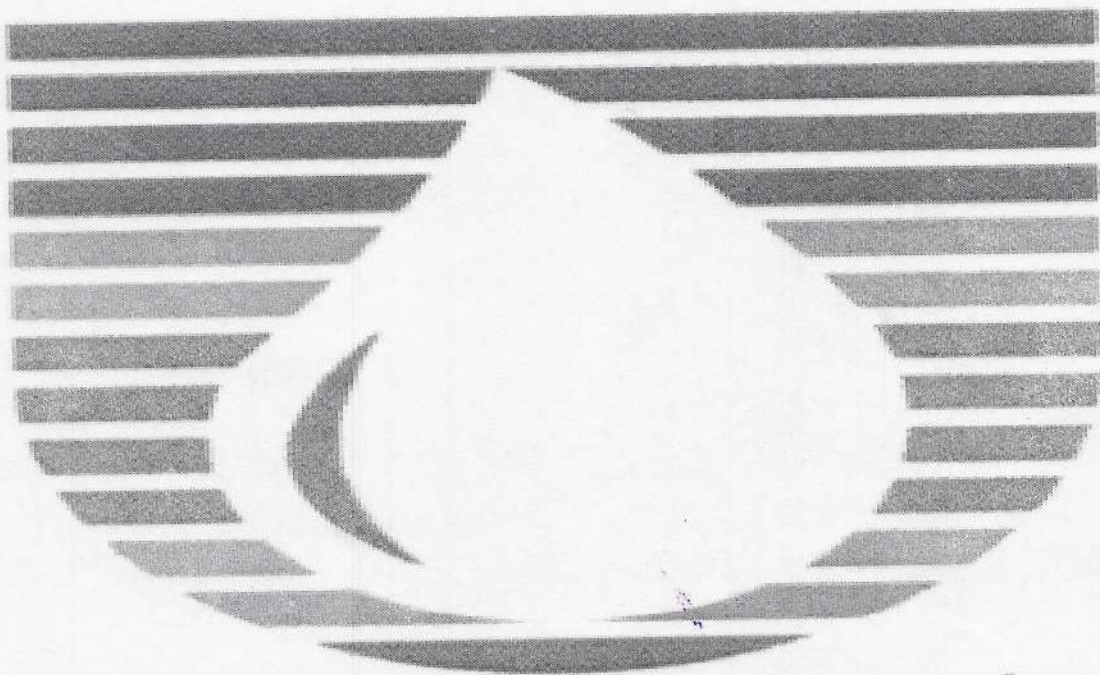


(Invitation for Geotechnical Soil Investigation Work)
(Under Assam Agribusiness & Rural Transformation Project)
(The World Bank)



Purabi

February' 2020





The West Assam Milk Producers' Co-operative Union Ltd.

PURABI DAIRY

Request for Quotation

WAMUL Invites bids from reputed agencies/firms/companies/organizations to undertake Geotechnical Soil Investigation Work including preparation and submission of detailed report for the proposed expansion cum strengthening of The West Assam Milk producers' Cooperative Union Limited (WAMUL) from 60 TLPD to 150 TLPD at Guwahati under the World Bank financed Assam Agribusiness and Rural Transformation Project (APART). The details are as follows:

Sl. No.	Brief Description of Services	Quantity	Scope of Work and other terms & conditions and Schedule of Quantity (SOQ)
1	GEOTECHNICAL SOIL INVESTIGATION WORK:	1 Job	As specified in the Terms of Reference (TOR)

Time line for submission of the bid documents will be as follows:

Sl. No	Item	Start date & Time
1	Bid Publishing start Date	25/02/2020
2	Bid submission End Date	11/03/2020,16:00hrs

You are requested to send your offer against the RFQ in sealed enveloped addressing to "The Managing Director, R.K.Jyoti Prasad Agarwala Road, Panjabari, Guwahati -781037 inscribing "Offer for Geotechnical Soil Investigation Work".



Sd/- Managing Director

(WAMUL)

R.K. Jyoti Prasad Agarwala Road, Panjabari, Guwahati- 781 037

E-mail: purabimilk@gmail.com • Website: www.purabi.org, GST No. 18AAAJW0070G1Z6



TERMS OF REFERENCE

WAMUL: APART: LMP Infra Con: 2017-18:

Dated the 25th February 2020)

1. **PROJECT & ASSIGNMENT BACKGROUND:**

- a) The Government of Assam (GoA) through Government of India (GoI) has received/obtained a loan from the World Bank for the Assam Agribusiness and Rural Transformation Project (APART). Assam Rural Infrastructure and Agricultural Services (ARIAS) Society, Government of Assam is the apex coordinating and monitoring agency for APART. The West Assam Milk producers' Cooperative Union Limited (WAMUL) popularly known as Purabi Dairy is the agency for implementing activities under the "Formal Dairy Sector" subcomponent of APART.
- b) The development objective of APART is "add value and improve resilience of selected agro value chains focusing on smallholder farmers and agro-entrepreneurs in targeted districts of the State of Assam"
- c) There are four components to the project: The first component (A) is Enabling Agro enterprise Development, with sub components being (i) enhancing state capacity to attract private investments, (ii) setting up of an Enterprise Development and Promotion Facility (EDPF) (iii) setting up of an Agribusiness Investment Fund (AIF) (iv) establishing stewardship councils. The second component (B) is Facilitating Agro Cluster Development with sub-components being- (i) support establishment of cluster level Industry Associations (IAs), (ii) supply chain support. The third component(C) is Fostering Market Led Production and Resilience Enhancement with sub components being (i) promoting climate resilient technologies and their adoption (ii) Facilitating market linkages through market intelligence and product aggregation (iii) Facilitating access to and responsible use of financial services. The fourth component is project Management, Monitoring and Learning.
- d) The project will achieve the proposed PDO by: (i) promoting investments in agro-enterprises, reducing the business and transaction costs, facilitating access to finance for agribusiness entrepreneurs, and, where appropriate, push for process, regulatory and/or policy change; (ii) supporting the development of a modern agro supply chain; improved information communication technologies (ICT) based farm information and intelligence services, and alternative marketing channels; and (iii) improving producers' access to knowledge,



technologies and infrastructure so that they are able to respond to market opportunities and climate variability. To achieve the PDO, the project will adopt a cluster approach both in terms of production (production clusters) and processing (enterprise clusters)

* TLPD stands for Thousand Liters per Day

- e) The West Assam Milk Producers' Co-operative Union Limited (WAMUL), a State level Cooperative Union of Assam was setup by the Government of Assam in 1978 and registered under the Assam Cooperative Societies Act, 1949. At present over 9000 dairy farmers are associated with WAMUL covering 06 districts in its area of operation. WAMUL is the apex milk cooperative union of the entire North East region and is manufacturing and selling milk and milk products under the brand name Purabi.

2. **ROLE OF WAMUL UNDER APART:**

WAMUL will be the implementing agency for the Third Component C - and sub-component - C.1.3.1 -Milk value chain: Formal sector .The focus of this value chain is productivity enhancement by organizing farmers into Milk Producers Institutions (MPIs) that eventually will get registered as Dairy Cooperative Societies (DCS) and genetic up gradation of Non-descript cows using Artificial insemination, improved feeding through Fodder production demonstration, etc. The project will also install Bulk Milk Coolers (BMC) for handling increased volume of raw milk procurement and maintaining the quality till it is transported to the Processing plant. Solar powered data processor based milk collection units (DPMCU) will be installed at each DCS to ensure transparency in milk reception, weight measurement and quality testing for making producers payments. The project will be leveraging the liquid milk processing and product manufacturing capacity of WAMUL.

3. **OBJECTIVE OF THE GEOTECHNICAL SOIL INVESTIGATION WORK:**

Bidders are invited to undertake Geotechnical Soil Investigation Work including preparation and submission of detailed report for the proposed expansion cum strengthening of the Purabi Dairy of The West Assam Milk producers' Cooperative Union Limited (WAMUL) from 60 TLPD to 150 TLPD at Guwahati

The structural design of the expansion Project will be done based on the detailed Geotechnical Soil Investigation report.

4. **SCOPE OF THE GEOTECHNICAL SOIL INVESTIGATION WORK:**

- a. To carry out at different location within site premises, boreholes of minimum 150 mm diameter which will be up to minimum (depth as mentioned in BOQ) below NGL (Normal / existing ground level) or refusal. The proposed locations shall be communicated through the drawing the time of execution.



- b. Taking disturbed soil samples minimum 3 samples per bore.
- c. Taking undisturbed soil samples at about 3m intervals in each bore.
- d. Standard or cone penetration test at 1.5 meter intervals within bore holes and at the end / terminated depth level of each bore.
- e. Taking one water sample from each borehole.
- f. Ground water table in each borehole.
- g. Safe soil bearing capacities for isolated, strip and raft footings at designated depth. Clear guidelines are required for amending S.B.C. for variation in footing depth from designated value.
- h. Recommendation for type of foundation. If pile foundation is recommended. Different size of piles along with capacity of each pile.
- i. Laboratory Test:
 - i) Cohesion, Water absorption test, Water swelling properties, Chemical Analysis of soil and ground water, Natural Moisture content, Bulk Density, Dry & wet density.
 - ii) Specific gravity – one sample of each type of soil met with estimated quantity.
 - iii) Liquid limit at least four samples in each bore.
 - iv) Plastic limit at least four samples in each bore.
 - v) Natural moisture content on all undisturbed samples estimated quantity: (average) 10 per above.
 - vi) Triaxial & unconfined compression on part undisturbed samples: (average) 4 per bore.
 - vii) Consolidation test on part undisturbed sample: (average) 6 per bore.
 - viii) Water analysis: one per bore
 - ix) Organic matter analysis average 4 per bore.

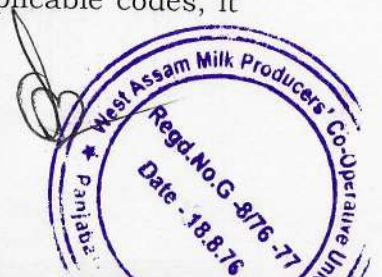
(The Tender should indicate the necessity or otherwise of all these tests to make his recommendations and quotes accordingly. Samples taken from the bore the produced if asked for)

This specification outlines the general requirements for site subsoil investigations.

4.1 CODES AND STANDARDS:

All work shall be carried out strictly in accordance with the Technical Specifications, unless otherwise approved by engineer in writing. Where not specified, the latest editions of one or more of the following IS codes of practice or any other applicable codes shall be followed. (In case of other applicable codes, it shall be followed subject to prior approval of WAMUL.

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- IS: 1498 - Classification and identification of soil for general Engineering purpose,
- IS: 1888 - Method of Load Test on Soils,
- IS: 1892 - Code of Practice for Site Investigations for Foundations,
- IS: 1904 - Code of Practice for structural Safety of Buildings,
- IS: 2131 - Code of Practice for walled Tube sampling of Soils,
- IS: 2720 - (Part I to Part XXII) - Method of Test for Soils,
- IS: 2809 - Glossary of Terms and symbols relating to soil Mechanics,
- IS: 2810 - Glossary of Terms and symbols relating to soil Dynamics,
- IS: 4434 - Code of practice for In-situ Vane and shear test for soils,
- IS: 4968 - (Part me and Part III) - Method of sub surface sounding,
- IS: 5249 - Method of test for Determination of IN - Situ Dynamic Properties of Soils,
- IS: 5529 - Code of practice for in - situ Permeability Test (Part 1: Test in overburden)
- LAMBE - Dry Unit Weight for un-disturbed samples (UDS)

5.0 EXTENT OF WORK

The extent of soil investigation will be as follows:

5.1 The exploration of the sub soil strata by trial pits / and Boreholes to determine the sequence and extent of the strata, and establish the geology of the soil and site as necessary.

5.2 The procuring of sufficiently representative sample of all soils, rocks and ground water to ascertain their characteristics, in order that the type of foundation and structures may be determined for the proposed site.

5.3 The preparation of a comprehensive report based on the finding and observations of the soil investigation, including recommendations on foundation design and / or safety of existing works, nature of soil, recommendation of soil stabilization means if required etc.



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6.0 TECHNICAL SPECIFICATIONS OF THE SOIL INVESTIGATION WORK

6.1 BOREHOLES-LOCATION & BORING PROCEDURE.

The location of boreholes shall be given in the sketch / drawing along with the reference mark at various points in the drawing / sketch and numbers of boreholes shall be sufficient to give a picture of the probable variation in the substrata over the site, and if necessary in certain areas adjacent to the site.

It shall be the responsibility of soil investigator or contractor / bidder to locate the position of the boreholes accurately which will be checked by the engineer-in-charge. Boreholes sunk at wrong locations shall not be considered for payment.

Boreholes of minimum 150 mm diameter shall be sunk to the required depth with shell and auger and powered mechanized rotary percussion equipment through sand, silt, clay, pebbles and gravels but excluding hard rocks. The boring in rock shall be carried out using mechanized boring equipment and diamond bits size not smaller than 100 mm diameter. The boring shall be carried out in Mud using mud boring techniques based upon the soil. Mud boring shall be carried out by employing bentonite slurry.

In case of cohesion-less soil, borehole may be kept filled up with bentonite or any other suitable slurry to prevent sides of borehole from caving in.

The boreholes shall be cleaned properly before conducting any in-situ test and test taking out un-disturbed samples.

6.1.1 Depth

The depth of each borehole shall be to include all strata that will affect the design and stability of the proposed structures. Depth shall always be measured from the original NGL (Natural Ground Level) of the particular location of the bore well.

Generally the borehole shall be terminated on refusal upon hard pan or hard rock. When hard rock is encountered at any depth less than the depth mentioned in BOQ, at least 1.0 meter long cores of such rock stratum shall be taken from below the rock to determine strength of the same and borehole shall be terminated after drilling up to 3.0 meters in rock or final depth(in BOQ) whichever happens earlier.

For the purpose of payments, boring depth shall be measured from the ground level (NGL) at the location of boreholes.

6.1.2 Back Filling

All bore holes and trial pits shall be properly filled back and existing pavements / Ground reinstated material shall be cleared away and site left tidy on completion.

6.1.3 Borehole Log



For each location of boring, a log shall be compiled for inclusion with report, giving the information in tabulated and graphical forms. The following information shall be included....

- a) Ordinance level of Ground at borehole site
- b) Bore hole No. and location
- c) Type and dia. of boring , and equipment used
- d) Classification and description of each soil and rock type, and depth below surface,
- e) Levels and limits of zones in rocks which shows definite characteristics (i.e. joints or shear planes or mineral deposits)
- f) The level at which ground water was encountered, the level to which the water rose, and rate of rise, if any.
- g) When boring in rock, the level to which the water was lost, seasonal or tidal variations.

6.2 SAMPLES

6.2.1 Frequency of sampling

A sufficient no. of disturbed and undisturbed soil samples shall be taken at varying depth for testing and analysis. The number of samples shall be adequate for complete classification of soil and accurate assessment of its properties. The manner of sampling shall be taken whenever a major change in soil is evident. In an apparently homogeneous stratum, samples are at intervals of not more than 2.0 meters in depth.

Undisturbed samples shall be minimum 50 mm in diameter and minimum 250mm long.

Disturbed samples shall be collected also at the locations where the in situ tests are carried out, at change of stratum and at all levels where UD (undisturbed) samples are drawn.

6.2.2 Protection

Due care shall be taken in protection and handing of the samples, in order to preserve their natural structure and moisture content. After withdrawal, the ends of the tubes shall properly sealed off with wax and capped before sending them over to laboratory for tests. Each sample shall be clearly labeled with the location and depth. These samples should be packed in widen boxes so that samples are not disturbed during transit to soil mechanics laboratory.

6.2.3 Ground Water



A representative selection of water samples shall be taken over the site to determine the content and variation, if any, of sulphates or other deleterious matter or chemicals. Water samples shall be taken as soon as possible after water has been struck, and care shall be taken to ensure that no dilution takes place with rain, or surface water, or water used to facilitate boring. Minimum 2.5 liters of water shall be collected for each sample and stored in proper containers adequately labeled and sealed prior to sending the same to laboratory for testing.

6.2.4 Description

The description of each sample of soil in the report shall include its consistency, swelling property, structure, colour, and other diverse characteristics, together with reference to any other material incorporated (i.e. stones, mineral or vegetable matter).

6.3 TESTING

6.3.1 Selection

Prior to carrying out laboratory testing, a schedule of tests bases on recovered samples first shall be got approved.

6.3.2 The sample shall be tested for the following.

6.3.2.1 Field Tests

6.3.2.1.1 Standard penetration test (SPT) shall be employed assess the resistance of the Soils.

6.3.2.1.2 Load Test

This test shall be carried out in accordance with IS: 1888 – 1971

6.3.2.1.3 Permeability Test

Where Specified, the permeability of the soil will be tested by in-situ methods.

6.3.2.1.4 Other Tests

Other tests will be as required.

The field test records shall be kept in an approved pro-forma in triplicate and one copy of this shall be submitted to the engineer in charge at site itself. Another original copy shall be submitted along with the final reports by soil investigator.

6.3.2.2 Laboratory Test....

- a) Cohesion
- b) Water absorption test
- c) Water swelling properties
- d) Chemical Analysis of soil and ground water



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- e) Natural Moisture content
- f) Bulk density
- g) Dry & wet density
- h) Specific Gravity
- i) Liquid and Plastic, Shrinkage limit
- j) Plastic and Liquidity Index (Cohesive Soils)
- k) Particle Size Distribution, grain size analysis
- l) Consolidation Characteristics
- m) California Bearing Ration (C.B.R.) Test
- n) Stabilization Test
- o) Unconfined compressive tests
- p) Triaxial Shear test
- q) Water analysis
- r) Organic matter
- s) Any Other Test that is required for the report

The sample taken from the bores to be produced by the bidder if asked for by WAMUL.

7.0 REPORT

The report shall include the following

7.1 General

All site observations shall be plotted and recorded on plans and sections and in tabular and graphical form.

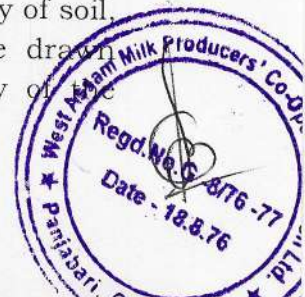
7.2 Local Geology

The local geology shall be discussed with particulars reference to the proposed structure and loadings.

7.3 Narrative Reports

The narrative report shall give a general description of the testing carried out; results obtained and deduced basic data useful for foundation design and settlement. The report shall include recommendations on type and depth of foundations, allowable bearing pressure at levels, typical settlement and different settlements calculations, settlements under major loads, recommendations for design and construction of roads and paving. The report shall include comments on chemical nature of soil and ground water with due regards to potential deleterious effects on concrete and steel include any other items worthy of notes, not fully covered in the tabulated results. If piles / soil stabilization means are envisaged, then report shall include recommendations regarding pile capacities, vertical, lateral and pullout capacities, and type of piles-bored cast-in-situ, driven cast-in-situ, precast, placement of piling through site fill etc., and negative skin friction on piles, of such conditions exist.

7.4 All Computations leading to the logical conclusion of bearing capacity of soil, safe capacity of piles etc. shall be included in report. If reference are drawn from standard test books, such reference shall be clearly given with a copy of



e) Earnest Money Deposit (EMD): The interested bidders have to provide a bid security of amounting Rs.3000/-which will be presented in the form of demand draft drawn in favour of "The West Assam Milk Producers' Cooperative Union Limited, payable at Guwahati". Bid security will be returned to the bidders within 60 days from the date of finalization of the successful bidder. Bid submitted without the requisite EMD shall be summarily rejected. No interest shall be paid by WAMUL on EMD amount deposited by bidder. If the successful bidder will not be able to supply the mentioned quantity at the stipulated time frame mentioned in the Purchase Order/Work Order, the cited EMD amount will be forfeited.

f) Performance Bank Guarantee :NA

g) The bidder should have all statutory compliances.

8.2 The selection criteria for the bidder shall be as follows:

a) The least quoted bidder will be selected.

9.0 GENERAL TERMS &CONDITION

The bidders shall inspect the site, collect and examine all the information required by them which are necessary for quoting and ensuring satisfactory of the work. No charges shall be payable to the bidder for visit and inspection.

a) No idle time charges shall be payable to the bidder. However, in the event of some delay in issuing instruction by the owners / consultants, the time limit may be suitably extended.

b) The bidder shall be fully responsible for the correctness and accuracy of the work done, results of the tests, their interpretations and finally the recommendations made. The work shall be executed in a professional manner befitting a specialist expert agency practicing in the field of Geo-technical Investigations.

c) No part of the bid document shall be detached and no alteration or mutilation shall be made therein. The bid shall be submitted along with a covering letter in duplicate wherein the bidder may furnish any other relevant information.

d) The rate / price shall be inclusive of following:

i. Necessary accommodation, transport etc. for his staff, all manpower and equipment at site. (No accommodation shall be permitted within site premises.)

ii. The bidder shall make his own arrangements for power supply (through Diesel pumps etc.) and water required for soil investigation field work.

iii. The site shall be cleared by the bidder after completion of job as it was earlier before.

e) Bidder shall be solely responsible for the safety & security of his men and equipment



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- f) The rates / price quoted shall be inclusive of all materials, labour, tools and plants, equipment, consumables, testing at field as well as laboratory, transportation charges, royalties except GST for the satisfactory and timely completion of the works. The rates shall also be inclusive of all the overheads, travels, supervision costs, profits & overheads etc. The % GST considered and the amount thereof may be indicated separately against the field defined in the Schedule of Quantity (SOQ).
- g) The quantities mentioned in this enquiry are tentative and may vary on either side while executing the job. The work actually done shall be measured and paid at the unit rates quoted / accepted for the respective items.
- h) The bids shall be valid for acceptance for a period of three months. The rates quoted shall be firm till completion of the work. The rates should be quoted both in figure as well as in words.
- i) WAMUL reserves the right to reject any or all the bids without assigning any reasons thereof.

10. COMPLETION TIME:

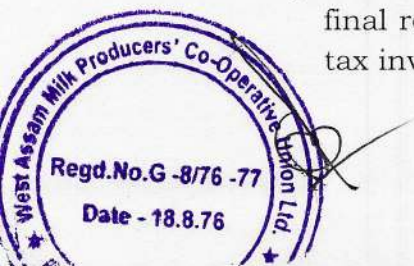
Total time period of the job shall be **Six Weeks** (Including non-working days & holidays) from the date of Purchase Order / Work Order and submission of before bore hole location drawing.

The bidder shall submitted the detail break-ups of time requirements for mobilization, field work, laboratory work and for preparation and submission of report etc. as mentioned below in his covering letter, confirming to the total time required for the complete job as mentioned above.

- a) Probable time to mobilize plant, equipment and personnel to site to start the work on receipt of purchase / work order: **One week.**
- b) Time required in completing all the field work: **Three week.**
- c) Time required for carrying out laboratory test and preparing and submitting the reports with recommendations: **Two week.**

11. PAYMENT TERMS:

- a) 75% payment shall be made against completion of job and submission of 2 (two) copies of draft report for acceptance and against submitting tax invoice.
- b) Balance 25% payment shall be done on submission of 5 (five) copies of final report and its acceptance by the consultant and against submitting tax invoice.



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- c) The quantities indicated are estimated & may vary on either side upon actual execution. However, payment shall be made based on the actual quantities executed at site & assessed / certified by engineer-in-charge of WAMUL.

12. APPROACH, METHODOLOGY & STAFFING

- a) During field investigation work, the soil investigator shall employ a qualified engineer (Site Engineer) specialized in soil mechanics with a minimum two years' experience who shall supervise the field work continuously at site. This site engineer shall camp / be posted at site and remain present continuously at the site for supervising of field work for the entire period of soil investigation field work.
- b) Along with his quotation / bid, the soil investigator will send the names, qualifications and year of experience of the following personnel:
- i) Site - Engineer - to be posted at site.
 - ii) Laboratory Engineer.
 - iii) Proprietor or Head of the Department or the senior most person in the organization who will be signing all the reports. Reports signed by junior staff will not be acceptable.

13. RATES:

- a) The rates and price quoted by the bidder shall be fixed for the duration of the contract and shall not be subjected to adjustment on any account. A bid submitted with any price adjustment condition shall be treated as non-responsive and rejected.
- b) The bidder shall quote the rates and prices entirely in Indian currency and all payment shall be made in Indian currency only.
- c) Payment shall be made on the basis of actual work executed and the reports submitted.

14. ARBITRATION:

In the event of any question, dispute, differences arising what so ever between the parties to this Agreement out of or relating to the interpretation or operation or effect of this Agreement, the same shall be settled amicably by the parties. If the parties are unable to settle such dispute amicably, the same shall be referred to sole arbitrator to be appointed by WAMUL. The arbitral proceedings shall be governed under the provisions of The Arbitration and Conciliation



Act, 1996 or any amendments thereof from time to time and the Award passed by the Arbitrator shall be final and binding on the parties. The venue of the arbitration shall be at Guwahati and the courts at Guwahati shall have exclusive jurisdiction to entertain any disputes arising out of this Agreement. The arbitration proceedings shall be in English.



Sr. No.	Brief description of the work	Unit	Quantity	Unit Cost excluding GST (Rs)	Total cost excluding GST (Rs)
1.	<p>To carry out minimum 150mm diameter borehole within site premises of which shall be drilled up to 10.00 meters below NGL (Normal/existing ground level) or refusal by taking disturbed soil samples, taking undisturbed soil samples, penetration tests at the intervals of 1.5m or as required in each bore and at the end/terminated depth level of each bore, taking minimum one water sample from borehole if encountered, ground water table in the borehole if observed, refilling the borehole etc complete as directed including all laboratory tests and deduced basic data useful for foundation design and settlement as per the latest IS codes, providing borehole log chart defining limits and depths of various soil strata and their classifications and descriptions, submitting the detailed report describing general information, local geology, narrative report, all computations leading to the logical conclusion of bearing capacity of soil, safe capacity of piles if any, ground water test reports, recommendation and evaluation about safe bearing capacity, type of foundation, protecting underground concrete from salts or any other impurities/chemicals contained in soil & water, evaluation, assessment and recommendations, in respect of site preparation, excavation, filling, construction, foundation designs.</p> <p>This specification outlines the general requirements for site subsoil investigations. The work shall be executed in a professional manner through a specialist expert agency</p>	No	4		



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SOQ

	practicing in the field of Geo-Technical Soil Investigations.				
2	Do as per item number 1 but bore hole drilled from 10 mtr. to 15 mtr.	No	4		
3	Do as per item number 1 but bore hole drilled from 15 mtr. to 20 mtr.	No	4		
GST @ -----% is extra on the above rates					
The actual number of Boreholes may vary on either side as per site requirement					

Sd. Managing Director

WAMUL



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Letter Pad of CA Firm

Anexxure **II**
Standard format

TO WHOMSOEVER IT MAY CONCERN

We..... based on audited books of accounts for the financial year 2016-17, 2017-18, 2018-19 and verification of documents ,records and information provided to us by the Management of

....., having its registered office at.....

..... Confirm the following:

Sl No	Financial Year	Turnover (Rs.)
1	2016-17	
2	2017-18	
3	2018-19	

Date:

Signature

Place

Seal/Stamp of CA Firm



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