

OFFICE OF
THE PROJECT DIRECTOR
PROJECT IMPLEMENTATION UNIT
JICA ASSISTED GUWAHATI WATER SUPPLY PROJECT
SAIKIA COMMERCIAL COMPLEX, CHRISTIAN BASTI
G. S. ROAD, GUWAHATI-781005

Letter No. PIU/JICA/GHTY/42/2016/04

Dated: 04-11-2016

SHORT NOTICE INVITING TENDER NO. 01 of 2016-17

Sealed tenders are hereby invited from the experienced contractors/ firms having requisite experience in the Sub-soil investigation work for Geotechnical Investigation at the proposed work site for the construction of Office Building of Guwahati Metropolitan Drinking Water & Sewerage Board at Kharghuli, Guwahati-04.

The detailed tender documents may be downloaded from the official website of Guwahati Metropolitan Drinking Water and Sewerage Board i.e. www.guwahatijalboard.gov.in from 07-11-2016.

The duly filled up tender documents will be received by the undersigned upto 16:00 hours of 18-11-2016 and the same will be opened on the same date and time in office in presence of tenderers or their authorized representatives who would like to be present.



Project Director
Project Implementation Unit
JICA assisted, Guwahati Water Supply Project

Memo No. PIU/JICA/GHTY/42/2016/04-A

Dated: 04-11-2016

Copy to:

1. The director of Information and Public Relation, Dispur, Guwahati-6 for favour of information and necessary action. He is requested to publish the above short tender notice in News Paper for wide circulation. Three copies of Short NIT No. 01 of 2016-17 is enclosed herewith for necessary action. He is requested to submit the certified bill to the undersigned for necessary action.
2. The Chief Supervising Officer (Technical), PIU, JICA assisted Guwahati Water Supply Project for information.
3. PIU Notice Board.


Project Director
Project Implementation Unit
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G. S. ROAD, GUWAHATI-781005**

DETAILED NOTICE INVITING TENDER NO. 01 OF 2016-2017

For

GEOTECHNICAL INVESTIGATION AT THE PROPOSED WORK
SITE FOR THE CONSTRUCTION OF OFFICE BUILDING
OF
GUWAHATI METROPOLITAN DRINKING WATER & SEWERAGE BOARD
AT KHARGHULI, GUWAHATI-04.

ISSUE OF TENDER DOCUMENT:

A) START ON: 07-11-2016

B) CLOSES ON: 18-11-2016

SUBMISSION OF TENDER CLOSES AT

: 4.00 P.M. ON 18-11-2016

OPENING OF TENDER STARTS AT

: 4.00 P.M. ON 18-11-2016

CONTENTS

- 1. Name and Address of Bidder**
- 2. Short Notice Inviting Tender**
- 3. Detailed Bidding Document**
- 4. Form of Price Bid**

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NAME AND ADDRESS OF THE BIDDER

Detailed Notice Inviting Tender No. 01 of 2016-2017 for Geotechnical Investigation at the proposed work site for the construction of Office Building of Guwahati Metropolitan Drinking Water & Sewerage Board at Kharghuli, Guwahati-04.

Name of Bidder:

Date of Submission:

Address of Bidder:

.....

The earnest money is deposited vide DD no.....Dated.....

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Sd/-

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Sd/-

Project Director
Project Implementation Unit
JICA assisted, Guwahati Water Supply Project

GENERAL CONDITION OF SUB-SOIL INVESTIGATION WORK

Name of work: Geotechnical Investigation at the proposed work site for the construction of Office Building of Guwahati Metropolitan Drinking Water & Sewerage Board at Kharghuli, Guwahati-04.

Scope of work:

The work covered under soil investigation includes setting out, field investigations, laboratory tests and submission of soil investigation reports incorporating the observations made during the field investigation and the results of laboratory tests, analyses of field and laboratory test results, foundation recommendations and other related information along with all charts, curves, drawings, tables etc.

The field investigation shall consist of sinking boreholes by boring, chiseling and drilling, conducting standard penetration tests, collection of disturbed and undisturbed soil sample, collection of blocks sample of soil/disintegrated rock and core samples of rock, collection of water samples etc.

The soil, rock and water samples collected at field shall be properly preserved and transported by the contractor to recognized and approved soil testing laboratory for conducting necessary laboratory tests.

All field information and test result shall be collected, collated and presented in the form of soil investigation report with necessary drawings, curves, charts, tables, calculations etc.

The Contractor shall provide all materials, surveying instruments, plant, instruments, equipment, Kentledge and labour required for carrying out the soil investigation work complete in all respects.

Setting out and taking levels at site of all soil investigation locations i.e. boreholes etc. are included within the scope of work.

Records of borings shall be maintained by the Contractor in accordance with Appendix-C of IS 1892. The boring records shall indicate bore hole number, time and date of start and completion of boring, type of boring and/or drilling, diameter of boreholes at different depths, depth of casing, existing ground level, level of standing subsoil water including loss or gain of water in borehole, description and thickness of various strata including their depth below existing ground level, 'N' values from standard penetration tests, number and type of soil samples collected and the depths at which samples were taken and all other relevant data. All boring records shall be incorporated by the contractor in the soil investigation report.

Numbers & depth of boreholes:

Minimum seven (07) nos of borehole from natural GL up to 15 m depth or refusal whatever is earlier.

Criteria of Investigating Agency:

To be short listed the investigating agency must fulfil the following criteria:

- Must be a Geotechnical firm having legal status (Copies of incorporation, PAN, VAT and Registration no).
- A declaration from their consultant that he will be responsible for analyses and interpretation of field and laboratory test results. The consultant must be a reputed geotechnical consultant and must be M.E./ M.Tech in Geotechnical Engineering.

TERMS AND CONDITIONS**1. Earnest Money:**

An amount of 2% on total value quoted will have to be deposited as earnest money to be pledged in favour of the Project Director, PIU, JICA assisted Guwahati Water Supply Project, payable at State Bank of India (SBI), Dispur branch in the form of demand draft along with the sealed tender.

2. Agreement:

Successful bidder shall have to sign formal agreement within 7(seven) days from the date of issue of the order.

3. Location of site:

The site of proposed work is at Kharghuli, Guwahati-04. However, the exact location of the site will be handed over to the selected bidder by the PIU Engineer or his representative.

The work will be executed under the instruction and supervision of concern PIU Engineer or his representative.

4. Terms and Procedures of Payment:

90% of the value of work after submission of final report will be released, remaining 10% will be released after getting no liabilities certificate from the PIU Engineer. There is no provision of escalation of rates and claiming of interest for delay in payment.

5. Completion time:

The work should be completed in 15 (fifteen) days from the date of issue of the order in exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.

Any willful delay on the part of the contractor in completing the work within the stipulated period will render him liable pay liquidated damages @ 0.1% per week which will deducted from payments due to him from the date of completion. The PIU may cancel the contract and take recourse to such other action as deemed appropriate once the total amount of liquidated damages exceeds 10% of the contract amount.

6. Dispute Settlement:

If over the works, any dispute arises between the two parties, relating to any aspects of this agreement, the decision of the Project Director PIU will be final and contractor should abide by the decision.

TECHNICAL SPECIFICATIONS

1.0 OBJECT

This specification covers soil investigation work to be carried out at the site. The object of the investigation is to ascertain the nature and properties of sub-soil available at different locations of the site at various depths and to determine sequence of strata and profile of rock also, chemical properties of sub-soil and groundwater are to be determined to assess their effects on foundations.

2.0 GENERAL

2.1 Visit to site

The contractor before submission of his bid shall visit the site and ascertain nature of soil, local, site and traffic conditions, the accommodation he may require for his staff and labour, obstructions in the area etc. and allow for any extras likely to be any such condition in his quoted rates. No claim on this account shall be admissible under any circumstances.

2.2 Setting Out and Surveying

The Contractor shall carry out necessary survey work to set out and take levels of all locations for soil investigation work and shall be responsible for the accuracy of the same. He is to provide all instruments and proper qualified staff and labour for getting his work checked by the PIU Engineer or his representative.

2.3 Safety Code

The contractor shall take adequate safety precautions and ensure complete safety and prevention of accidents at site and shall be entirely responsible for the complete safety of his workmen working at site. These shall include barricading with pipes/ safety tapes, lights, flags, keeping safety watchmen and supervisors etc.

2.4 Keeping Works Free from Water and Obstructions

The Contractor shall provide and maintain at his own cost, pumps and other equipment to keep the work areas free from water, other obstructions and continue to do so till the completion of the work.

2.5 Removal of Vegetation etc.

The Contractor shall clear all vegetation, sod, rubbish etc. from site as may be required to carry out the soil investigation work and dispose them suitably in areas.

2.6 Bench Marks, Reference Pillars etc.

The Contractor shall project all bench marks, reference pillars, reference lines and control points already established at site from damage or movement during work.

2.6 Standards

Unless otherwise specified herein, all latest applicable codes and standards of the bureau of Indian standards shall govern the work in respect of design, workmanship, quality and properties and materials and method of testing. a list is furnished in the end of this specification.

3.0 FIELD INVESTIGATIONS

The Contractor shall perform soil investigation work as specified, in various areas of the plant, in order of priority decided by the PIU Engineer or his representative during the course of field and laboratory work.

4.0 LOCATION

Locations of boreholes are tentatively shown in our drawing. However, these are liable to be shifted based on availability of clear fronts at site and to accommodate any changes in layout. Final locations will be confirmed to the contractor at site before commencement of work by the PIU Engineer. The contractor shall do the necessary setting out and take levels with his own surveying instruments and get the approval of the same from the PIU Engineer or his representative before commencement of work. The locations may be modified at site in consultation with the PIU Engineer or his representative.

5.0 BORING

Boring shall be done generally in accordance with I.S.1892, employing mechanically operated equipment. Boreholes of nominal diameter 100/150 mm shall be sunk employing shell and auger equipment or other approved method, to the envisaged depth. Wash boring shall not be permitted above the level of Ground water Table (GWT). In case of boring through hard slag and heterogeneous fill, the boreholes may have to be advanced by using equipment of larger diameter. In such cases, the borehole diameters may be increased.

Before commencement of boring, at each borehole location, a 1.0 m x 1.0 m pit up to a depth of 2.0 m shall be excavated to identify any possible underground obstructions like electrical, water, sewage or other service/utility lines. In case of exposure of rock surface within 2 M. depth, confirmatory bore holes to be made at a distance of 5 to 6 M. to check whether it belongs to hard rock strata or not.

Temporary casing shall be provided to side collapse of boreholes, if required at site. When the rate of advancement of boring with shell and auger falls to 30 cm in 30 minutes, chiseling will be employed to extend the borehole. Chiseling will be done till the rate of advancement falls to 30 cm in 60 minutes. Rotary drilling will then be resorted to using TC coring bit in the borehole. The size of the drill holes will be normally 'NX' (73 mm), but may be receded to 'BX' (60 mm) depending on strata conditions. Diamond bits will be used for drilling in compact hard rock. All the above changes will be made with the approval of the PIU Engineer or his representative.

Boreholes shall normally be terminated at 15 m below EGL or 1 m into compact hard rock whichever is met earlier.

Drilling in rock and collection of rock samples shall be in accordance with IS 4464.

Records of borings shall be maintained by the Contractor in accordance with Appendix-C of IS 1892. The boring records shall indicate bore hole number, time and date of start and completion of boring, type of boring and/or drilling, diameter of boreholes at different depths, depth of casing, existing ground level, level of standing subsoil water including loss or gain of water in borehole, description and thickness of various strata including their depth below existing ground level, 'N' values from standard penetration tests, number and type of soil samples collected and the depths at which samples were taken and all other relevant data. All boring records shall be incorporated by the contractor in the soil investigation report.

6.0 STANDARD PENETRATION TEST

Standard penetration tests in boreholes shall be carried out in accordance with IS: 2131 at intervals of 1.5 m, at every change of strata or at depths as directed by the Engineer. Samples collected from the split spoon shall be preserved for conducting laboratory tests for identification and classification purpose. Results of all such penetration tests shall be included by the Contractor in the borelogs and soil investigation report.

7.0 OBSERVATION OF GROUND WATER LEVEL

While sinking boreholes, the Contractor shall carefully record the level at which sub-soil water is first encountered. Standing sub-soil water level shall be observed in boreholes every day at the beginning of the boring work. On completion of each borehole, the Contractor shall allow sufficient time for the ground water to come to a steady level and record the static sub-soil water table. All such records shall be included by the Contractor in the soil investigation report. Method for determination of water level in a borehole shall be according to IS 6935.

8.0 SAMPLING

Disturbed samples shall be collected from boreholes at every change of stratum whichever is earlier and stored in polythene bags in accordance with IS 1892. Samples collected from the cutting shoe of the undisturbed soil sampler, split spoon sampler and lump samples from the auger shall be placed in suitable containers, labeled and preserved by the Contractor as disturbed samples.

Undisturbed soil samples shall be collected from boreholes in accordance with IS 1892 and IS 2132 by open drive thin walled tube sampler having outside and inside diameters of 106 mm and 100 mm respectively and 450 mm long, at 1.5 m intervals or at every change of stratum, whichever is earlier or at depth as decided by the Engineer-in-charge. After recovery, the tubes containing undisturbed soil samples shall be cleaned, waxed, capped and labeled according to IS 1892 and IS 2132 for onward transmission to the laboratory by the Contractor, Special care shall be taken during handing and transportation of the samples.

Block samples of soil/rock shall be collected from plate load test pits to ascertain their engineering and physical properties. The minimum size of the samples shall be 150mm x 150mm x 150mm.

Water samples shall be collected by the Contractor in consultation with the PIU Engineer or his representative from ground water, from boreholes and from test pits for the soil investigation work or from other available source. Samples shall be collected as per IS 1892. The Contractor shall take adequate care in collecting the water samples and ensure that the samples represent the true characteristics of water. The quantum of samples shall also be adequate to ensure that all specified be collected in standard sampling bottles, properly sealed and labeled or onward transmission to laboratory. Each sample label shall display the source, location and depth from where the samples have been collected, data and time of collection and initials of the Contractor.

Upon completion of each borehole, the Contractor shall submit to the PIU Engineer or his representative one set of soil/rock samples properly preserved in polythene bags/boxes with sample labels. Each sample label shall display the source, location and (with R>L) etc from where the samples have been collected and also the description of the soil and rock as per IS classification.

For drilling through rock, cores shall be collected and stored in wooden core boxes in sequence of depths of collection and labeled properly indicating depth and date of collection. Selected cores shall be transported to approved laboratory for testing. Remaining core samples shall be handed over to the PIU Engineer or his representative in core boxes.

9.0 LABORATORY TESTS

Samples obtained during field investigation shall be carefully selected by the Contractor so as to be representative for particular types of subsoil and rock and forwarded by him to a recognized and approved soil testing laboratory for performing the laboratory tests as per relevant parts of IS: 2720. The quantity of samples shall be adequate for conducting all the laboratory tests satisfactorily. The Contractor shall prepare the laboratory test schedule and submit along with the bore logs to the PIU Engineer or his representative for approval. The tests shall include the following:

Sl. No	Name
1.	Moisture content
2.	Specific gravity
3.	Bulk and dry density
4.	Grain size analyses
5.	Liquid, plastic and shrinking limits
6.	One dimensional consolidation
7.	Tri-axial comprehension : *Unconsolidated un-drained
8.	Unconfined comprehension
9.	Direct shear
10.	Unit weight of rock
11.	Crushing strength of rock
12.	Chemical analyses of soil
13.	Chemical analyses of ground water e.g. Determination of ph value, Sulphate and Chloride content etc.

The results and interpretation of all the laboratory tests shall be incorporated in the soil investigation report indicating borehole/field test number, sample number, sample description and depth of collection of sample from ground level.

10.0 SOIL INVESTIGATION REPORT

The Contractor shall submit six (06) copies of the final soil investigation report in English language. The final soil investigation report shall include complete compilation and consideration of all available data, in-situ and laboratory tests conducted Contractor's interpretation and inference of result of shall in-situ and laboratory investigation. It shall include general description of site, geology of the area, soil investigation procedures, description and characteristics of soil and rock, sub-soil conditions, description and results of all in-situ and laboratory tests. The report shall include special features and their effects on foundation, for example effect of shrinking and swelling characteristics of soil on sub-grade of road, flooring, material storage areas etc., in ground water or sub-soil on foundation and remedial measures to be adopted. The report shall also include

drawings showing test locations, borehole logs, subsoil profile, load-settlement and time-settlement curves, tri-axial and unconfined compression test diagrams etc. The Contractor shall ensure that all observations made during the field investigation and results of all laboratory tests are incorporated in the final report. The Contractor shall perform adequate in-situ and laboratory tests to study and establish the properties of all sub-soil and rock layers.

The report shall specify allowable bearing capacities at various depths considering strength and settlement criteria and estimated settlement for different sizes of foundations for given intensity of loading. The report shall include assessment of ground condition and indicate types of foundations to be adopted for different sub-soil, including existing fill if any, and rock strata. The report shall also include precautions and special measures, to be taken for design and construction of foundations, for example, precautions to be taken for construction of foundations/sub-structures in existing fill, if any, making keep excavations, dewatering etc. Prior to submission of final soil investigation report, the Contractor shall submit draft final report for comments, if any, to the PIU Engineer or his representative.

In addition to the draft final and final soil investigation reports, the Contractor shall submit four (4) copies of interim report. These shall include the bore logs/pit logs and results of field and laboratory tests conducted till that point of time.

Bidding document for Geotechnical Investigation at the proposed work site for the construction of Office Building of Guwahati Metropolitan Drinking Water & Sewerage Board at Kharghuli, Guwahati-04.

NIT No. 01 OF 2016-2017

FORM OF PRICE BID

PRICE BID

I /We.....agree to carry out the items of work as described under Bill
(Name of Bidder)
of Quantities for Geo-technical Investigation at the proposed work site for the
construction of Office Building of Guwahati Metropolitan Drinking Water & Sewerage
Board at Kharghuli, Guwahati-04 in conformity with technical specifications and terms
and conditions forming part of the tender documents at the rates and amounts as
mentioned below:

Sl. No.	Items of Works	Estimated cost of each borehole (Approximate) (Rs.)	Quoted by the Tenderer (Tenderer is advised to see the notes below before filling up his rates/amount	
			Rate (Rs.)	Amount (Rs.)
(1)	(2)	(3)	(4)	(5)
			See Note 1 below	
1.	Collection from the field and testing in the laboratory of undisturbed soil samples for sub-soil investigation (as per relevant I : S code) by open drive sampler(100 mm dia boring) through clayey soil layer/sandy soil layer/ sandy clay/ sandy slit layer/ clayey silt layer, conducting standard penetration test (SPT) and collection of SPT sampler, observation of ground water table, spot level survey to the bore location and carrying out R.L from nearest B.M, laboratory test (particle size analysis, hydrometre test, liquid limit determination, plastic limit determination, bulk limit determination, moisture content determination, specific gravity determination, triaxial test,direct shear test,unconfined compression test, consolidation test) including preparation of sub- soil investigation report complete with necessary printing and binding (minimum 5 copies).			
a)	From natural GL to 15 m depth or refusal	26000.00		

2.	Conducting laboratory tests on the samplesof foundation for the structure	Included in Sl. No. 1 above
3.a	Chemical analysis of soil and water samplel to foundation material all complete	Included in Sl. No. 1 above
3b	Laboratory permeability test	Included in Sl. No. 1 above
4.	Electrical resistivity test	Included in Sl. No. 1 above
5.	Submitting draft report in three copies and final report in six copiesfoundation etc. showing bore hole locations etc. all complete	Included in Sl. No. 1 above

(Signature with Seal of the Tenderer)

Notes: 1. The tenderer shall fill up his rates in percentage both in figures and words below /At par /Above the base cost under column 4.

(All taxes and duties except service tax are included in the above rates / amounts. Service tax shall be paid extra at actual against documentary evidence)