

**TENDER FOR  
TOPOGRAPHICAL SURVEY AND GEOTECHNICAL  
INVESTIGATION FOR PROPOSED ALL INDIA  
INSTITUTE OF MEDICAL SCIENCES AT RAJKOT,  
GUJARAT**

**July' 2019**



HSCC (INDIA) LTD.  
(GOVERNMENT OF INDIA ENTERPRISE)  
E-6(A), Sector-1, NOIDA(U.P) 201301 (India)

Phone : 0120-2542436-40

Fax : 0120-2542447


**Tender No: HSCC/D&E/AIIMS/RAJKOT/Geotech\_Survey/2019**

**Name of Work: Topographical Survey & Geo-technical Investigation and Hydro Geological Survey for Proposed Construction of AIIMS at Rajkot, Gujarat**

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**NOTICE INVITING e-TENDER**

 <p>एच.एस.सी.सी <b>HSCC</b> A Miniratna Co.</p>	<p><b>HSCC (INDIA) LIMITED</b> (A Subsidiary of NBCC (India) Limited) (A GOVERNMENT OF INDIA ENTERPRISE) <b>E-6A, Sector-01, Noida-201301</b></p>
<p><b>NOTICE INVITING e-TENDER</b></p> <p>HSCC (India) Ltd as Executing Agency on behalf of Ministry of Health and Family Welfare invites online bids through e-tendering from eligible firms for following works at the proposed AIIMS Rajkot, Gujarat :</p> <p>(1) Conducting EIA study and getting EIA Clearance from concerned Authorities (<b>Tender No:HSCC/D&amp;E/AIIMS/RAJKOT/EIA/2019</b>)</p> <p>(2) Conducting Topographical Survey &amp; Geotechnical Investigation and Hydro Geological Survey (<b>Tender No:HSCC/D&amp;E/AIIMS/RAJKOT/ Geotech_Survey/2019</b>)</p> <p>Sale of Tender shall be from 29.07.2019 to 12.08.2019 up to 13:00Hrs. Last date of Bid submission shall be 12.08.2019 up to 14:30 Hrs&amp; opening on same day at 15:00 Hrs.</p> <p>For detailed NIT, please visit HSCC e-tender portal <a href="http://www.tenderwizard.com/HSCC">http://www.tenderwizard.com/HSCC</a>, CPP Portal <a href="http://eprocure.gov.in">http://eprocure.gov.in</a> and <a href="http://www.hsccltd.co.in">http://www.hsccltd.co.in</a>. Corrigendum to this publication, if any, would appear only on said websites and not be published.</p> <p style="text-align: right;"><b>DGM (Struc), HSCC (I) Ltd</b></p>	

## Conducting Topographical Survey & Geotechnical Investigation and Hydro Geological Survey for the Proposed Construction of AIIMS at Rajkot, Gujarat

Tender No: HSCC/D&E/AIIMS/RAJKOT/Geotech\_Survey/2019

Date: 29.07.2019

### NOTICE INVITING e-TENDER – Detailed

HSCC (India) Ltd., as executing agency for and on behalf of Ministry of Health and Family Welfare invites online bids through e-tendering from the eligible consultants to carry out Topographical Survey & Geotechnical Investigation and Hydro Geological Survey for the Proposed Construction of AIIMS at Rajkot, Gujarat

Details are as follows:

Name & description of work	Completion period	Estimated cost (Rs.)	Tender Fee/Bid Security (in Rs.)	Sale of Tender	Date of Submission & opening
Topographical Survey & Geotechnical Investigation and Hydro Geological Survey for the Proposed Construction of AIIMS at Rajkot, Gujarat	06 Weeks	6,10,000/-	Tender Fee of Rs.500/- and EMD of Rs.12,200/-	29.07.2019 to 12.08.2019 up to 13:00 hrs	12.08.2019 up to 14:30 hrs & Opening at 15:00 hrs

The bidder would be required to register at HSCC e-tender portal <http://www.tenderwizard.com/HSCC>. The bid document is available online from 29/07/2019. The bidder is required to have Digital Signature Certificate (DSC) from one of the authorized Certifying Authorities for submission of the bids.

The bidders are required to submit

- (a) Original non-refundable Demand Draft of Rs.500/- (Rs. Five Hundred only) as cost of bid, in favour of “HSCC (India) Ltd.” payable at Noida (b) Original bid security in approved form of Rs. 12,200/- (Rs. Twelve Thousand Two Hundred Only).  
(or)
- The Firms/Consultants registered as MSEs under Ministry of Micro, Small & Medium Enterprises should submit required documents/proofs to avail the benefit of exemption from payment of Tender Fee and Earnest Money Deposit. Duly certified relevant registration certificates to be submitted

Any one of the above documents should be submitted to the office of “Deputy General Manager(Structure), HSCC (India) Ltd., Plot no. E-6(A), Sector-1, Noida (U.P.) Pin-201301”, before date and time fixed for opening of bid either by registered post or by hand failing which the bid will be declared non-responsive.

The documents to be uploaded online are listed at **Annexure III**

Complete Tender Document has been made available at e-tender portal <http://www.tenderwizard.com/HSCC>

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 e-tender portal <http://www.tenderwizard.com/HSCC> as corrigendum/amendments etc., if any, will be notified on this portal only and separate advertisement will not be made for this.

Conditional tenders and tenders not filled in figure and words are liable to be rejected.

The bids shall be valid for 90 days from the last date of submission.

Dy. General Manager (Struc)  
HSCC (India) Ltd.

**INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING PART OF BID DOCUMENT**

HSCC (India) Ltd., as executing agency for and on behalf of Ministry of Health and Family Welfare invites online bids through e-tendering from the eligible consultants for the following works:

Name & description of work	Completion period	Estimated cost (Rs.)	Tender Fee/Bid Security (in Rs.)	Sale of Tender	Date of Submission & opening
Topographical Survey & Geotechnical Investigation and Hydro Geological Survey for the Proposed Construction of AIIMS at Rajkot, Gujarat	06 Weeks	6,10,000/-	Tender Fee of Rs.500/- and EMD of Rs.12,200/-	29.07.2019 to 12.08.2019 up to 13:00 hrs	12.08.2019 up to 14:30 hrs & Opening at 15:00 hrs

1. Firms who fulfill the following requirements shall be eligible to apply
  - i. Should have successfully completed similar works during last seven years ending last day of month previous to the one in which applications are invited should be either of the following;
    - a) Three similar completed works consisting not less than the amount equal to 40% of the estimated cost.  
Or
    - b) Two similar completed works consisting not less than the amount equal to 50% of the estimated cost.  
Or
    - c) One similar completed works consisting not less than the amount equal to 80% of the estimated cost.

Similar works here mean Topographical Survey and Geotechnical Investigation Works of Large Construction Projects.

- ii. Average Annual financial turnover during the last three years, ending 31st March of the previous financial year, i.e. for FYs 2015-16, 2016-17 & 2017-18 should be at least 30% of the estimated cost.

2. The document consisting of scope of work, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website <http://www.tenderwizard.com/HSCC> free of cost.
  3. But the bid can only be submitted after uploading the mandatory scanned documents such as Demand Draft or Pay order of any Scheduled Bank towards cost of bid document and Bid Security in favour “HSCC (India) Limited”, payable at Noida.” as per details given in the Bid Document and Processing Fee via online mode only and other documents as specified.
  4. Firms can upload documents in JPG format or PDF format.
  5. The Technical bid shall be opened first on due date and time as mentioned above. The time and date of opening of financial bid of firms qualifying the technical bid shall be communicated to them at a later date.
  6. Prospective bidders are advised to regularly scan through HSCC e-tender portal <http://www.tenderwizard.com/HSCC> as corrigendum/amendments etc., if any, will be notified on this portal only and separate advertisement will not be made for this.
  7. (a) Original non-refundable Demand Draft of Rs.500/- (Rs. Five Hundred only) as cost of bid, in favour of “HSCC (India) Ltd.” payable at Noida (b) Original bid security in approved form of Rs.12,200/- (Rs. Twelve Thousand Two Hundred Only).
- (or)
8. The Firms/Consultants registered as MSEs under Ministry of Micro, Small & Medium Enterprises should submit required documents/proofs to avail the benefit of exemption from payment of Tender Fee and Earnest Money Deposit. Duly certified relevant registration certificates to be submitted  
Any one of the above documents should be submitted to the office of “Deputy General Manager (Structure), HSCC (India) Ltd., Plot no. E-6(A), Sector-1, Noida (U.P.) Pin-201301”, before date and time fixed for opening of bid either by registered post or by hand failing which the bid will be declared non-responsive.
  9. The last date of submission of bid is 12/08/2019 up to 14:30hrs. The bids shall be opened on the same day at 15:00 hrs.
  10. The EMD of all other unsuccessful agencies shall be refunded within one month of finalization of appointment of consultant.
  11. The Lump sum Consultancy charges quoted shall remain firm throughout the validity of contract. The consultancy charges should include cost of material, labour, tools and equipments, transport charges, all taxes, royalties, octroi etc. payable on all transactions for the due performance of work under this contract.
  12. Income tax shall be deducted from Agency’s bill as per Government of India norms.

**Brief Description of Project:**

Proposed Construction of All India Institute of Medical Sciences at Rajkot, Gujarat

- Total Plot Area – 197 Acres
- Total Built up area – 1,52,000 Sqm

**Pre-Qualifying Criteria**

Following is the pre-qualification criteria for the tenderers:

Consultants working with CPWD, Railways, MES, P & T Deptt., State PWD's, Semi govt. Organizations and Institutes or in reputed private Sector Firms who have:

- i. Average Annual financial turnover during the last three years, ending 31st March of the previous financial year, i.e. for FYs 2015-16, 2016-17 & 2017-18 should be at least 30% of the estimated cost.
- ii. Experience of having successfully completed similar works during last seven years ending last day of month previous to the one in which applications are invited should be either of the following;
  - a) Three similar completed works consisting not less than the amount equal to 40% of the estimated cost.  
Or
  - b) Two similar completed works consisting not less than the amount equal to 50% of the estimated cost.  
Or
  - c) One similar completed works consisting not less than the amount equal to 80% of the estimated cost.
- iii. Similar works here mean Topographical Survey and Geotechnical Investigation of Large Construction Projects

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

***The estimated cost of the work is Rs.6,10,000/- (Rupees Six Lakhs Ten Thousand only) including GST.*** 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.



**A. SCOPE OF WORK**

**1. TOPOGRAPHICAL SURVEY, COLLECTION OF FIELD DATA AND REPORT SUBMISSION**

The Scope of work is detailed as under: -

- 1.1 Carrying out topographical survey including transferring the level from nearest available permanent G.T.S. benchmark
- 1.2 Establishment of 1 no. bench mark at nearby permanent structures including all labour and materials. The reduced level with respect to M.S.L. shall be engraved at each location of the bench mark as well as corresponding reference be given on the Survey Plan.
- 1.3 Spot leveling of total area of land/plot by taking spot levels at 5 m center to center grid and contour intervals at 0.5 m.
- 1.4 Digital Map of Land along with coordinates based on GPS & KDL.
- 1.5 To locate on the survey plan in A1/A0 sheet to the scale of 1:200 with all permanent & temporary structures along with existing storm, sewer & water line, power (HT & LT) & telecommunication lines/poles, trees of various girths, roads, water supply, sewer, drainage line and also any other important features etc. adjacent and within the total area of plot, if any.
- 1.6 Following field data shall be collected and supplied in the form of report and drawings by the agency: -
  - a) Direction of North.
  - b) Prevailing wind direction and speed.
  - c) Maximum, minimum, average, hourly, daily, monthly and annual rainfall for the last 10 years.
  - d) Daily maximum, minimum and average temperature for last ten years.
  - e) High Flood level near site
- 1.7 Existing water supply source data shall be collected and supplied as under:-
  - a) Location and alignment of potable water source with reference to area under survey along with size and residual pressure available in and around the project site boundary.
  - b) Total water storage capacity in existing tanks & details of consumption per day.
  - c) Feasibility to connect proposed water supply from existing main ring.
- 1.8 Existing Fire fighting system data shall be collected and supplied for areas in and around the project site boundary as under : -
  - a) Location and capacity of existing fire storage tank & fire pumps.
  - b) Existing fire ring main – location, alignment, diameter, material of pipe, location of hydrants etc.

- c) Feasibility to connect fire line nearest to the proposed site.
  - d) Local Bye-laws of the area.
- 1.9 Details about Sewer and storm water drain / nallah passing through/near the complex indicating the following details:-
- a) Location and alignment of drain / nallah
  - b) Invert level / L-Section of the drain / nallah indicating slope.
  - c) Cross-section of the nallah / drain at suitable locations.
- 1.10 Location of the road near the site indicating its layout with reference to site and the crown levels (L-section) of road/railway at 20 m. interval along the alignment are to be indicated.
- 1.11 Details of Municipal/Public sewer line:
- a) Location, material, diameter and alignment of the existing sewer lines running in and around the project site. Location for suggested outfall point for sewerage of the proposed Complex.
  - b) Location of manholes with size, ground level and invert levels of sewer line running around/near the project site.
  - c) Feasibility to connect proposed sewer with existing sewer line.
- 1.12 Details of the proposed approach road connecting main road to project site to be supplied as under: -
- a) Alignment of the road
  - b) L-Section of the road indicating ground levels at 10 m centre to centre between main road and entrance of project site.
  - c) Cross-section of the road extending up to 10 m distance on both sides of centre of road with levels at 5m c/c.
  - d) Crown level of the main road at the junctions with the proposed approach road.
  - e) Details - such as L.S. & C.S., Bed level, H.F.L. etc. of the cross drainage, if any.
- 1.13 Details of the existing boundary wall, temporary and permanent structures, if any, inside the site including the following shall be collected and supplied: -
- a) Cross section of the wall
  - b) Part elevations and cross-section of the buildings also showing foundation.
  - c) Length, width, height, area and no of stories of each building including details of materials used in construction.
  - d) Location of existing trees (along with height and girth of the trees) and other permanent/ temporary structures.
  - e) Electric overhead lines (LT/ HT), telephone lines.
  - f) The agency shall submit colored photographs (about 25) showing the major features of the site and its surroundings.

- 1.14 All survey, grid levels shall be done by Total Station and contour plan shall be prepared on computer through digitization process and the soft copy shall be provided for the same immediately.
- 1.15 On completion of all fieldwork, collection of pertinent field data and preparation of drawings the agency shall submit a formal draft report containing all the information/field observations and drawings, in triplicate for review of Supervising Agency. Thereafter the agency shall visit to Supervising Agency's office for detail discussions on Supervising Agency's comments if any. After discussion with the Supervising Agency, the agency shall incorporate the agreed modifications in the draft report at their own cost and submit six copies of the detailed final report (plastic coated with spiral binding) and 6 sets of drawings (the drawings shall bear the logo of HSCC and the format of the same can be obtained from HSCC) along with a set of reproducible drawings and related CD. The agency shall also submit along with report a copy of field book in original or an authenticated copy of the same duly certified by Engineer.
- 1.16 Description and photos of general surrounding and plot and of the team while carrying out the work awarded.
- 1.17 The any above is not relevant or not covered in the report to be specifically listed out in draft report and obtain the above from HSCC/Client. Otherwise agency has to provide the same without an extra cost or paid accordingly.
- 1.18 Payment shall be made for actual survey area.

## **2 GEOTECHNICAL INVESTIGATION AND REPORT SUBMISSION**

- 2.1 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.
- 2.2 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.
- 2.3 The work shall include mobilization of all necessary equipment's, 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.
- 2.4 The Agency shall make their own arrangements for locating the coordinates and positions of bore holes, trial pits 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.
- 2.5 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.
- 2.6 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.
- 2.7 **FIELD INVESTIGATIONS –SOIL**
- 2.7.1 **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, payment shall be made as per actual quantities executed.
- b) All boreholes shall extend up to 10.0 depth 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.

## 2.7.2 SAMPLING

### 2.7.2.1 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.

### 2.7.2.2 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.

### 2.7.2.3 Undisturbed Sample

In each borehole undisturbed sample shall be collected at every change of strata and depths of 1.0 m, 3.0 m, 6.0 m, 10.0 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.

- 2.7.2.4 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.

- 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

## 2.8 LABORATORY TESTING

### 2.8.1 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.

### 2.8.2 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)

### 2.8.3 Salient Test Requirement

- a) Chemical analysis of sub-soil shall include determination of pH value, carbonate, sulphate (both SO<sub>3</sub> and SO<sub>4</sub>), 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 25<sup>0</sup> C and chemical contents such as Carbonates, Sulphates (both SO<sub>3</sub> and SO<sub>4</sub>), 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.

## 2.9 REPORT

### 2.9.1 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, summarised 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.

### 2.9.2 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, 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 summarized for each sample and for each layer along with 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 along with relevant calculations.
- h. Soil resistivity Test results
- i. 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 along with secondary settlements, if significant, shall also be calculated.

### 2.9.3 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:-

#### 2.9.3.1 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 Sub grade Reaction .
- c) Rate and magnitude of settlement expected of the structure.



2.9.3.2 For Pile foundations

If piling is required, the following shall be indicated with comprehensive supporting calculations:-

- a) Type of pile and reasons for recommending the same duly considering the soil characteristics.
- b) Suitable founding strata for the pile and the pile depth at respective locations.
- c) Estimated length of pile for 450 mm dia, 500 mm, 600 mm dia and any other diameter to be suggested by the investigating agencies.
- d) Type of pile- End bearing and/or Frictional resistance and whether bored cast-in-situ or Pre cast driven pile shall be indicated separately. The estimated pile capacity clearly identifying the end bearing and treated resistance capacities contributes in the total capacity.
- e) Magnitude of negative skin friction, if any, to be considered in pile design.

### **3. Hydro Geological Survey**

The scope of work includes conducting Geo-physical and Geo-hydrological survey of the entire area and a study of the environmental conditions that may affect the fitness of the underground water source for domestic and non-domestic purpose. The total water requirement for the proposed site is approximately 2 lakh liters per day. The alternative sources of ground water i.e tube well and rain water-harvesting scheme be assessed scientifically. This also includes the assessment of the capacity and dependability of the different sources to meet water for project.

The detailed scope of work will be as below:

- 3.1 Full details of the existing underground sources of water, nature and extent aquifers, their depth and yield expected from tube well or open dug wells in entire campus.
- 3.2 Best point selection on the field for the tube well drilling. The same to be marked on overall plot plan with co-ordinate. The exact bench markings for individual wells suggested will be got done by your representative at site as directed by Engineer.
- 3.3 Apparent resistivity of existing sub - Geoelectrical layers and corresponding geology of the layer. Correlation of data with CGWB data.
- 3.4 Detailed design and specification for tube wells.
- 3.5 Recommended drilling depth and drilling techniques of each tube well.
- 3.6 Expected yield of tube well in (litre /hr) and rate of withdrawal.
- 3.7 Suggest number of tube wells required to meet total water requirement.
- 3.8 Recommended capacity (discharge, head) of submersible pump, pumping hrs for individual bore well, type of material and dia. of pipe for tube well.
- 3.9 Recommended spacing between the tube wells to avoid minimum interference.
- 3.10 Recommendations for functional utility of the bore wells/ dug wells.
- 3.11 Suggest method for improvement of bore well yield and quality of water.
- 3.12 Suggest scheme for piping network for interconnection of different tube wells.
- 3.13 Suggest rainwater harvesting scheme/ground water recharge method and maximum percolation rate through recharge pit.
- 3.14 Water quality Assessment

The quality of surface as well as Ground water is to be tested as per IS: 10500, (23 parameters) standards. The scope of water analysis is not limited to ascertaining potability or being semi-salty

or salty. It should also include chemical and bacteriological tests. A range regarding percentage salt content shall be given which should be close to 90% of salt content once water is actually pumped out.

The study report shall also include the required Geo-electrical sections for the area, as well as samples of the curves used for matching.

### 3.15 Contents of the report.

- I. The Geo-hydrological investigation report should have the following contents:
  - a. Introduction
  - b. Location of the Study Area
  - c. Objectives of Ground Water studies
  - d. Applied Methodologies
  - e. Available basic Data
  - f. Ground Water level
  - g. Geology of the area
  - h. Information and details of existing ground water sources.
  - i. Delineation of potential ground water bearing zones
  - j. Assessment of hydraulic parameters of aquifers
  - k. Water producing capabilities of aquifers likely to be tapped for construction of tube wells/ Dug wells in liters/hour
  - l. Correlation of the data obtained from site with data from CGWB etc.
  - m. Number of tube wells/ dug wells to meet the water requirement of the project.
  - n. Spacing between tube wells/ dug wells.
  - o. Specification of tube wells/ dug wells and type of pump set, type of material and dia of pipe for tube well.
  - p. Details of rain water harvesting scheme.
  - q. Recommendations.

**B. General Conditions of Contract**

The General Conditions of Contract are as under.

**i. Security Deposit**

Security deposit at the rate of 5% of the amount of each running bill shall be retained and the same shall be released after six months of the successful completion of the work at site. However no interest shall be payable to the Agency for the amount of security deposit for the period retained by HSCC.

**ii. 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.

**iii. Compensation payable for delay in completion**

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.

**iv. 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.

**v. 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 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.

**vi. Jurisdiction of Court**

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

**vii. 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

**viii. 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.

**ix. 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.

**x. 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.

**xi. 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, GST/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.

**xii. 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.

**xiii. Mobilization advance**

No Mobilization advance shall be paid.

**xiv. Income tax**

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

**xv. 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

**xvi. Return of earnest Money**

Earnest Money of the unsuccessful bidders shall be returned after the expiry of bid validity period.

**C. 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. No.	Particulars	Collection of Field Data	Submission of Draft Report	Submission of Final Report
1.	Topographical Survey, Collection of Field Data and Report Submission(as per scope of work S.No 1)	3 weeks from date of award of work	5 weeks from date of award of work	1 week from the date of receipt of comments on Draft report from HSCC
2.	Geotechnical Investigations (as per Scope of Work S.No 2)	3 weeks from date of award of work	5 weeks from date of award of work	1 week from the date of receipt of comments on Draft report from HSCC
3.	Hydro-Geological Survey (as per Scope of Work S.No 3)	3 weeks from date of award of work	5 weeks from date of award of work	1 week from the date of receipt of comments on Draft report from HSCC

**D. MODE OF PAYMENT**

**Table-2**

S. No.	Stage of Work	Percentage of Total fees payable
1.	On submission of draft Report along with field information	40
2.	On submission of final Report including photographs, calculation sheets, complete in all respects, in a CD & hard bound copy of 3 sets.	60



**LETTER OF PROPOSAL/ UNDERTAKING FROM THE BIDDER**

To  
The Deputy General Manager(Struc)  
HSCC India Limited  
E-6(A), Sector-1  
Noida

Sir

**Reg.: Tender for Topographical Survey & Geotechnical Investigation and Hydro Geological Survey for the Proposed Construction of All India Institute of Medical Sciences at Rajkot, Gujarat**

We submit our financial bid here with in accordance with the terms and conditions mentioned in the Request for Proposal (RFP).

We understand that

- You are not bound to accept the lowest or any bid received by you, and you may reject all or any bid
- If our bid is accepted, we are responsible for the due performance of the contract.
- Bidder means the bidder who is decided and declared so after examination of commercial bids.

Date:

Place:

Yours faithfully

Signature of Authorized Signatory  
Name of Signatory  
Designation  
Seal of Firm/Consultant

**Price Bid for Topographical Survey & Geotechnical Investigation and Hydro-Geological Survey at proposed Construction of Proposed All India Institute of Medical Sciences at Rajkot, Gujarat**

S.No.	Description	Unit	Quantity	Rate	Amount
<b>1</b>	<b>Topographical Survey, Collection of field and report Submission:</b>				
	(a) Site Survey and Collection of Field Data as per defined scope of work of the area ear marked in enclosed layout drawing.	Acre	200		
	(b) Construction of Bench Mark and providing fencing around them as per drg supplied.	No	2		
<b>2</b>	<b>Soil boring, sampling, chemical analysis and report submission:</b>				
	Boring minimum 100mm dia exploration boreholes in all kinds of soil upto N<50 including STP test at every 1.5m interval up to refusal including collection of undisturbed/disturbed sample and also change in strata as per IS code of practice. The scope also include recording of water table, conducting necessary test as per scope of work, chemical analysis of water and soil etc.	RM	140		
<b>3</b>	Drilling/Boring in formation/strata <b>extra over item No 1</b> (N>50) upto 10% core recovery using the necessary bit including collection of samples, necessary test and recommendation.	RM	110		
<b>4</b>	<b>Ground water investigation</b>				
	Ground water investigation by Geo-physical equipments for assessment of availability of ground water at site as per scope of work specified including the followings:				
	(a) Collection of geophysical field data at 4 no of required locations to suggest 2-3 no of tube wells/dug wells.				
	(b) Collection of data from existing underground water sources,.				
	(c) Collection of water samples from 2 no locations of existing underground sources and getting them tested (Physical, Chemical & Bacteriological) at every location. Suggesting design of tube wells/dug wells				
	(d) Suggested design for Rain water Harvesting System	Lumpsum	1		

**Price Bid for Topographical Survey & Geotechnical Investigation and Hydro-Geological Survey at proposed Construction of Proposed All India Institute of Medical Sciences at Rajkot, Gujarat**

S.No.	Description	Unit	Quantity	Rate	Amount
5	<b>Soil resistivity test</b>				
	Conducting soil resistivity test as per IS 3043 and submission of test results as part of draft and final report.	Each	1		
	<b>Total Amount in Rs.</b>				
	<b>Total Amount in words</b>				

Authorized Signatory of Agency with Seal

**CHECKLIST****TECHNICAL PACKAGE - Part I**

S.No	Name of Document	Mode of submission	Page No.
1.	<p>i. Non refundable Demand Draft of Rs.500/- (Rs. Five Hundred only) as cost of bid, in favour of “ HSCC India Limited “ payable at Noida</p> <p>ii. Original Bid Security of Rs. 12,200/-in the form of Demand Draft/Pay order, in favour of “ HSCC India Limited “ payable at Noida (or)</p> <p>iii. The Firms/Consultants registered as MSEs under Ministry of Micro, Small &amp; Medium Enterprises should submit required documents/proofs to avail the benefit of exemption from payment of Tender Fee and Earnest Money Deposit. Duly certified relevant registration certificates to be submitted</p>	<p>In Original before the date and time fixed for opening of bid either by registered post or by hand</p> <p>&amp;</p> <p>Copy Online</p>	

**TECHNICAL PACKAGE - Part II**

S.No	Name of Document	Mode of submission	Page No.
1.	All the information required for prequalification as mentioned in at Page No.7	Online only	
2.	Annexures I&III		
3.	Whole tender document duly signed by authorised person and stamped		

## FINANCIAL PACKAGE COMPRISING OF:

S.No	Name of Document	Mode of submission	Page No.
1.	Digitally signed bid / Price Bid (Annexure-II)	Online	

Note: The bidders are required to submit all documents duly authenticated by digital signatures and online only. No hard copy of the documents is required to be submitted except

1. (a) Original non-refundable Demand Draft of Rs.500/- (Rs. Five Hundred only) as cost of bid, in favour of “HSCC (India) Ltd.” payable at Noida (b) Original bid security in approved form of Rs.12,200/- (Rs. Twelve Thousand Two Hundred Only).

(or)

2. The Firms/Consultants registered as MSEs under Ministry of Micro, Small & Medium Enterprises should submit required documents/proofs to avail the benefit of exemption from payment of Tender Fee and Earnest Money Deposit. Duly certified relevant registration certificates to be submitted

**Any one of the above documents should be submitted to the office of “Deputy General Manager(Structure), HSCC (India) Ltd., Plot no. E-6(A), Sector-1, Noida (U.P.) Pin-201301”, before date and time fixed for opening of bid either by registered post or by hand failing which the bid will be declared non-responsive.**