apply to be pre-qualified by yourselves as a bidder for the

Tender No.	Client Name
HSCC/NRHM/IRINJA/SOIL/2013	HSCC(I) Ltd. E-6/A, Sector-1, Noida

2. Attached to this letter are copies or original documents defining:
 - (a) the applicants legal status
 - (b) the principal place of business
 - (c) the place of incorporation (for applicants who are corporations) or the place of registration and the nationality of the owners (for applicants who are partnerships or individually owned firms)
3. Your agency and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this application, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This letter of application will also serve as authorization or any individual or authorized representative or any institution referred to in the supporting information, to provide such information deemed necessary and requested by you to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.
4. Your agency and its authorized representatives may contact the following persons for further information:

General, Personnel, Technical and Financial Enquiries	
Contact 1 :	Telephone 1 :
Contact 2 :	Telephone 2 :
Fax No.:-	

5. This application is made in the full understanding that:
- (a) Bids submitted by applicants will be subject to verification of all information submitted at the time of bidding
- (b) Your agency reserves the right to :
- amend the scope and value of the contract / bid under this project ; in such event, bids will only be called from pre-qualified bidders who meet the revised requirements ; and
 - reject or accept any application, cancel the pre-qualification process, and reject all applications without assigning reasons or incurring any liability thereof; and
- (c) Your agency shall not be liable for any such actions and shall be under no obligation to inform the Applicant
6. The undersigned declare that statements made and the information provided in the duly completed application are, true and correct in every detail.

Sealed & Signed
Name
For and on behalf of

Pre Qualifying Criteria

Following is the pre qualification criteria for the tenderers:

Contractors working in the same field and who have:

1. Experience of having successfully completed three similar works during last seven years.
2. Similar works here mean works mentioned in “Scope of Work”.

All tenderers should submit the proof of works executed as above & “Satisfactory Performance Certificates”. Absence of submitting the same along with the tender will disqualify the tenderer.

The competent authority to pre-qualify shall have the powers to relax any condition/criteria for pre-qualification if it considers expedient to do so.

SCOPE OF WORK

GEOTECHNICAL INVESTIGATION AND REPORT SUBMISSION

- 1.01 Detailed Geo-technical Investigation is to be carried out of the area of plot and submission of a detailed Geo-technical report which shall be the basis for the design and detailing of foundations for buildings and structures.
- 1.02 Item wise list of investigations to be conducted along with approximate estimated quantities are given at Schedule of Quantities against which the agency shall quote the rates in figures as well as in words. However, **payment shall be made as per quantities actually executed.**
- 1.03 The work shall include mobilization of all necessary equipments, providing necessary engineering supervision and technical personnel, skilled and unskilled labour etc. as required to carry out the entire field as well as laboratory investigation, analysis and interpretation of data collected and preparation of a Geo-technical report.
- 1.04 The Agency shall make their own arrangements for locating the coordinates and positions of bore holes, trial pits, dynamic cone penetration tests and other field tests as per the drawings/sketches supplied to him and for determining the reduced levels (R.L's) at these locations with respect to the single bench mark indicated by the Engineer. Two established reference lines will be indicated to him.
- 1.05 All the field and laboratory data shall be recorded in the proforma recommended in Indian Standards codes. The Agency shall submit to the HSCC one copy of field bore logs and all the field records (countersigned by the Engineer) soon after the completion of each borehole/test.

1.06 The Agency shall interact with HSCC and get acquainted with the broad guidelines about the different types of structures envisaged and in assessing the load intensities on the foundations for the various structures of the project in order to enable him to make specific recommendations for the depth, founding stratum, type of foundation and the allowable bearing pressure.

1.07 The Agency shall carry out all work meant within Para 1.01 of this specification even if not explicitly mentioned under the scope. All work shall be executed to the satisfaction of the Engineer.

1.08 FIELD INVESTIGATIONS - SOIL

1.08.1 BORING

a) Bore holes shall be taken at specified locations to obtain information about the subsoil profile, its nature and strength and to collect soil samples for strata identification and conducting laboratory tests. The sequence of boring shall be fixed with the approval of the Engineer and on ascertaining preliminary nature of subsoil profile, the Engineer shall reserve the right to increase or decrease the number of proposed Bore holes by any limit. However, as per Clause 1.02, payment shall be made as per actual quantities executed. The minimum diameter of the bore holes shall be 150 mm and boring shall be carried out in accordance with the provisions of IS: 1892.

b) All boreholes may extend up to 15.0 to 30.0 Mtr. depths or depths shown on the construction drawings or as directed by the Engineer. The refusal criteria shall be strictly as per IS: 1892. When the boreholes are to be terminated in soil strata an additional Standard Penetration Test shall be carried out at the termination depth. No extra payment shall be made for carrying out Standard Penetration Tests. **The site data shall be made available to HSCC as and when each bore is completed either by fax/ courier/speed post/ hand delivery showing location of the borehole on the plan and the soil data along with visual description. The comments regarding the strata and the nature of variations shall also be included.**

c) On completion of the boreholes, the Agency shall backfill all the bore holes as directed by the Engineer. The boreholes shall not be back filled till verified by the Engineer. Arrangements shall be made by the agency to preserve the boreholes so that the depth can be verified.

1.08.3 SAMPLING

1.08.3.1 General

All the accessories required for sampling and the method of sampling shall conform to IS: 2132. All the disturbed and undisturbed samples collected in the field shall be classified at the site as per IS: 1498.

1.08.3.2 Disturbed Sample

Disturbed soil samples shall be collected from bore holes at regular intervals. Jar samples weighing approximately 1 Kg. shall be collected in bore holes at 0.5 m below ground level and at every identifiable change of strata to supplement the boring records. Samples shall be immediately stored in air tight jars and shall fill the jar as far as possible.

Sufficient number of soil samples shall be collected. Disturbed soil samples shall be collected for field identification and conducting tests such as sieve analysis, index properties, specific gravity, chemical analysis, (chemical tests on undisturbed samples to be done so that representative chemical state of the total depth of the soil is obtained) etc. Undisturbed samples shall be collected to estimate the physical strength and settlement properties of the soil.

1.08.3.3 Undisturbed Sample

In each borehole undisturbed sample shall be collected at every change of strata and depths of 1.0 m, 4.0 m, 7.0 m, 10.0 m, 13.0 m, 15.0 m and as directed by the Engineer. Undisturbed samples shall be of 100 mm dia and 450 mm length. Samples shall be collected in such a manner that the structure of the soils and its moisture content do not get altered.

The specifications for the accessories required for sampling and the sampling procedure shall conform to IS: 1892 and IS: 2132. Undisturbed sampling in sand shall be done using compressed air technique mentioned in IS: 8763.

1.08.3.4 One of the methods shall be adopted for determining the ground water table in bore holes as per IS: 6935 and as per the instructions of the Engineer.

1.08.3.5 a) Sub-soil water samples

Sub-soil water samples shall be collected for carrying out chemical analysis thereon. Representative samples of ground water shall be collected when it is first encountered in boreholes before the addition of water to aid boring or drilling.

b) Chemical analysis of water samples shall include determination of PH value; turbidity; sulphate; carbonate; nitrate and chloride contents; presence of organic matter and suspended

c) Standard Penetration Test

This test shall be conducted in all types of soil deposits met within a bore hole to find the variation in the soil stratification by co-relating with the number of blows required for unit penetration of a standard penetrometer. This test shall be conducted at 1.50 m interval and every change of strata and as per the direction of the Engineer. The depth interval between the top levels of standard penetration test and next undisturbed sampling shall not be less than 1.0 m.

d) Dynamic Cone Penetration Test

Dynamic cone penetration test shall be conducted to predict stratification, density, bearing capacity etc. of soils. The test shall be conducted by driving a standard size cone attached to the bottom of a string of drill rods. The test shall be conducted up to the specified depth or refusal whichever is earlier. Refusal shall be considered when the blow count exceeds 150 for 300 mm penetration. The specifications for the equipment and accessories required for performing this test, test procedure, field observation and reporting of results shall conform to IS : 4968, Part - II.

1.9 LABORATORY TESTING

1.9.1 Essential Requirements

- a) Tests indicated in the schedule of items shall be performed on soil, water and rock samples as per relevant IS codes.
- b) Laboratory tests shall be conducted using approved apparatus complying with the requirements of Indian Standards or other approved standards for this class of work. The tests shall be conducted at an approved laboratory.

1.9.2

Tests

Tests as indicated in this specification and as called for by the Engineer shall be conducted. These tests shall include but not be limited to the following: -

- a) Tests on Disturbed and Undisturbed samples: -
 - Visual and Engineering Classification
 - Sieve analysis and Hydrometer analysis
 - Liquid, Plastic and Shrinkage limits
 - Specific Gravity
 - Chemical Analysis
 - Swell pressure and free swell index determination (applicable only for black cotton soil)
 - Proctor Compaction Test
- b) Tests on undisturbed samples
 - Bulk density and moisture content
 - Relative density (for sand)
 - Unconfined compression test
 - Box shear test (in case of sand)
 - Tri-axial shear tests: (depending on the type of soil and field conditions on undisturbed or re-moulded samples).
- c) Unconsolidated undrained
- d) Consolidated undrained test with the measurement of Pore Water Pressure.
- e) Consolidated drained.
- f) Consolidation Test (In case of cohesive soil)

1.9.3 Salient Test Requirement

a) Chemical analysis of sub-soil shall include determination of pH value, carbonate, sulphate (both SO₃ and SO₄), chloride and nitrate contents; organic matter; salinity and any other chemical harmful to the foundation material. The contents in soil shall be indicated as percentage (%).

b) Chemical analysis of sub-soil water sample include the determination of the properties such as colour, odour, turbidity, pH value and specific conductivity both at 25⁰ C and chemical contents such as Carbonates, Sulphates (both SO₃ and SO₄), Chlorides, Nitrates, Organic matter and any other chemical harmful to the foundation material. The contents such as Sulphates, Saltpetre, etc. shall be indicated as ppm by weight.

1.10 REPORT

1.10.1 General

a) On completion of all the field and laboratory work, the Agency shall submit a formal report containing Geological information of the region, procedure adopted for investigation, field observations, summarized test data, conclusion and recommendations. The report shall include detailed bore-logs, subsoil sections, field test results, laboratory observations and test results both in tabular as well as graphical form, practical results both in tabular as well as graphical form, practical and theoretical considerations for the interpretation of test results, the supporting calculations for the conclusions drawn, etc. Initially the Agency shall submit three copies of the report in draft form for the Supervising Agency's review. The format of the cover page of the reports shall be got approved by the Engineer.

b) The Agency's qualified Geotechnical Engineer shall visit Supervising Agency's office for a detailed discussion on Supervising Agency's comments on his draft report. During the discussions, Supervising Agency shall decide as to the modifications that need to be done in the draft report. Thereafter the Agency shall

incorporate in his report the agreed modifications and after getting the amended draft report approved, six copies of the detailed final report (in A4 size and spiral binding with plastic covers) shall be submitted along with one set of reproducible of the graphs, tables, etc.

c) The detailed final report based on field observation, in-situ and laboratory tests shall encompass theoretical as well as practical considerations for foundations for different types of structures envisaged in the area under investigation. The Agency shall acquaint himself about the type of structures, foundation loads and other information required from the Engineer.

1.10.2 Data to be furnished

The report (in soft as well as hard copy) shall also include but not be limited to the following: -

a) A plot plan in A1/A0 sheet showing the locations and reduced levels of all field tests e.g. boreholes, trial pits, static cone penetration tests, dynamic cone penetration tests, plate load tests, etc., properly drawn to scale and dimensioned with reference to the established grid lines.

b) A true cross section of **all individual boreholes and trial pits** with reduced levels and coordinates showing the classification and thickness of individual stratum, position of ground water table, various in-situ tests conducted and samples collected at different depths and the rock stratum, if met with.

c) A set of longitudinal and transverse soil profiles connecting various boreholes in order to give a clear picture of the variation of the subsoil strata as per IS: 6065. (each soil profile to be submitted in separate sheets).

d) Past observations and historical data, if available, for the area or for other areas with similar soil profile or with similar structures in the surrounding areas.

e) Plot of Standard Penetration Test (N values both uncorrected and corrected) with depth for identified areas.

f) Results of all laboratory tests summarised (i) for each sample and for each layer alongwith all the relevant charts, tables, graphs, figures, supporting calculations, conclusions and photographs of representative 'rock cores'.

g) For all tri-axial shear tests stress vs strain diagrams as well as Mohr's circle envelopes shall be furnished. If back pressure is applied for saturation, the magnitude of the same shall be indicated. The value of modulus of elasticity, E shall be furnished for all tests alongwith relevant calculations.

h) For all consolidation tests, the following curves shall be furnished :-

e vs log p

or e vs p and as per applicability

Compression vs log t or

Compression vs square root of t (depending upon the shape of the plot for proper determination of co-efficient of consolidation).

The point showing the initial condition of the soil shall be marked on curves.

The procedure adopted for calculating the compression index from the field curve and settlement of soil strata shall be clearly specified. The time required for 50% and 90% primary consolidation alongwith secondary settlements, if significant, shall also be calculated.

1.10.3 Recommendations

Recommendations shall be given area wise duly considering the type of soil, structure and foundation in the area. The recommendations shall include but not be limited to the following:-

1.10.3.1

For shallow foundations

The following shall be indicated with comprehensive supporting calculations.

- a. Net safe allowable bearing pressure for isolated footings and continuous strip footings of suitable sizes (Varying from 1 to 4m) at suitable foundation depth as per site condition below ground level considering both shear failure and settlement criteria, giving reasons for type of shear failure adopted in the calculations. Such Footings to be suggested for single storeyed buildings are proposed.
- b. Net safe allowable bearing pressure for Raft Foundation at suitable foundation depth as per site condition below ground level considering both shear failure and settlement criteria, giving reasons for type of shear failure adopted in the calculations. Such Footings to be suggested for Raft Foundation giving data for modulus of Subgrade Reaction
- c. Rate and magnitude of settlement expected of the structure.

2.0 General Conditions of Contract

The General Conditions of Contract are as under.

2.1 Delay and extension

If the work is delayed by force majeure or any other cause in the absolute discretion of Employer is beyond the Agency's control, they shall immediately upon the happening of such event contributing to delays give notice thereof in writing to Employer but shall nevertheless use constantly their best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of HSCC to proceed with the work.

Request for extension of time shall be made by the Agency in writing within seven days of the happening of the event causing delay. The survey Agency shall also indicate with any such request, the period for which extension is required. In any such case HSCC may give a fair and reasonable extension of time for completion of individual items or group of items of work for which separate period of completion is specified in the contract as a whole, but it shall be the sole discretion of the Employer to grant or refuse such extension.

The decision of HSCC in regard to the extension will be communicated to the Agency in writing within a reasonable time but no compensation or any extra amount shall be paid for such extension granted by HSCC.

2.2 Compensation payable for delay in completion and risk prejudice clause

The Agency shall be liable to pay compensation to HSCC in case of delay in fulfilling obligation under this agreement for causes solely attributable to the survey Agency at 1% (One percent) of contract amount per week of delay subject to maximum of 5%(five percent only) of the total contract price towards their contract.

2.3 Risk Prejudice Clause

In case progress of any part of Agency's work is found to be unsatisfactory by HSCC at any time during the execution vis-a-vis, the terms of contract, HSCC shall give the Agency a fortnight's notice in writing asking for their plans for remedying the situation and to complete the job within the time mutually agreed, subject however to the conditions that the entire work falling within their scope of work shall be completed within the stipulated time. On the failure to remedy the situation

as per agreed time with HSCC, HSCC shall have the right to withhold that portion of the work and get the same done at the risk and cost of the Agency after giving one weeks notice.

2.4 Arbitration

If at any time any doubt, question, dispute or difference whatsoever, shall arise between the Agency and HSCC upon or relating to or in connection with this contract, either of the parties may give the other notice in writing of the existence of such doubt, question, dispute or difference and the same shall be referred to the Chairman - cum - Managing Director, HSCC or his nominee as Sole Arbitrator. The decision of the sole arbitrator thereon shall be final, conclusive and binding upon the parties to dispute. The party invoking arbitration shall specify the dispute or disputes to be referred to the arbitration under the clause together with the amount or amounts claimed in respect of each of dispute.

2.5 Jurisdiction of Court

All disputes arising out of the contract shall have the jurisdiction of courts of the Union Territory of Delhi only.

2.6 Termination of Contract

HSCC reserves the right to terminate, or postpone the work on account of unfulfillment of contractual obligation(s) or any sufficient cause, HSCC being sole judge of the same. The Agency shall be paid for the useful work done upto the date of termination. HSCC shall determine the credit to be given to the detailer for the value of the work executed by the Agency. The Agency shall give HSCC all the data, compiled report, drawings etc. prepared by them till the date of termination before the final dues are paid to the Agency. Even after the termination of agreement, the Agency shall continue to cooperate with HSCC to such a reasonable extent as may be necessary to clarify or explain any reports or recommendations in documents or detailing made by them.

2.7 Breach of Trust

Unless otherwise directed by HSCC specifically, the Agency shall not contact directly or indirectly the client or any other authorities connected with the project. Non compliance of this clause shall be treated as breach of trust resulting in the termination of contract between HSCC and the Agency for with without any prior notice to him. In such event, no job will be entrusted to him in future by HSCC.

2.8 Discussions with HSCC and Approvals

The Agency shall make themselves available at reasonable notice to be present for discussions with HSCC. The Agency shall also provide assistance, advice and information to HSCC as may be required from time to time for discussions with other agencies or HSCC officials connected with the work.

The Agency shall get approved the work done by him at every stage throughout the period from HSCC. However, such approval by HSCC shall not be deemed to absolve the Agency of the total responsibility of the correctness and soundness of the work and other obligations under this contract.

2.9 Guarantee and liability of the Agency

The Agency shall be liable for all consequence of errors and omissions arising from errors solely attributable to Agency or on the part of their employees to the extent and with the limitation specified by HSCC.

2.10 Periodical Progress Report

The Agency shall prepare and submit periodical progress reports and status of works being performed by them. Such submissions of reports and review and approvals, if any, thereof by HSCC shall not be deemed to absolve the responsibilities of the Detailer for timely completion of the assignment.

2.11 Unit Rates

The Lump sum / Unit rates quoted shall remain firm throughout the validity of the contract. The rate shall include cost of materials, labor, tools and equipments, transport charges, taxes, royalties, octroi, service tax etc. payable on all transactions for the due performance of work under this contract. The rates shall be given in the schedule, as specified herein before. No escalation shall be paid on whatever account it may be.

2.12 Variation in scope of work and schedule of quantity

The scope of work & schedule of quantities may vary to any extent. The rates quoted by the Agency shall remain firm for the complete job as directed by the Engineer.

2.13 Mobilization advance

No Mobilization advance shall be paid.

2.14 Income tax

Income tax shall be deducted from Agency's bill as per rules.

2.15 Only computerized output

The Agency shall prepare a CD of the complete work assigned to them including drawings, report work, data, and other documents & the same shall be submitted to HSCC after completion of job. All drawings shall be on AUTOCAD and in A1 & A4 sizes only.

2.16 Water for construction purposes

The Agency shall make his/ their own arrangements for unfiltered water required for the work and nothing will be paid for the same.

2.17 Power

The Agency shall make his own arrangements for Electricity and nothing extra is payable on this account.

2.18 Completion Time

Total time period for completion of job will be as per following from the date of issue of letter of award. The work is to be done in phases in order of priority as given below:-

Table-1

S.N.	Particulars	Completion Time
A.	Geotechnical Investigations (as per Scope of Work) including submission of report	4 weeks from date of award of work

BOQ

Geo-technical (Soil) investigation for 50 Bedded MCH Block at THQH Irinjalakuda, Thrissur, Kerala						
S.No.	Description	Unit	Total Qty.	Rate (in Rs. Figure)	Rate (in Rs. Words)	Amount
1	Site survey & Collection of field data and report Submission:					
	Construction of Bench Mark and marking level with reference to mean sea level (MSL).					
	Carriage and mobilization charges(one time only) upto site of investigation, erection, setting up and dismantling/ removal of all equipment including union loading, unloading charges etc. all complete. Nothing extra is payable for shifting from one bore	Job	1			
2	Soil boring, sampling, chemical analysis and report submission					
	Boring of holes of 150mm dia. In all types of soil upto the depth of 30m below the existing G.L. or refusal whichever is met earlier complete in all respects. (The quoted rate shall take care of following subheads.)					
	(a) Conducting standard penetration test in all bore holes at intervals of 1.5 m and also at change of strata as per IS codes of practices					
	(b) Collecting disturbed and undisturbed samples of soil at 1.5m interval and also at change of strata from the bore-holes.					
	(c) Recording of water table in bore hole after completion of boring as per scope of work.					
	(d) Conducting necessary tests on samples collected from each hole. The laboratory tests include chemical analysis of soil and water as per scope.					
	(e) Collection of water samples from bore holes for chemical test and analysis.					
	(f) Preparation of test report after conducting all necessary tests from approved laboratory including recommendations on type of foundation.					
i)	Bore hole upto 10 mtr depth (in all kinds of soil except rock/ laterite soil)	Nos	3			
ii)	Bore hole above 10 mtr depth upto hard strata (in all kinds of soil except rock/ laterite soil)	Mtr	10			
iii)	Bore hole in hard laterite soil	Mtr	30			
iv)	Bore hole in 'Rock boulder/ hard rock	Mtr	8			
Total						
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