**BHARAT HEAVY ELECTRICLES LIMITED**

(A government of India undertaking)

Unit: High-Pressure Boiler Plant, boiler project P.O

**TRICHIRAPALLI-14**

**COMBINED CYCLE DEMONSTRATION PLANT**

# NOTICE INVITING TENDER

| | |
|---|---|
| 01. Name of work | : Gasifier/Gas cleaning Operation & Maintenance: 2014-15 |
| 02. Tender No. | : O&M:CCDP:14-15/PR.89870764 |
| 03. Value of contract | : Rs. 64.50 lakhs (approx) |
| 04. EMD | : Rs. 1.5 Lakhs. |
| 05. Contract period | : One Year |
| 06. Last date for receipt of tenders | : 14.00 Hrs. / 03.03.2014 |
| 07. Date of tender opening (Technical bid) | : 14.30 Hrs. / 03.03.2014. |
| 08. Tender should be addressed to | : **THE SENIOR MANAGER,**<br>**MAINTENANCE & SERVICES / PLANNING,**<br>**2&4 BUILDING, BHARAT HEAVY ELECTRICALS LIMITTED,**<br>**HIGH PRESSURE BOILER PLANT,**<br>**TIRUCHIRAPPALLI – 620 014,**<br>**TAMILNADU – INDIA.** |

This document contains Covering letter, Specification, General Conditions, Security Deposit details, Part-I (Technical qualification bid) and Part-II (Price bid).

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# PART –I (TECHNICAL BID)

| SECTION - I / QUALIFYING CRITERIA | | |
|---|---|---|
| TENDER NO.: | | |
| The bidder has to meet the following requirements to get qualified for submitting tender for “Gasifier/Gas cleaning Operation Maintenance:2014-15” | | |
| SL.NO. | REQUIREMENTS | BIDDER'S RESPONSE |
| 1 | Years of experience in the similar function (minimum one year required) | |
| 2 | Similar functions executed earlier, if so, cite examples (Use separate sheet if required, including feedback letters from customers) | |
| 3 | Posses adequate manpower for deployment with required qualification/experience (Furnish details) | |
| 4 | Approximate (average) quantum of business per annum<br>(For the past three years ) | |
| 5 | Number of contracts under execution at present | |
| 6 | Any instance of termination of contract in the middle | |
| 7 | Will you ensure TN Govt min. wages (April 2013) plus<br>Additional wages (as per corporate guidelines)<br>and PF,ESI, Bonus (both TN Govt. min. wages and additional wages) | |
| 8 | PAN card No. | |
| 9 | ESI No. | |
| 10 | PF. Account No. | |
| 11 | Service Tax No. | |
| 12 | Whether visited the plant for assessing work content for finalizing the offer(If plant visit certificate is not enclosed offer will be rejected) | |
| 13 | Bidder should be capable of engaging manpower for estimated man days required for completing the Scope of work. | |
| 14 | Permanent address of the Firm with contact person name and phone no | |

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| SECTION – II | | |
|---|---|---|
| BID/OFFER FORMAT | | |
| The Bidders to note the following | | |
| SLNo. | REQUIREMENTS | BIDDERS COMPLIANCE |
| 1 | The Bidder shall submit the offer in TWO PARTS in two separate covers | |
| | 1.COVER- 1 -- Technical and Commercial (Part-I) | |
| | 2.COVER- 2 -- Price Bid (Part-II) | |
| | (Covers should be superscripting Tender No.) | |
| 2 | COVER- 3 -- D.D for **E.M.D** shall be submitted in a separate cover and superscripting the cover 'EMD'. (The Tender without EMD is liable for rejection.) | DD No. & Date |
| 3 | All the above 3 covers put into a large single cover and superscripting Tender Notice No: | |
| 4 | The Part-I Technical and commercial bid alone will be opened on the Tender opening date | |
| 5 | Part-II Price Bid of technically suitable bidders alone will be opened after giving prior intimation. | |
| | **IMPORTANT POINTS TO BE TAKEN CARE OF WHILE SUBMITTING OFFER** | |
| a | Should a bidder find discrepancies or omissions in the tender documents or should there any doubt as to their meaning, he should at once address the authority inviting the tender, for clarification well before the due date, so as to submit his tender in time. (No extension of time shall be given for submission of the tender on any account). | |
| | Pre-bid discussion for clarifications in the tender conditions will be held on 30.01.2014 at M&S conference hall,Bldg.2&4, BHEL,Trichy-620 014. | |
| b | Conditional and late tenders, tenders containing prima-facie absurd rates and amounts, tenders which are incomplete or otherwise considered defective and tenders not in accordance with the tender conditions herein contained and the tenders not in original ARE LIABLE TO BE REJECTED | |
| c | All entries in the tender documents should be in one ink. Erasures and overwriting are not permitted. All cancellations and insertions should be duly attested by the bidders concerned. | |
| d | Rates should be quoted as per the Work / Rate schedule. Rates quoted in any other form will not be accepted and will be rejected. | |
| e | Unit rates should be quoted in figures as well as in words for all the items shown in the attached schedule. Wherever there is a difference in the two, the rates in words will be taken as final. | |
| f | The tender must be signed separately and legibly by Partner /Director of the Firm or by the person holding the Power of Attorney on behalf of the Firm concerned. In the latter case, a copy of Power of Attorney, duly attested by a Notary Public must accompany the tender. | |
| g | If a bidder deliberately gives wrong information in his tender or creates conditions favourable for the acceptance of his tender, the BHEL RESERVES THE RIGHT TO REJECT SUCH TENDER AT ANY STAGE. | |
| h | Words imparting singular number shall be deemed to include plural number and vice-versa where the context so requires. | |
| i | Canvassing in any form in connection with tenders is strictly prohibited and the tenders submitted by the Bidders who resort to canvassing will be liable for rejection. | |

| | |
|---|---|
| j | If a bidder withdraws his offer after submission of his tender before opening of the price bid or after acceptance of his tender, fails to start the work in accordance with the instructions of BHEL**, the Earnest Money Deposited by him shall be forfeited.** |
| k | Should a bidder's or a Contractor's or in the case of a firm or company of contractors/any of its shareholder's or shareholder's relative is employed in BHEL, the authority inviting the tenders shall be informed in writing of this fact at the time of submission of the tender, failing which the tender may be disqualified, or if such fact subsequently comes to light, the contract may be cancelled. |
| l | The bidder should sign and stamped in all pages of documents. |
| m | Submission of tenders by hard copy only. |
| n | The service provider should cover PF & ESI for all the drivers engaging for duty. |

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WORK SPECIFICATION

# (Gasifier / Gas cleaning system plant Operation/Maintenance Contract)

The one year contract is planned as follows: (assuming 300 working days)

1. Total 45 days of CCDP – Gasifier & Gas cleaning system plant operation (in three shifts A,B & C)
2. Total 255 days of CCDP --Gasifier & Gas cleaning system plant maintenance work (in two shifts A & B)

## Plant Operation :

As per the instructions of our Engineers and supervisors, the contract employees are required to assist our employees for Plant Operation activities in three shifts (A, B & C shifts)

1. Leak check for gasifier system / gas cleaning system, flow check as per the instructions from control room and field supervisor instruction

2. Start up burner: starting burner, monitoring flame stability, controlling the flame temperature.

3. Coal feeding : opening closing of coal inlet valves, air valves, continuous monitoring of coal/bed material feeding through coal feed pipe, monitoring smooth functioning of coal feeders against noise, gland leak, gear box oil leak, smooth transferring of coal in coal lock, coal receiver. Monitoring bunker level, transferring coal through weigh belt feeder to coal lock

4. Bottom ash extraction: Monitoring smooth functioning of three numbers bottom ash extractors like purging, checking gland leak, observing noise / temperature raise, gear box oil leak etc.

5. Bottom ash disposal: smooth discharge through gates, disposal through chain conveyor and belt conveyor, keeping the area neat and clean

6. Fly ash pump: monitoring fly ash collection in lock and hopper, continuous pumping of fly ash from hopper to silo through fly ash pump, clearing line block, monitoring hopper and silo levels. Fly ash disposal from silo periodically and keeping the silo and gasifier area neat and clean.

7. Cooling water flow monitoring : Maintaining cooling water flow and temperatures of fly ash coolers, bottom ash coolers, Y'pieces, Distributor cooling

8. Vent filter operation : Fly ash lock is depressurized through vent filter system and its operation like N2 purging, checking the discharge of fly ash collected in vent filter

9. Sampling : collection of samples for coal, bottom ash, fly ash, slurry ash, at specified intervals and handing over to Lab for sample analysis

10. Gas cooler system operation monitoring.

11. Gas cleaning quench column : Maintaining quench column level by suitably draining and filling the level, in order to remove dissolved dust periodically

12. Cyclone level maintaining: observation and controlling of ventury scrubbers and cyclone separators knock out drum levels.

13. Settler drum level: Maintaining settler drum level by adding raw water, draining sediments during plant operation

14. Flare stack: During plant start and gas generation, igniting and maintaining the flame in the flare stack

15. Barrier Filter system operation including reverse purging of $N_2$/Syn. gas, ash level controls, fly ash pump, vent filter operation and keeping the area neat and clean

16. Nitrogen storage system operation and keeping the area neat and clean

17. During plant operation if any situation (gas leak, line puncture, line block, hot spot, gear box/feeder gland leak, valves leak, motor problem etc.) that requires stopping of plant. The problem causing stoppage of plant to be attended / rectified immediately and bring back the plant for starting at the earliest possible time.

18. The above operational activities are listed/covered in the tender work / rate schedule for monthly bill calculations

**Repair /maintenance and modification work**

As per the instructions from our Engineers & supervisors, the contract employees are required to carry out the following repair and maintenance / modifications / improvement works during shut down period, in coordination with our employees, for early completion and restarting the plant. The repair and maintenance work is to be carried out in two shifts (A&B shifts)

1. Identification of problems : Any failure of welding, gas leak, pipe erosion, hot spot failure due to very high temperature/pressure, Feeder/extractor gland leak, valves failure, Line block or chocking in ash/coal lines or vessels. Any failure in Distributor, like welding, nozzle melting, similarly in distributor plate, center pipe, cooling water lines, thermocouple damage, thermocouple welding failure, thermocouple bending. Similarly any other area of repair /maintenance work like gasifier, cyclones, Gas cooler, Barrier filter system, Nitrogen storage system, quench column, water knock out drum, Flare stack system during operation/maintenance to be identified and rectified.

2. Investigation of failures: by opening flanges, cutting pipes, opening man holes, dismantling vessels, structures, lines that disturbs repair work, removing coal/ash from vessels, equipments, valves, lines and locating the failures

3. Preparation for repair work: arrangement for approaching failure spots, scaffoldings/platforms, ladders, supports, Cleaning the lines, vessels, equipments, preparing of plates, pipes, gaskets, bolts and nuts. Preparation of surfaces for repair work, by cutting grinding, edge preparing. Arranging welding set, cutting set, electrodes gas cylinders etc.

4. Repair work: cutting, welding, grinding and other repair works like bending, gland packing, replacing damaged portion with new pipes, tubes, plates etc. Dye penetration tests for welding repair and other quality control tests etc.

5. Assembly of system after repair work: assembly of vessels, flanges, pipe lines, equipments, dummies and tightening the manholes, flanges, equipments

6. Leak checking : After repair, the repaired area strength to be tested with leak check, hydraulic check or any other applicable method

7. Putting back to service: After checking the repair work, the system to be put back to service. Add bed material, ensure cooling water by starting pumps and opening/throttling valves, start the burner system, keeping steam ready for start

8. For system improvements, addition of gas lines, air lines, water lines, purge lines, valves, equipments, fabrication of burners, vessels or any other additions required to be added on need basis.

9. The above operational activities are listed/covered in the tender work / rate schedule for monthly bill calculations.

10. The labours should work very carefully in critical areas of Gasifier (distributor, cyclone vessel) and gas cleaning (quench column, cyclones, knock out drum, gas cooler, barrier filter, flare stack, as it involves risk & space constraint.

**Note:** Considering the no. of equipments / area involved for plant operation & maintenance, the minimum man power required per shift for executing above work is skilled fitter - 2nos, welder - 2nos, pipe welder - 2nos, unskilled - 10nos & supervisor 1no.

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# GENERAL CONDITIONS

## (OPERATION / MAINTENANCE WORK FOR GASIFIER / GAS CLEANING AREA)

**STATUTORY REQUIREMENTS: --**

1. The contractor shall pay minimum wages to his labours as per Tamil Nadu govt. latest circular. Any revision arises within one year period, it is the contractors responsibility to pay the revised min. pay as per norms.
2. The contractor shall pay **additional wages also** as per corporate guidelines (Refer BHEL/HR/Welfare circular Dt.16.08.2011) **along with Tamil Nadu Govt. minimum wages**. PF&ESI shall be covered for both wages and separate record shall be maintained.
3. The contractor shall maintain attendance and acquaintance register and submit copies every month for both TN Govt. wages and additional wages (as per corporate guidelines)
4. The contractor shall pay Bonus to their employees as per minimum bonus act, for both TN Govt. wages and additional wages (8.33% one month pay)
5. The contractor shall remit PF and ESI (for both TN Govt. wages and additional wages) for the actual labourers engaged and produce the original challan every month for our verification and record. Similarly Service Tax shall be paid every month to the work executed and produce for reimbursement ( Contractors without Service Tax number need not bid the contract)
6. The contractor shall comply with all state and central laws, statutory rules, and regulations, inclusive of labour and industrial laws, income tax, service tax etc. which are applicable from time to time.
7. Any increase in minimum wage by Tamil Nadu Government, has to be implemented to the persons engaged by the contractor (including PF & ESI).
8. For any reason, no increase in contract value will be agreed by BHEL.
9. Necessary gate entry, pass arrangement for labours shall be arranged by the contractor before commencement of the work. The authorized person / supervisor of the contractor are responsible for making the pass arrangement.
10. The supervisor shall be an experienced Diploma Holder
11. The contractor shall produce certificates for skilled workers engaged.
12. It is the sole responsibility of the contractor to ensure his workman against accident and injury while at work. They have to follow relevant pay compensation rules in case of accident/injury.

**SAFETY**

1. The contract employees shall follow safe working procedures by using appropriate safety equipments like safety shoes, safety helmets, safety belts, earplugs, nose filter cloth or nose filters etc. All safety equipments mentioned above shall be supplied by the contractor.
2. All workers should compulsorily wear safety shoes and helmets at work site.
3. Scaffolding if required should be done by the contractor. Pipe, wooden planks & ropes will be provided by BHEL at free of cost.

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4. The contractor shall strictly follow BHEL Engineers safety instructions daily and whenever pointed out during unsafe working.
5. Since the contract employees are working in a dusty atmosphere, the contractor shall provide them with, long towel, soap, 100ml coconut oil, once in a month compulsorily.
6. Contractor shall provide First Aid Box with medicines required for meeting first aid requirements. Medicines shall be replenished as and when required.

**WORKS**

1. The contractor shall engage sufficient skilled workers (Daily three shifts for Plant Operation 45days and two shifts maintenance work for 255days, each shift minimum 4 skilled workers(fitters & welders), 2 pipe welders, 10 unskilled workers and 1 supervisor to meet the work listed in Specification
2. Pipe welding shall be done only after the edge preparation as per standard.
3. Proper electrode shall be used for welding joints based on grade/ type of material.
4. General category welders shall be engaged for all welding works.
5. Preheating of electrode as recommended by the electrode manufacturer shall be carried out prior to welding.
6. Pipes, pipe fittings, bends, flanges, valves, gaskets, gland ropes, fasteners and spares etc. Consumables like welding electrodes, oxygen / acetylene cylinders, kerosene, paints, rustolene and other consumables like electric power supply shall be provided by BHEL at free of cost.
7. Welding machine, cutting set, drilling machine & accessories and special tools/sets shall also be provided by BHEL at free of cost.
8. All scrap materials shall be transferred to CCDP stores after inspection by the site in charge.
9. The contractor shall bring welding shield and arc welding holder for welding works.
10. The contractor has to bring two sets of tool boxes with spanners, hammers, chisels, cutters, wire brushes, steel tapes, bonds, shovels etc.,
11. Each fitters shall be provided with tool box containing spanner set from size 6mm to 36 mm and erection spanner size 30,36,41,55 and other tools like dot punch, center punch, gas lighter, gas cylinder opener, rough/smooth files, spare hacksaw blades/gas lighter etc.
12. The contractor shall supply to all their employees sufficient safety equipments like safety shoes, safety helmets, safety belts, earplugs, welding goggles etc.
13. Since the contract employees are working around dusty atmosphere, the contractor shall provide them with nose mask, long towel, soap, 100ml coconut oil, once in a month.
14. The contractor shall engage sufficient skilled workers wherever necessary like structural welding, fitting, alignment, servicing, repair work of rotating parts, servicing of ball valves and other types of valves and all other maintenance activities as listed in rate schedule. The contract supervisor shall take care of this responsibility.

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15. Timely completion of work is very important. Hence the contractor shall engage sufficient no. of workers. If sufficient workers are not brought to the work spot, penalty will be imposed for the delay caused at 10% of value of such work and it may even be extended up to termination of contract.
16. During plant operation, every location shall be manned with sufficient man power, to the satisfaction of site engineer.
17. Any deficiency in the supply of required man power for operational needs will be met by Department from other agencies at your risk & cost.
18. The contractor's supervisor will control the man power and he is responsible for maintaining quality, speedy and smooth overall work completion.

**GENERAL**

1. The contractor shall be responsible for the proper behavior and observing all rules and regulations by the labor employed by them.
2. BHEL rules will be applicable towards issue of refreshments /food which will be adhered by the contractor. As per existing procedure for Canteen facilities, the lunch coupon shall be issued @ Rs.5 (Rs. Five) per person. Sufficient and valid coupons are to be tendered for Tiffin, Tea, Coffee, Milk, etc. to the canteen staff.
3. The contract labourers should not indulge in any mass strike within CCDP/BHEL or strike outside CCDP gate. If any such thing happen, BHEL has the right to terminate the contractor and no payments will be paid.
4. No advance payment will be arranged for the contract
5. Monthly bill shall be raised as per the measurement of actual work completed on pro-rata basis.
6. The contractor is directly responsible for the payment of wages to his workmen.
7. The contractor shall submit an acceptance letter for the above terms and conditions.
8. The contractor shall visit the plant and asses the work content before quoting. Plant visited certificate shall be enclosed in offer. Without certificate, offer will be rejected.
9. Qualification criteria: The tenderer should have executed a similar single contract of value not less than Rs 20 lakhs per year. Technical/Qualification competitiveness will be evaluated by technical committee and based on their recommendations only price bid will be opened. If the tenderer fails to satisfy qualifying criteria (both explicitly and implicitly stated) their offer will be rejected.
10. The contractor shall quote their offer as per rate schedule only. Plant operation has three shifts per day (A,B & C shifts) and maintenance work has two shifts per day (A&B shifts) and general shift. Sometimes we may plan for General and night shift, 08.00hrs to 16.30 hrs and 16.30 hrs to 01.00 hrs. In emergency, Sundays/ holidays also required to perform the work in three shifts.
11. All taxes & duties as applicable by central and/or state government will be reimbursed to the successful tenderer on proof of payment (like Service Tax, Surcharge etc. as applicable.)
12. All tenderers to quote excluding taxes & duties. However they are requested to indicate the existing taxes & duties separately

NOTE: The contractor may contact BHEL welfare section for details regarding additional wages as per corporate guidelines, in addition to the Tamil Nadu Govt. minimum wages along with necessary additional PF &ESI

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## 8.2 Security Deposit:

8.2.1 -- Security deposit should be collected from the successful tenderer. The rate of security deposit will be as given below:

- Upto Rs. 10 Lakhs - 10% of work order value.
- Above Rs. 10 Lakhs up to Rs.50 Lakhs - 1 Lakh +7.5% of the amount exceeding Rs.10 lakhs.
- Above Rs. 50 Lakhs, Rs 4 Lakhs + 5% of the amount exceeding Rs.50 Lakhs

The security Deposit should be collected before start of the work from the contractor.

8.2.2 -- Security Deposit may be furnished in any one of the following forms:

I. Cash (as permissible under the Income Tax Act)
II. Pay Order, Demand Draft in favour of BHEL.
III. Local cheques of Scheduled Banks, subject to realization.
IV. Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of contractor furnishing the security and duly pledged in favour of BHEL and discharge on the back.)
V. Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the companies act subject to a maximum of 50% of the total Security Deposit value. The balance 50% has to be remitted either by cash or in the form of security. The Bank Guarantee format should have the approval of BHEL.
VI. Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in Companies Act. The FDR should be in the name of the Contractor, A/c BHEL, duly discharged on the back.
VII. Security Deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the balance 50% may be recovered from the running bills.
VIII. EMD of the successful renderer shall be converted and adjusted against the Security Deposit.
IX. The Security Deposit Shall not carry any interest.

NOTE:

Acceptance of Security Deposit against Sl.No.(iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

Security Deposit shall not be refunded to the contractor except in accordance with the terms of the contract.

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**PART – II** (Price Bid)

RATE SCHEDULE

BHE:O&M:CCDP:14-15/PR.89870764

| **BHEL : TRICHY**<br>**Combined Cycle Demonstration Plant** | | | | | |
|---|---|---|---|---|---|
| | **O&M contract for Gasifier & Gas cleaning system**<br>**Plant Operation & maintenance** | | | | |
| **Sl no** | **Description** | **unit** | **Qty** | **Rate /unit (Rs)** | **Total (Rs)** |
| 1 | vessels/heat exchangers/equipments repair & maintenance | Ton | 500 | | |
| 2 | Pipe lines repair /maintenance/fabrication & erection | Run.m | 3000 | | |
| 3 | Fabrication / erection / repair & maintenance of structural items like columns, beams, floor grills & plates, supports etc | Ton | 100 | | |
| 4 | Cleaning of bed material, coal, fly ash, bottom ash, ash slurry from all vessels of gasifier & gas cleaning system | Cu.m | 1000 | | |
| 5 | Equipments cleaning of material, ashes, dusts etc | Sq.m | 1500 | | |
| 6 | Area cleaning floors, working area, sorrounding area cleaning | Sq.m | 10000 | | |
| 7 | Servicing of Rotating parts like coal feeders, extractors, pumps, gear boxes, conveyors etc | No. | 500 | | |
| 8 | Valves dismantling, servicing & connecting back (2" equivalent) | No. | 1000 | | |
| 9 | Leak check & flow check through vessels, heat exchangers as a total system | No of times | 20 | | |
| 10 | Plant operation -no of vessels / equipments to be operated for smooth operation of gasifier & gas cleaning system (10 nos x 3 shifts x 45 days = 1350nos) | No. | 1350 | | |
| (TOTAL IN WORDS: | | TOTAL | | | |

L1 will be finalized on cumulative total of the above quoted price.

The above quoted rates should be exclusive of taxes and duties.

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(WITH SEAL)

ISSUING OFFICER

# CHECK LIST

Documents to be included in **Part I qualification bid (sealed cover)**

1. Documentary evidence as per qualification criteria (Order copy, Bill copy, payment voucher, site visit certificate, bank solvency certificate etc).
2. EMD as per Tender.
3. Tender documents signed in all pages.
4. Part-I Technical / Qualification bid.
5. Income tax PAN copy and latest IT return copy.
6. Service Tax number xerox copy.
7. Latest solvency certificate.

Documents to be included in **Part II Price bid (sealed cover)**

1. Part-II Price bid duly filled in with Address and Signature

# PLANT VISIT CERTIFICATE

This is to inform you that I have visited the site on …… and fully understood the work nature. While arriving the rates, site requirements will also be considered and we will not ask for any revision of rates / contract value during the tenure of the contract.

Authorized person with seal

BHEL Engineer's Signature