



**ASSAM ELECTRICITY GRID CORPORATION LIMITED**

Regd. Office: 1<sup>st</sup>Floor.Bijulee Bhawan. PALTANBAZAR; GUWAHATI - 781001

CIN: U40101AS2003SGC007238

PHONE: 0361-2739520 FAX NO.0361-2739513

Web: [www.aegcl.co.in](http://www.aegcl.co.in) Email: [cgm.ppd@aegcl.co.in](mailto:cgm.ppd@aegcl.co.in)

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## SHORT TENDER NOTICE



### TENDER DOCUMENT FOR

NIT NO: - **AEGCL/MD/Tech-1091/220 kV Morigaon GIS/SI/18(a)**

Dtd.30.12.2023

NAME OF THE WORK: - **“Geotechnical Investigation for construction of 1 nos. of 220/132/33 kV GIS Grid Substation at Morigaon under AEGCL”**

Price: - ₹ 1,000/-

OFFICE OF THE CHIEF GENERAL MANAGER (PP&D),  
BIJULEE BHAWAN, GUWAHATI-781 001



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**Chapter-I**

**Short Tender Notice**

**No.** AEGCL/MD/Tech-1091/220 kV Morigaon GIS/SI/18(a)

**Dated:- 30.12.2023**

Chief General Manager (PP&D), AEGCL invites short sealed quotations in prescribed format from experienced contractor(s)/firm(s) having experience in survey works for execution of the following works of AEGCL.

**Invitee:** The Chief General Manager (PP&D), AEGCL.

**Name of Work:** “**Geotechnical Investigation for construction of 1 nos. of 220/132/33 kV GIS Grid Substation at Morigaon under AEGCL**”.

**Duration of Completion:** Time to complete all works is 90 days from date of issue of the work order/NOA.

**Tender Fee (Non-Refundable):** INR 1,000/- (Rupees One Thousand) only.

**Earnest Money Deposit (EMD):** INR 6,500 /- (Rupees Six Thousand Five Hundred) only.

**Address:** The Chief General Manager (PP&D), AEGCL, 1<sup>st</sup> Floor, Bijulee Bhawan, Ghy-781001

**Issue of Tender Paper/Tender Start Date:** On all working days from **01.01.2024**

**Receipt of Tender Paper /Tender end Date:** Till 12:00 hrs of **11.01.2024**

**Tender opening Date:** 12:00 hrs of **12.01.2024**

In case the date of receiving of tenders happen to be holiday the next working day will be treated as receiving/ opening date of tender at the same time and place.

The undersigned reserves the right to reject the tender (partly or in whole) without assigning any reason thereof and does not bind himself to accept the lowest tender.

Sd/-

**Chief General Manager (PP&D), AEGCL**



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### Chapter-II

#### Scope of Work:

The brief description of the scope covered under this bidding document is furnished below:

- a) Conducting soil investigation test necessary to initiate the process of construction of the following Grid Sub-station under AEGCL:
  - i. 220/132/33 kV Morigaon GIS Grid Substation.
  
- b) The different tests need to be carried out are as follows:
  - Natural Moisture content
  - Particle size Analysis
  - Index Properties
  - Unconfined Compression Test
  - Bulk & Dry Density Test
  - Shear test by Triaxial compression
  - Direct shear Test
  - Consolidation test (Odometer)
  - Chemical analysis for soil & sub-soil water
  - Making Test Bores on soil including taking out undisturbed and disturbed soil samples
  - Maintaining driving records of standard penetration test at various depths in soil
  - Conducting Plate Load Test
  - Earth Resistivity Test
  - Hydrometer Analysis
  - Standard Proctor compaction test
  - Relative Density (for sand)
  - California bearing ratio
  - Any other tests as required per Schedule of Work (Section 2 - Bidding Forms).
  
- c) The different tasks need to be carried out in the scope of work as laid out in the attached schedule of work in **Chapter V and Annexure I**



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### Chapter-III

#### Instruction for Bidders and General Terms and Conditions

1. Sealed bids in prescribed format are to be submitted with Name of the Work, Tender Reference No./Short Tender Ref No. and Name of the bidder mentioned on the sealed envelopes containing the bids.
2. The tender shall be submitted in two separate parts, each in separate sealed covers superscribed as follows.  
Part I – Technical & Commercial bid. Part II – Price bid.
3. Tender should be written either in ink or typed. No tender filled in otherwise shall be considered.
4. Every tender must be accompanied with **Earnest Money amounting to INR 6,500/-** in the form of A/C payee Demand draft/ Bankers Cheque pledged in favour of the Assam Electricity Grid Corporation Limited, Bijulee Bhawan, Paltanbazar, Guwahati-1, and Payable at Guwahati. Tenders without EMD / EMD of lesser amount shall be rejected outright. EMD of all the bidders shall be returned on receipt of Performance Security as per bid condition from the successful bidder.
5. The cost of the tender documents is Rs. 1,000.00 (Rupees One Thousand) only (non-refundable) in the form of Banker's Check /Demand Draft in favour of Assam Electricity Grid Corporation Limited, Guwahati-781001 and to be submitted along with the tender in 'Part I – Technical & Commercial bid'.
6. The rates against item(s) as detailed in the Schedule of Work (Chapter-V) are to be quoted as per the given schedules and shall be submitted along with the bid in "Part II – Price bid."
7. Every tender should quote rate of all items clearly both in figure and word. Taxes should be indicated separately in given columns.
8. The tenders should reach/ be submitted in the office of the Managing Director, AEGCL, Bijulee Bhawan, Paltanbazar, Guwahati-781001 on or before 12-00 hours on 11.01.2024
9. The Part-I (Technical & Commercial bid) of the tender will be **opened at 12:00 hours on 12.01.2024** in the office of the Managing Director, AEGCL, Bijulee Bhawan, Paltanbazar, Guwahati-781001, in presence of the authorised representatives of the bidders who desire to be present.
10. The Part-II (Price bid) of the bidders whose bids are Technically responsive in the "Technical Evaluation" of Part-I (Technical & Commercial bid) shall be opened separately.
11. Tenders shall preferably be submitted in person or by registered post with AD. Tenders received late due to delay in postal/courier service/ late due to any other reason shall not be considered. The tenders received after due date and time shall be returned unopened by post.
  - (a) Telegraphic tenders / tenders sent by means of FAX shall not be considered
  - (b) If for any unforeseen reasons the date of opening of bid turns into a holiday, the tenders shall be opened on the next working day at the specified time
12. The tender shall be accompanied with the registration certificate / GST/ Income tax certificate etc. of the contractor/ firm etc. participating as the bidder.
13. The contractor must have registration with the concerned department of Government of Assam/Govt. of India.
14. The Contractor/Firm should produce work experience/completion certificate in the name of the Contractor/Firm of at least 1(one) complete work relevant to the tendered work, done within last 10 years.
15. All pages of the submitted bid by an intending bidder must contact seal and signature of the bidder.



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16. The Chief General Manager, (PP&D), AEGCL Circle reserves the right to reject any or all the tenders without assigning any reason thereof and further reserves the right to split up the supply order/ work order in favour of more than one contractor.
17. The works vide the work order issued to the successful bidder must not be sublet.
18. No labour below 18 years should be engaged and contractor should have labour licence from competent authority.
19. The tender shall have to be submitted in the prescribed form only.
20. The tender shall be completed in all respect. Incomplete tender will not be considered and will be rejected.
21. The contractor will be responsible for safety of his materials.
22. Cost for construction of temporary building for storage of materials etc. house for contractor and staff should bear by the contractor. No rent will be paid by the AEGCL.
23. **ELIGIBILITY CRITERIA:**
  - (i) **EXPERIENCE**

Reputed and financially sound engineering firms/contractors having experience of successfully executing similar nature of work for minimum 132kV Voltage level during the last 10 years. (Submitted with supporting documents).

***Documentary Evidence of Experience in works of a similar nature and volume for each such work in the last ten years, and/or details of works presently under way or contractually committed and their respective clients.***
  - (ii) **CAPABILITY**
    - (a) Each bid shall be accompanied by a statement by the bidder declaring that he/she/it is a bona-fide engineering contractor and has in possession adequate equipment, qualified personnel to fill positions required for execution of the work.
    - (b) The Bidder will supply information of the key personnel, design & engineering staff, support staff, field staff etc. proposed for the work along with details of their experience in similar nature of work.
    - (c) The Bidder should also substantiate availability (either owned or leased) of the tools, tackles, spare parts etc. for carrying out the works.
24. **Supervising Authority:** The work shall be carried out under supervision of the AGM, Guwahati Transmission Division, Narengi, AEGCL.
25. **Approving Authority:** The GM (P&D), AEGCL & DGM (Civil), AEGCL shall approve the submitted report. After approval, the contractor shall submit the report(s) to the office of CGM(PP&D), AEGCL, First Floor, Bijulee Bhawan as follows:

**Hard copies: 6 nos. of approved hard copies Soft copies: 6 nos. in USB drives.**

All data is to be submitted in PDF as well as hard copies (Coloured) as referred above.
26. **Execution of Work:** The execution of work shall be done in the presence of AEGCL officials/representatives. The successful bidder before beginning of the work shall intimate AEGCL regarding their readiness to initiate the work.
27. **Liquidated Damage:** The date of completion of work shall be deemed as the essence of the work order and shall not be completed no later than the time specified in the contract. In case of failure, AEGCL shall be entitled to recover an amount at the rate of 0.5% of the contract price per week subject to maximum of 10% of the work order value as liquidated damage of AEGCL. However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the work.
28. **Performance Guarantee:** A DD/BG for an amount equivalent to 10% (ten percent) of the total value of the work will shall have to be submitted as performance security within 10 days from date of issue of the W.O. and the said



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BG/DD shall be valid for a period of upto 3 (three) months from the date of issue of W.O. After successful completion of the work and on completion of the period, the BG/DD shall be released on written request from the bidder.

29. Income tax shall be deducted at source. GST as per the GST norms shall be paid to the contractor.

30. The contractor should produce experience of such work executed earlier with supporting documents.

**31. Terms and procedure of Payment:**

- (i) The payment shall be made as a whole after the completion of the project.
- (ii) All payments shall be released from HQ.
- (iii) No payment shall be made unless Performance Security Deposit in the form of Bank Guarantee is furnished as per the tender clause no. 28.
- (iv) No advance payment is applicable for this contract.
- (v) Payment shall be made subject to availability of fund against this specific project.

**32. BIDDER SHOULD EXAMINE & UNDERSTAND**

All prospective bidders are required to thoroughly study and carefully examine all the terms and conditions, instructions, requirements & specifications pertaining to the work and visit the field of work to fully satisfy and acquaint themselves about the nature and location of work, the configuration of the ground, the surface conditions, quality and quantity of materials required and the type of equipment and facilities needed preliminary to and during the execution of the work and local conditions which may affect the work or cost thereof. Failure to do so will be at the bidder's risk.

33. Any condition not included herewith will be applicable as per the "GENERAL CONDITIONS OF SUPPLY AND ERECTION-2009" OF AEGCL.



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**Chapter –IV**

**BIDDER DETAILS**

Tender Notice No. AEGCL/MD/Tech-1091/220 kV Morigaon GIS/SI/

Dated: . . .2023

Name of work: “**Geotechnical Investigation for construction of 1 nos. of 220/132/33 kV GIS Grid Substation at Morigaon under AEGCL**”.

Name of Bidder: -

Address: -

Bidder’s Contact Official/Representative

Contact No:

Email Id:

Contact No:

**PREVIOUS EXPERIENCE** (As per Clause 23. (i), Chapter-III):

{Make a list of your works of similar nature executed/completed by you along with [supporting documents \(Work Order/NOA and Completion Certificate\)](#) and enclose sheets if necessary}.

**DECLARATION** (As per Clause 23. (ii)-a, Chapter-III):

**Manpower & Equipment(s) List** (As per Clause 23. (ii)-b & c, Chapter-III):

**Seal and Signature of the Bidder.**





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**Chapter –V**

**SCHEDULE OF WORK**

**(To be filled up and submitted separately as part of the 2<sup>nd</sup> Envelope i.e Part-II – Price BID)**

**From**

.....  
.....  
.....

**To**

**The Chief General Manager (PP&D), AEGCL,**  
1<sup>st</sup> Floor, Bijulee Bhawan, Ghy-781001

Sub: - Submission of Tender for the Work – **“Geotechnical Investigation for construction of 1 nos. of 220/132/33 kV GIS Grid Substation at Morigaon under AEGCL”**

.

Ref: Your Tender Notice No. AEGCL/MD/Tech-1091/220 kV Morigaon GIS/SI/

dtd:- -0 -2023

Sir,

Having thoroughly examined all terms and conditions of the NIT and having clearly understood the scope and specifications of the work to be executed as incorporated in the tender specification, I/We.....am/are submitting my/our rates for the work as follows;

**Schedule of work**

<b>Item No.</b>	<b>Description of Test</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Rate (excluding taxes) (Rs)</b>	<b>Amount (Rs)</b>
<b>1</b>	Mobilization & Demobilization of team & Equipment to site and return				
	i) For the proposed Substation	LS	1		
<b>2</b>	Soil sample test in approved laboratory				
	A. Natural Moisture Content	Each	35		



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<b>Item No.</b>	<b>Description of Test</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Rate (excluding taxes) (Rs)</b>	<b>Amount (Rs)</b>
	B. Particle Size Analysis				
	i) Sieve	Each	17		
	ii) Mechanical Analysis	Each	17		
	C. Index Properties (Liquid & Plastic Limits, shrinkage & Plasticity index)	Each	35		
	D. Bulk & Dry Density	Each	35		
	E. Unconfined Compression Test	Each	35		
	F. Shear Test by Triaxial Compression	Each	21		
	G. Direct Shear Test	Each	21		
	H. Consolidation test (Odometer)	Each	21		
	I. Chemical analysis for				
	i) Soil	Each	2		
	ii) Sub-Soil water	Each	2		
<b>3.</b>	Making Test Bores on soil including taking out undisturbed and disturbed soil samples, maintaining driving records of standard penetration test at various depths in soil and furnishing the necessary report and data in bore log form in sextuplicate to the engineer.				
	A. Upto 15m depth from natural ground level (15Mx 12 Nos. BH)	RM	180		
<b>4.</b>	PLT- Conducting Plate Load Test including all necessary arrangements.	Each	1		
<b>5.</b>	Earth Resistivity test with four-point Megger.	Nos.	5		
<b>6.</b>	1. Hydrometer Analysis	LS	1		
	2. Standard Proctor Compaction Test				
	3. Relative Density (for sand)				

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<b>Item No.</b>	<b>Description of Test</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Rate (excluding taxes) (Rs)</b>	<b>Amount (Rs)</b>
	4. California Bearing Ratio				
	5. Preparation and submission of report on soil investigation including recommendations as per specifications.				
7	<b>Trial pits</b> to be made at two locations as approved by AEGCL. The trial pits shall be 2 meters square in size extending to (four) meters depth or as specified by AEGCL. Undisturbed samples shall be taken from the trial pits as per the direction of AEGCL.	LS	2		

**Signature of the Bidder.**

## Annexure-I

### TECHNICAL SPECIFICATIONS FOR REFERENCE OF THE BIDDERS:

The Contractor shall use the recommendations made in the soil investigation report provided by the Employer with this bid document for reference purpose only.

- a) The Contractor shall perform a detailed soil investigation to arrive at sufficiently accurate general as well as specific information about the soil profile/strata and the necessary soil parameters of the site in order that the foundations of the various structures can be designed and constructed safely and rationally. Foundation systems adopted by the contractor shall ensure that relative settlement shall be as per provision in IS 1904 and any latest IS and other Indian Standards.
- b) This Specification covers all the work required for detailed soil investigation and preparation of a detailed report. The work shall include mobilization of necessary equipment, provision of necessary engineering supervision and technical personnel, skilled and unskilled labor etc., as required to carry out field investigation and tests, laboratory tests, analysis and interpretation of data and results, preparation of detailed soil report including specific recommendations for the type of foundations and the safe bearing capacity for different sizes of foundations at different founding strata for the various structures of the substation. The Contractor shall make his own arrangements for locating the coordinates and various test positions in field and also for determining the reduced level of these locations with respect to the benchmark. All the test is to be carried out before the AEGCL officials or before any agency engaged by AEGCL. Prior intimation in this effect has to be given to AEGCL.
- c) A report to the effect will be submitted by the Contractor for AEGCL specific approval giving details regarding his data for Civil structures design.
- d) Any variation in soil data provided with bid document shall not constitute a valid reason for any additional cost and shall not affect the terms and condition of the Contract. Nothing extra whatsoever shall be paid to the Contractor on account of any variation in subsoil properties /or conditions. Tests must be conducted under all the critical locations i.e. GIS Building, Control room building, autotransformer, lightning mast, 400 kV/220 kV/132 kV column location, auxiliary buildings etc. However, some of the soil parameters given below for substations have to be determined and submitted to authorized representative of AEGCL.
  - i. Dry density
  - ii. Bulk density
  - iii. Angle of internal friction/cohesion
  - iv. Specific gravity
  - v. Natural moisture content.

#### e) Bore holes

Drilling of a specified number of bore holes of 150 mm dia. in accordance with the provisions of IS 1892 at approved locations to specified depths or to refusal whichever occurs earlier. (By refusal it shall mean that a standard penetration blow count (N) of 100 is recorded for 30 cm penetration). However, at least 5 boreholes or as specified in BOQ shall be drilled to the required depth (15 mts. approximately).

Performing Standard Penetration Tests at approximately 2.0 m intervals in the bore hole starting from 0.5 m below ground onwards and at every change of stratum. The disturbed samples from the standard penetrometer shall also be collected for necessary tests.

Collecting undisturbed samples of 100/75 mm diameter 450 mm long from the bore holes at intervals of 2.5 m and every change of stratum starting from 1.0 m below ground level onwards. The depth of Water Table shall be recorded in each bore hole.

All samples, both disturbed and undisturbed, shall be identified properly with the bore hole number and depth from which they have been taken. The sample shall be sealed at both ends of the sampling tubes



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with wax immediately after the sampling and shall be packed properly and transported to the Contractor's laboratory without any damage or loss.

The logging of the bore holes shall be compiled immediately after the boring is completed and a copy of the bore log shall be handed over to AEGCL.

### **f) Dynamic cone penetration test**

Two Dynamic cone penetration tests under the locations of auto transformers shall be carried out with the circulation of bentonite slurry at specified location and a continuous record of penetration resistance (NG) up to 15 meters from natural ground level or refusal, shall be maintained by the Contractor.

Dynamic cone penetration tests are conducted to correlate engineering properties such as stratification density, bearing capacity, settlement, etc., of soils which are primarily cohesive in nature. The tests shall be conducted by driving a standard size cone attached loosely or screwed to a string of drill rods. The specification for the equipment and accessories required for performing this test, test procedure, field observations and reporting of results shall confirm to IS 4968-part 11 latest revision. The driving system shall comprise of 65 kg weight having a free fall of 75 cm. The cone size shall be 65 mm diameter, and provided with vents for continuous flow of bentonite slurry through the cone and rods in order to avoid friction between the rods and soil. The location for tests shall be as directed by AEGCL. On completion of the test, the results shall be presented as a continuous record as the number of blows required for every 300 mm penetration of the cone into the soil.

### **g) Trial pits**

Trial pits shall be made at two locations as approved by AEGCL. The trial pits shall be 2 meters square in size extending to (four) meters depth or as specified by AEGCL. Undisturbed samples shall be taken from the trial pits as per the direction of AEGCL.

### **h) Field California Bearing Ratio test**

This test shall be carried out to obtain the properties of soil required for the construction of roads. The equipment and accessories required for carrying out the test, test procedure, recording of observations and presentation of results shall confirm to IS 2770 part XXXI. The test locations of CBR test shall be on the road locations as per GA drawing. These tests shall be performed on remolded and undisturbed, soaked and un soaked samples.

### **i) Electrical resistivity test.**

This test shall be conducted to determine the electrical resistivity of soil required for designing safety grounding system for the entire station area. The specifications for the equipment and other accessories required for performing electrical resistivity test, the test procedure, and reporting of field observations shall confirm to IS 3043. The test shall be conducted using Wagner's four electrode method as specified in IS 1892, Appendix-B2. Unless otherwise specified at each test location, the test shall be conducted along two perpendicular lines parallel to the coordinate axis.

### **j) Plate load test**

Plate load test shall be conducted to determine the bearing capacity and load/ settlement characteristics of soil at shallow depths by loading a plane and level steel plate kept at the desired depth and measuring the settlement under different loads, until a desired settlement takes place or failure occurs. The specification for the equipment and accessories required for conducting the test, the test procedure, field observations



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and reporting of results shall conform to IS 1888. The location and depth of the test shall be given by the Contractor and approved by AEGCL. Undisturbed tube samples shall be collected at 1.0 m and 2.5 m depths from the natural ground level for carrying out laboratory tests.

The size of the pit shall not be less than five times the plate size and shall be taken upto the specified depth. All provisions regarding excavation and visual examination of pit shall apply here.

If the ground water table is at a depth higher than the specified test depth, the ground water table shall be lowered and maintained at the test depth for the entire duration of the test. Dewatering shall be at Contractor's cost.

Unless otherwise specified the reaction method of loading shall be adopted. Settlement shall be recorded from dial gauges placed at four diametrically opposite ends of the test plate. The test plate shall be 600 x 600 mm size and at least 25mm thick. The bottom of the pit shall be levelled before placing the plate in position for conducting the test.

A seating load of 70 gm/sq.cm shall be applied and after the dial gauge readings are stabilized, the load shall be released, and the initial readings of the dial gauges recorded after they indicate constant reading. The load shall be increased in stages. These stages shall be 20, 40, 70, 100, 150, 200, 250, 300, 400, 500, 600 and 800 KN per sqm or as directed by AEGCL. Under each loading stage, record of time versus settlement shall be kept as specified in IS 1888.

The load shall be maintained for a minimum duration of one hour or till the settlement rate reduces to 0.02 mm/m. whichever is later. No extrapolation of settlement rate from periods less than one hour shall be permitted.

Loading shall be carried out in stages as specified above till one of the following conditions occurs:

- i. Failure of the soil under the plate i.e. the settlement of the plate at constant load becomes progressive and reaches a value of 40 mm or more.
- ii. Total settlement of the plate is more than 40mm.
- iii. Load intensity of 800 kN/sq.m is reached without failure of the soil.

Backfilling of the pit shall be carried out as per the directions of AEGCL. Unless otherwise specified the excavated soil shall be used for this purpose. The quoted rates shall include backfilling.

Dial gauge readings for settlement shall generally be taken at 1, 2, 4, 6, 9, 16, 25, 60, 90 and 120 minutes from the commencement of each stage of loading. Thereafter the readings shall be taken at hourly intervals upto a further four hours and at two hours intervals thereafter for another six hours.

### **k) Water sample**

Representative samples of ground water shall be taken when ground water is first encountered before the addition of water to aid drilling of boreholes. The samples shall be of sufficient quantity for chemical analysis to be carried out and shall be stored in air-tight containers.

### **l) Laboratory Test**

The laboratory tests shall be carried out progressively during the field work after a sufficient number of samples have reached the laboratory, in order that the test results of the initial bore holes can be made use of in planning the later stages of the field investigation and quantum of laboratory tests.

All samples brought from field, whether disturbed or undisturbed shall be extracted/prepared and examined by competent technical personnel, and the tests shall be carried out as per the procedures laid out in the latest edition of the relevant IS Codes and Standards.

The following laboratory tests shall be carried out:

- i. Visual and engineering classification.



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- ii. Liquid limit, plastic limit and shrinkage limit.
- iii. Natural moisture content, bulk density, dry density and specific gravity.
- iv. Grain size distribution.
- v. Unconfined compression test.
- vi. Unconsolidated undrained test.
- vii. Swell pressure and free swell index determination.
- viii. California bearing ratio.
- ix. Consolidated undrained test.
- x. Consolidated drained test.
- xi. Chemical tests on soil and water to determine the carbonates, sulphates, nitrates, chlorides, Ph value, and organic matter and any other chemicals harmful to the concrete foundation.

### Test results and reports

The Contractor shall submit the detailed report in four (4) copies wherein information regarding the geological detail of the site, summarized observations and test data, bore logs, and conclusions and recommendations on the type of foundations with supporting calculations for the recommendations. Initially the report shall be submitted by the Contractor in draft form and after the draft report is approved, the final report in six (6) copies shall be submitted.

The report shall include, but not be limited to the following:

- A plan showing the locations of an exploration work i.e. bore holes, dynamic cone penetration tests, trial pits, plate load test, etc.
- Bore logs: Bore logs of each bore holes clearly identifying the stratification and type of soil stratum with depth up to the refusal. The values of Standard Penetration Test (SPT) at the depths where the tests were conducted on the samples collected shall be clearly shown against that particular stratum.
- Test results of field and laboratory shall be summarized strata wise as well in combined tabular form. All relevant graphs, charts tables, diagrams and photographs, if any, shall be submitted along with report.
- **Recommendation:** The report should contain specific recommendations for the type of foundation for the various structures envisaged at site. The Contractor shall acquaint himself about the type of structures and their functions from AEGCL. The observations and recommendations shall include but not be limited to the following:
  - Geological formation of the area, past observations or historical data, if available, for the area and for the structures in the nearby area, fluctuations of water table, etc.
  - Recommended type of foundations for various structures. If piles are recommended the type, size and capacity of pile shall be given.
  - Allowable bearing pressure on the soil at various depths for different sizes of the foundations based on shear strength and settlement characteristics of soil with supporting calculations for the recommendations.
  - Recommendations regarding slope of excavations and dewatering schemes, if required.
  - Comments on the chemical nature of soil and ground water with due regard to protective measures.
  - If expansive soil is met with, recommendation on removal or retainment of the same under the structure/road etc. shall be given. In the latter case detailed specification of any special treatment required including specification for materials to be used, construction method and equipment to be deployed etc. shall be furnished.
- Recommendations for additional investigation beyond the scope of the present work, if Contractor considers such investigation necessary.



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### OTHER REQUIREMENTS BY THE EMPLOYER

#### A. Contractor to Inform Himself Fully

- a. The Contractor should ensure that he has examined the Specifications and Schedules as brought out in this Section as well as other Sections of This document and has satisfied himself as to all the conditions and circumstances affecting the contract price and fixed his price according to his own views on these matters and acknowledge that no additional allowances except as otherwise provided therein will be levied.
- b. The Employer shall not be responsible for any misunderstanding or incorrect information obtained by the contractor other than information given to the contractor in writing by the Employer.

#### B. Service Conditions

- i. The plant and materials supplied shall be suitable for operation under the following climatic and other conditions:
  - a) Peak ambient day temperature in still air : 45°C
  - b) Minimum night temperatures : 0°C
  - c) Reference ambient day temperature : 45°C
  - d) Relative Humidity a) Maximum : 100 %  
b) Minimum : 10 %
  - e) Altitude : Below 1000 M above MSL
  - f) Maximum wind pressure : As per IS: 802 latest code.
  - g) Seismic Intensity : ZONE-V as per IS 1893.

#### C. Conformity with Indian Electricity Rules & Other Local Regulations

- a. The Contractor shall note that all substation works shall comply with the latest provisions of Indian Electricity Rules and with any other regulations. Local authorities concerned in the administration of the rules and regulation relating to such works shall be consulted, if necessary, about the rules and regulations that may be applicable.
- b. All registration and statutory inspection fees, if any, in respect of his work pursuant to this Contract shall be to the account of the Contractor.

#### D. Standards

- a. The scope covered under this bidding document shall, unless otherwise stated be designed in accordance with the latest revisions of relevant Indian Standards and shall conform to the regulations of local statutory authorities.
- b. In case of any conflict between the standards and this specification, this specification shall govern.





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**E. All work shall be carried out in accordance with the following Indian Standards and Codes:**

Indian Standards	Title	International Standard
IS 1080	Codes of Practice for Design and Construction of Shallow Foundations on soils (other than Raft, Ring & Shell)	
IS1498	Classification and Identification of Soils for General Engineering purposes	ASTM D 2487 ASTM D2488
IS 1892	Code of Practice for Subsurface Investigation for Foundation	
IS 1904	Code of Practice for Design and Construction of foundation in Soils: General Requirements	
IS 2131	Method of Standard Penetration Test for Soils	ASTM D 1586
IS 2132	Code of Practice for Thin-Walled Tube Sampling of Soils	ASTM D 1587
IS 2720 (Part 1-39) (relevant parts)	Method of Test for Soils (Relevant Parts)	
IS 2809	Glossary of Terms and symbols Relating to Soil Engineering	
IS 2911 (Part I-VI)	Code of Practice for Design and construction of Pile Foundations (Relevant Parts)	
IS 3043	Code of Practice for Earthing	
IS 4078	Code of Practice for Indexing and Storage of Drill Cores	
IS 4091	Code of Practice for Design and Construction of Foundations for Transmission Line Towers and Poles	
IS 4434	Code of Practice for In-situ Vane Shear Test for Soils	ASTM D 2573(M)-15 ASTMD 4648(M)-16
IS 4453	Code of Practice for Sub-Surface Exploration by Pits, Trenches, Drifts and Shafts	
IS 4464	Code of Practice for Presentation of Drilling information and core description in Foundation investigation	
IS 4968(Part-II)	Method for Subsurface sounding for soils, dynamic method using cone and Bentonite slurry	
IS 5313	Guide for Core Drilling observation	



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IS 6403	Code of Practice for Determination of Bearing Capacity of Shallow Foundation	
IS 6926	Code of Practice for Diamond Core Drilling for Site Investigation for River Valley Project	
IS 6935	Method of Determination of Water level in a Bore Hole	
IS 2809	Glossary of Terms and symbols Relating to Soil Engineering	ASTM D 653-14
IS 2911 (Part I-VI)	Code of Practice for Design and construction of Pile Foundations (Relevant Parts)	
IS 3043	Code of Practice for earthing	
IS 4078	Code of Practice for Indexing and Storage of Drill Core	
IS 4091	Code of Practice for Design and Construction of Foundations for Transmission Line Towers and Poles	
IS 4434	Code of Practice for In-situ Vane Shear Test for Soils	ASTM D2573 (M)-15 ASTMD 4648(M)-16
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IS 5313	Guide for Core Drilling observations	
IS 6403	Code of Practice for Determination of Bearing Capacity of Shallow Foundation	
IS 6926	Code of Practice for Diamond Core Drilling for Site Investigation for River Valley Projects	
IS 6935	Method of Determination of Water level in a Bore Hole	
IS 7422 Part (I- V)	Symbols and Abbreviations for use in Geological Maps Sections and subsurface Exploratory Logs (Relevant parts).	
IS 8009(Part-I)	Code of Practice for Calculation of Settlements of Foundations (Shallow Foundations subjected to symmetrical Vertical Loads).	
IS 8764	Method of Determination of Point Load Strength Index of	



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	Rocks.	
IS 9143	Method of Determination of Unconfined Compressive Strength of Rock Material	ASTM D 7012- 14e1
IS 9179	Method of Preparation of Rock Specimen for Laboratory Testing	
IS 9259	Specification for Liquid Limit Apparatus	ASTM D4318-17
IS 9640	Specification for Split Spoon Sampler	ASTM D1586-11
IS 10050	Method of Determination of Slake Durability Index of Rocks	ASTM D4644-16
IS 11315 (Part 1-12)	Method for the Quantitative Description of discontinuities in Rock Mas	

**\*\*Test Reports under Scope of this Short Tender Notice are to be submitted within the stipulated timeline for approval of AEGCL.**