



NOTICE INVITING TENDER

Tender Enquiry No.:TE-2022-23/14

Date: 06.07.2022

BHEL-FSIP, Jagdishpur invites bid in two part bid system (Part-I: Techno-commercial Bid; Part II: Price Bid) for following work from experienced and financially sound bidder.

- Description of work:** Construction of Radiographic Testing Enclosure at FSIP BHEL Jagdishpur
- Quantum of work:** As per Annexure-I (Total Quantum of Work) of STC of NIT
- Duration of Contract:** Within 05 Months from date of start of Work.
- Cost of tender Document:** Rs. 1180/- (Inclusive of GST @ 18%)
- EMD Amount:** Rs. 2,56,707/-
- Due Date and Time for Submission of Bid:** 18.07.2022 (12:00 PM)
- Due Date and Time for Opening of Techno-Commercial Bid:** 18.07.2022 (03:00 PM)
- BHEL** reserve the right to accept or reject any of the bid/all bids or cancel/withdraw the invitation for bid without assigning any reason whatsoever and in such case no bidder/intending bidders shall have any claim arising out of such action by BHEL.
- BHEL** can accept/reject any or all tenders fully or partly, reduce/increase quantum of work without assigning any reasons thereof.
- Mode of Submission of offer:** Being e-tender, offer will be submitted online through e-tender portal: <https://eprocurebhel.co.in/nicgep/app>. Offer to be submitted only on e-procurement portal. Hard copy of offer is not required to be submitted to BHEL-FSIP. **Any offer received in Hard copy shall not be accepted and straightway rejected by BHEL-FSIP**

Enclosures to Tender Enquiry:

- Section-I: General Terms and Conditions**
- Section-II: Special Terms and Conditions**

Note:

- The contractors may personally visit the work place to understand the scope of work before submitting their bids.
- For relevant details please visit our website “www.bhel.com”. All subsequent corrigendum/amendment shall be published only on website. Hence, bidders are advised to always be in touch with our said website until the tender is finally opened.

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Tel.: + 91 5361 224154; FAX: 27 0057; web site: www.bhel.com,
Registered & Corporate Office: ‘BHEL House’, Siri Fort, New Delhi 110 049



SECTION-I
GENERAL TERMS AND CONDITIONS

1. DEFINITIONS:

The following terms and expressions shall have the meaning hereby assigned to them, except where the context otherwise requires:

- 1.1 'BHEL' shall mean Bharat Heavy Electricals Limited, a Company registered under the Indian Companies Act, 1956 with its Registered Office at BHEL House, Siri Fort, New Delhi, Pin-110049 through its office at FSIP-Jagdishpur or its authorized Officers or its Engineers or other employees authorized to deal with any matters with which these persons are concerned on its behalf.
- 1.2 'CONTRACTOR' or 'FIRM' shall mean the individual, firm or Company who is enlisted with BHEL for providing the services and shall include their executors, administrators, successors and permitted assigns.
- 1.3 'CONTRACT' or 'CONTRACT DOCUMENT' shall mean and include guidelines and declarations of the registration, the General Terms & Conditions and Statutory Compliances, schedules of quantities, accepted appendices of rates, if any, technical specifications, special specifications, if any, Letter of Intent, agreement & the work order, issued by BHEL. Any conditions or terms stipulated by the bidder in the tender documents or subsequent letters shall not form part of the contract unless specifically accepted in writing by BHEL and incorporated in the work order.
- 1.4 'TENDER DOCUMENTS' shall mean Instruction to Tenderers, General Terms & Conditions, Special Terms & Conditions, Tender Specifications including drawings and all other documents issued to the bidder against invitation of bid.
- 1.5 'LETTER OF INTENT' shall mean the intimation by a letter / email / fax to the bidder that the tender has been accepted in accordance with provision contained in that letter. The responsibility of the contractor commences from the date of issue of this letter and all the terms and conditions of contract are applicable from this date.
- 1.6 'APPROVED, DIRECTED or INSTRUCTED' shall mean approved, directed or instructed by BHEL Shop Engineer / Shop- in-charge/ Concerned authorities.
- 1.7 'WORK' or 'CONTRACT WORK' shall mean and include the work to be done in relevant work category by the firm or as specified in the Tender documents.

2. OFFICIAL SECRET ACT :

The contractor shall give an undertaking under the official secret Act for maintaining secrecy of the drawings, documents or other records connected with the work given to them. The contractor shall return all the drawings/documents given to them. A third party non-disclosure agreement as per annexure-G shall be submitted.

3. MODE OF COMMUNICATIONS:

Generally, all communications, references etc. shall be delivered through Letter/Fax/ E-Mail or given to the authorized supervisor. It will be undertaken that the contractor has read and understood the message, within three days of the delivery, even if they have not received / not opened/ having technical problems on their side. Contractor shall communicate their change of authorized supervisor, email address in advance.



4. SECURITIES:

4.1 EARNEST MONEY DEPOSIT (EMD):

- 4.1.1 EMD is to be paid by bidder for securing fulfilment of any obligations in terms of the NIT. Offer should be accompanied with Earnest Money as specified in NIT through The EMD may be accepted only in the following forms:
- Electronic Fund Transfer credited in BHEL account (before tender opening). EFT shall be made in Bank Account No.: 10405292240 of SBI, IGFC branch, I A Jagdishpur, IFSC No. SBIN0009072. Receipt of EFT Transfer from bank shall be enclosed with technical offer.
 - Fixed Deposit Receipt (FDR) issued by Scheduled Banks/Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL)
 - In addition to above, the EMD amount in excess of Rs Two Lakh may also be accepted in the form of Bank Guarantee from scheduled bank. The Bank Guarantee in such cases shall be valid for at least six months.
 - The EMD shall not carry any interest.
- 4.1.2 In case of unsuccessful bidder, the EMD will be refunded after finalization of the tender.
- 4.1.3 BHEL reserves the right of forfeiture of EMD, in case the successful bidder who:
- After opening the tender and within the offer validity period, the tenderer revokes his tender or makes any modification in his tender which is not acceptable to BHEL.
 - The Contractor fails to deposit the required Security deposit or commence the work within the period as per LOI/ Contract.

4.2 SECURITY DEPOSIT (SD):

- 4.2.1 Security Deposit means the security provided by the Contractor towards fulfilment of any obligations in terms of the provisions of the contract.
- 4.2.2 The total amount of Security Deposit will be 5% of the contract value. EMD of the successful bidder shall be converted and adjusted towards the required amount of Security Deposit.
- 4.2.3 The balance amount to make up the required Security Deposit of 5% of the contract value may be accepted in the following forms:
- Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL (payable at Ind. Area Jagdishpur). EFT shall be made in Bank Account No.: 10405292240 of SBI, IGFC branch, I A Jagdishpur., IFSC No. SBIN0009072. Receipt of EFT Transfer from bank shall be submitted to BHEL.
 - Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
- (Note: 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.)
- 4.2.4 At least 50% of the required Security Deposit, including the EMD, should be deposited before start of the work. Balance of the Security Deposit can be collected by deducting 10% of the gross amount progressively from each of the running bills of the Contractor till the total amount of the required Security Deposit is collected.
- 4.2.5 If the value of work done at any time exceeds the contract value, the amount of Security Deposit shall be correspondingly enhanced and the additional Security Deposit shall be immediately deposited by the Contractor or recovered from payment/s due to the Contractor.



- 4.2.6 The recoveries made from running bills (cash deduction towards balance SD amount) can be released against submission of equivalent Bank Guarantee in acceptable form, but only once, before completion of work, with the approval of the authority competent to award the work.
- 4.2.7 Security Deposit shall be released to the Contractor upon fulfilment of contractual obligations as per terms of the contract.
- 4.2.8 The Security Deposit shall not carry any interest.

5. SUBMISSION OF OFFER / TENDER:

- 5.1. The bid is invited in either two part or single part as specified in NIT. In case of two part bid system offer shall be submitted as per following:
- 5.1.1. Part I: Techno commercial Bid: Techno commercial bid should be filled as per **ANNEXURE-H** to this section and should contain documents in the same order as listed there along with Documents for Pre-qualifying requirements, if applicable.
- 5.1.2. Part II (Price) Bid: Price bid should contain only Price Offer to be submitted strictly as per given format of Price Schedule given in the tender document. The Price Bid not submitted as per Price Schedule may not be considered.
- 5.1.3. Part I and Part II Bids should be put in separately sealed envelopes and each envelope must be marked clearly as “Techno commercial Bid” or “Price Bid” as the case may be. NIT Number and bidder’s name & address should also be clearly mentioned on these envelopes. These two envelopes must be put in a bigger envelope and sealed properly. Top of the outer cover/envelop should contain following information:
- Tender Enquiry No. & Title of Work
 - Bid Opening date & time
 - Address/Venue of Bid Submission
 - Bidder’s Name & Address
- Technical bid and price bid should be submitted in separate sealed envelopes. In case the bids are found in one single envelope then the “bids” are liable to be rejected.
- 5.1.4 In case of single part bid system, Techno-commercial bid and price bid should be submitted . in single sealed envelope.
- 5.1.5 All papers/documents should be ink signed and rubber stamped by the bidder.
- 5.2 The bidder shall quote the rates in English Language using international numerals. These rates shall be entered in figures as well as in words. For the purpose of the tender, the metric system of units shall be used.
- 5.3 All entries in the tender shall either be typed or be written in ink. Overwriting or cutting is not acceptable.
- 5.4 The tender shall be submitted on or before the time & date specified in NIT & shall be dropped into tender box as specified in NIT.
- 5.5 Tenders can be submitted personally/courier/post. The tenders received after the due date and time of submission will be rejected.
- 5.6 Tenders shall be opened by authorized officers of BHEL at the above mentioned address at the time and date specified in the NIT in the presence of such of those bidders or their authorized representative who may like to be present.
- 5.7 The offers should be strictly in accordance with the tender specifications & General Instructions to the bidder. Should the bidder require any clarification on the tender specification, or is interested in offering any deviation from the tender specification, he shall contact the authority inviting the tender for clarification before submission of the tender. No deviation w.r.t. terms & conditions of the tender



- are acceptable.
- 5.8 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document.
- 5.9 Before tendering, the bidder is advised to inspect the site of work and the environments and be acquainted with the actual working and other prevalent conditions, facilities available etc. No claim will be entertained later on grounds of lack of knowledge.
- 5.10 **Validity of Offers:** The offer should be valid at least for a period of **90 days** from the date of opening of tender. In case Bharat Heavy Electricals Limited (BHEL) calls for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer, which shall be binding, on the bidder. All expenses for attending such negotiations are to be borne by the bidder.
- 5.11 The acceptance of tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights to reject any or all the tenders.
- 5.12 Conditional and unsigned tenders, tenders containing absurd or unworkable rates and amounts, tenders which are incomplete or otherwise considered defective and tenders not in accordance with the tender conditions, specifications, etc., are liable to be rejected.
- 5.13 If the bidder deliberately gives wrong information in his tender, BHEL reserves the right to reject such tender at any stage or to cancel the contract, if awarded and forfeit the Earnest Money / Security Deposit / any other moneys due.
- 5.14 Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the Bidder who resorts to canvassing are liable to be rejected.
- 5.15 In case of non-conformities/errors/discrepancies are observed between the quoted prices in figures and that in words, following guidelines shall be followed:
- (a) If, in the price structure quoted for the required goods / services / works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly. Unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
 - (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected and
 - (c) If there is a discrepancy between words and figures, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
 - (d) If there is such discrepancy in an offer the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.
- 5.16 BHEL reserve the right to accept or reject any of the bid/all bids or cancel/withdraw the invitation for bid without assigning any reason whatsoever and in such case no bidder/intending bidders shall have any claim arising out of such action by BHEL.
- 5.17 BHEL can accept/reject any or all tenders fully or partly, reduce/increase quantum of work without assigning any reasons thereof.

6. SIGNING OF TENDER DOCUMENTS

The tenderer shall furnish following, duly enclosing documents relating thereto for the person who signs the tender documents:

- a) Authorized signatory shall be the person holding 'power of attorney' on behalf of the firm/company/bidder-concerned authorized/empowered to act on behalf for the specific purpose.



- b) Power of Attorney: An attested copy of the Power of Attorney, in case an individual other than the sole proprietor signs the tender shall be submitted along with the tenders.
 - c) Sole Proprietor-ship Firm: Undertaking on oath (Rs. 100 stamp paper) that Proprietor is solely responsible for all rights and liabilities while working under the name and style of Sole Proprietorship firm namely (_____)
 - d) In case of Partnership Firms: The names of all the partners and their address. A copy of the partnership deed duly certified by the Notary Public/ Deed registered at the office of Registrar of Firms shall be enclosed. The tender must be signed by all the partners of the firm or by the managing partner who has power to do.
 - e) Company: Certified copy Memorandum of Association, Article of Association and Incorporation Certificate.
 - f) Society: Registration certificate issued by Registrar of societies.
- BHEL will not be bound by any other power of attorney granted or the change in composition of the firm made after the execution of the contract agreement. They may, however, recognize such power of attorney or change in status only after legal advice.

7. PRICE SCHEDULE (PRICE BID):

- 7.1 Rate should be quoted strictly as per prescribed Price Schedule.
- 7.2 Rates to be quoted in figures and words by the Contractor.
- 7.3 There should not be any corrections in price bid contradictory to the above the offer will be liable for rejection.
- 7.4 The rate quoted should be kept firm during the execution of contract and no extra payment will be reimbursed to the contractor by BHEL. No increase in rate of DA / Wages hike shall be reimbursed to the Contractor.
- 7.5 Rate quoted above shall be inclusive of minimum wages as per govt. rules, additional wages as per BHEL rules, all statutory requirements like PF & ESI, Uniform, shoes, PPEs, bonus, machinery charges, Consumable cost, supervision charges and all other charges as per scope of work, as applicable exclusive of GST. GST, if applicable shall be paid extra at actual.

8. EVALUATION OF OFFERS

- 8.1 Technical-cum-Commercial Bid (Part-I) shall be opened first on due date specified in NIT.
- 8.2 The bidders shall be evaluated as per Pre-qualifying and techno-commercial requirements mentioned in the tender documents.
- 8.3 BHEL Reserve the rights to evaluate the bid as per BHEL policy norms and Govt. guidelines. The decision of BHEL for evaluation of bids shall be final and binding to bidder.
- 8.4 Price Bid (Part-II) shall be opened only of Technical-cum-Commercial qualified bidder.
- 8.5 The bidder shall submit complete price of the package. Total price of the package (Price Schedule) shall be compared for purpose of arriving at L1.
- 8.6 Any discount/revised offer submitted by a bidder on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e part-1 bid). The discount shall be applied on pro rata basis to all items unless specified otherwise by the bidder.
- 8.7 Unsolicited discounts/ revised offers given after Part-I bid opening shall not be accepted.
- 8.8 Evaluation of the offer will be strictly based on the information submitted by the bidder. In view of this the bidder is requested to go through tender document carefully and furnish all details clearly. Missing information may not be asked by BHEL.
- 8.9 In case of tie between two or more than two bidders for L1 price. Bids shall be called for discount on



- price offered in sealed envelope from all the L1 bidders.
- 8.10 BHEL reserve the right to split the work in two or more bidders, if required. If not specified, total work in full shall be ordered on a single party i.e. L-1 bidder.
- 8.11 BHEL reserves its right to negotiate with the Bidder and/ or go for Reverse Auction (RA).

9. REVERSE AUCTION:

- 9.1 BHEL may go for Reverse Auction (on line bidding on Internet) instead of opening the submitted sealed price bid. Bidder should confirm participation in Reverse Auction along with Techno-Commercial Bid.
- 9.2 The decision to go for Reverse Auction will be taken after techno-commercial evaluation. Only technically and commercially acceptable bidders shall be eligible to participate in reverse auction. Information and general terms and conditions governing RA shall be communicated to technically and commercially acceptable bidders.
- 9.3 In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids already submitted and available with BHEL shall be opened as per BHEL's standard practice.

10. CONTRACT AGREEMENT

The successful bidder (Contractor) has to make an agreement with BHEL in the format prescribed by BHEL on Rs. 100/- Non-Judicial Stamp Paper at his own cost.

11. TERMS OF PAYMENT:

- 11.1 Payment shall be made, on the Nos. of Measurement units, successfully executed, by the Contractor. The contractor shall submit their clear & legible bills (in Duplicate) on Monthly basis, duly verified by concerned BHEL staff. Each bill must be enclosed with work/ activity completion report duly signed by contractor & and BHEL representative (s).
- 11.2 All payments shall be released through electronic-pay mode only.
- 11.3 BHEL shall be releasing payments against the work order after deduction of income tax at source (TDS) as per requirement of income tax rules as well as TDS under GST and BHEL will issue appropriate certificates in this regard.
- 11.4 GST, if applicable, shall be paid, as per Govt. rules, to the contractor against running actual, on documentary evidence. The GST shall be paid extra and over the quoted rate.
- 11.5 All the terms & conditions of the contract with respect to Taxes & Duties are subject to the new taxation laws introduced from time to time (e.g., GST). The terms & conditions will be modified in accordance with the provisions of new laws (e.g., GST). The payment of Tax will be released subject to furnishing details of outward supplies of materials/services to BHEL in the Return. Also, ensure that the existing contracts, which spill over, to the date of implementation of new GST laws are modified accordingly.
- 11.6 The GST Credit entry maintained by GSTN to the BHEL Accounts on 'GSTN Common Server' must be ensured by the contractor. In absence of the same or any loss of GST Credit due to the fault contractor, shall be recovered/not payable to the contractor.
- 11.7 No interest shall be payable by BHEL on Earnest Money, Security Deposit or on any money due to the firm by BHEL.
- 11.8 Firm shall arrange his own finance for smooth execution of contract, wages payment, other statutory payments to his employees and all other agreed conditions.
- 11.9 Normally, payment shall be made within 45 days of receipt of clear and accepted bill at BHEL's execution department. Contractor is required to submit the bill within 30 days from work completion.
- 11.10 Clarifications from the contractors on bills will be intimated in one go within 07 days of receipt of clear bills, generally. Further, contractors are also required to submit the clarification in one go by next 07 days of receipt of clarification letter from BHEL
- 11.11 Contractors are required to submit the bill within 6 month from work completion, beyond this period, bill will not be accepted.



12. PENALTY :

For delays beyond the specified schedule given in tender document, if attributable to contractor, penalty shall be applicable as per terms given in NIT. Cost of rejection/rework, as appropriate shall be recovered from contractor as compensation for defective job done.

13. SAFETY AND OCCUPATIONAL HEALTH:

The contractor has to assume full responsibility of the safety of the vehicles/ equipments, crew and to comply with the security/ safety regulations of BHEL and Government, as applicable, inside the BHEL factory. The contractor is required to keep and maintain first aid box at work place at his own cost.

14. FORCE MAJEURE:

Notwithstanding anything contained in this Contract, neither the Contractor and nor the BHEL shall be held responsible for total or partial non execution of any of the contractual obligations, should the obligation be made impossible due to concurrence of a Force Majeure which will include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotion's, insurgency, sabotage, act of public enemy, acts of god, epidemics and act of Govt. over which the contractor or BHEL has no control.

15. ARBITRATION:

All disputes arising in connection with the contract shall be settled by mutual consultation. If no agreement is reached, the dispute shall be settled in accordance with Arbitration and conciliation Act, 1996 and the rules made there under. The dispute shall be referred for arbitration to any arbitrator to be appointed by the Head of Unit- FSIP, Jagdishpur. The award of the arbitrator shall be final and binding on both the parties. The venue of the arbitration shall be at Amethi (U.P.). The award to be given by the Arbitration shall be a speaking award. All questions, disputes, differences arising under, out of or in connection with this contract shall be to the exclusive jurisdiction of Sultanpur (U.P.), court.

16. JURISDICTION:

The contract shall be governed, by the law for the time being in force, in the Republic of India. Any matter of dispute arising out of or in connection with this contract shall be under jurisdiction of Sultanpur (U.P.), court only.

17. RIGHTS OF BHEL :

BHEL reserves to itself, the following rights without entitling the Contractor to any compensation. Resorting to any, some, all of the actions like Contract termination, recovering the dues/ losses from the Security Deposit and the contract amount, forfeiting the Security Deposit, getting the work done through other agencies at the cost of the contractor, cancellation of registration, banning the business with BHEL etc., in any event of the followings:

- Contractor's repeated poor performance, withdrawal from or abandonment of the work, except in force majeure conditions.
- Serious lapse in performance, Persistence disregard of the BHEL instructions.
- Insolvency of the contractor.
- Assignment, transfer, subletting of the contract work.
- Non-fulfilment of any contractual obligations or obligations under the law.



18. RISK AND COST:

If the Contractor fails to perform/execute the work within time or fail to perform as per the specification prescribed in tender or acted in violation to prescribed terms and conditions, BHEL shall be entitled to terminate the Contract and take recourse to alternate source to get the work done at the risk and cost of the Contractor. In such case Contractor shall make good the loss to BHEL. BHEL shall be entitled to recover the difference in cost, if any incurred by BHEL due to getting the work done from alternate source. However, in such case Contractor shall not be entitled for any gain.

19. TERMINATION

This contract may be terminated at any time without paying any compensation whatsoever to the Contractor in case of misbehaviour, disobedience, dishonesty, clandestine insolvency, any court order or any other related activities on their part or their failure to fulfil the terms and conditions of this contract or agreement.

BHEL reserves the right to terminate contract awarded for any contravention of statutory provision or any other reasons without assigning any explanation or notice to the contractor.

20. EXTENSION

The contract may be extended as per BHEL's policy on mutual agreement of BHEL and the contractor.

21. PREFERENCES FOR MSMEs:

Following preferences/benefits shall be given to MSEs in line with Public procurement policy for Micro and Small Enterprises (MSEs), 2012:

- The tender documents shall be issued free of cost to MSEs.
- MSEs are exempted from payment of Earnest Money Deposit (EMD).
- In tender, Micro and Small Enterprises quoting within the price band of L1+15% shall be allowed to supply the requirement of at least 25 % of the tender quantity subject to condition that such Enterprises bring down their price to L1 price where L1 price is from other than a Micro and Small Enterprise. If L1 offer is from a Micro / Small Enterprise, this provision will not be applicable. In case more than one Micro and Small Enterprise is there within this span, the supply shall be shared proportionate to the tender quantity.

Note: Special provision for Micro and small enterprises owned by SC or ST: -

Sub target of 25% (i.e. 6.25 % out of 25%) would be earmarked for procurement from Micro and Small Enterprises owned by the Scheduled Caste or Scheduled Tribe Entrepreneurs provided that in event of failure of such Micro and Small Enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 6.25 % sub-target for procurement ear-marked MSE owned by Scheduled Caste or Scheduled Tribe Entrepreneurs shall be met from other MSE Enterprises/s.

Note: Special provision for Micro and small enterprises owned by women: -

Minimum of 3 % reservation for women owned MSEs within 25% reservation.

MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -D where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry



if any deficiency in the above required documents is not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

In case of any change in the MSE status of the Bidder, it shall be the responsibility of the Bidder to notify the change as a part of the Bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the Bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the Bidder as per the procurement policy of BHEL.

- d. All other applicable benefits, if any shall be given to MSE bidders as per guidelines of GOI issued time to time.

22. TERMS & CONDITIONS FOR CONTRACTORS FOR DEPLOYMENT OF CONTRACT LABORERS UNDER SERVICE OR WORKS CONTRACT

22.1 LABOUR LICENCE AND OTHER REQUIREMENTS

- 22.1.1 Contractor shall within 15 days of commencement/completion of work-order submit Form VI-A to RLC office. The first & final bill shall be processed only on clearance regarding submission of Form VI-A by contractor.
- 22.1.2 Contractor shall apply for Form V to BHEL for obtaining labour license (if the number of workers deployed is more than 19) from appropriate government (as on date Central Government) and submit the same within one month from the date of award of the contract. Contractor shall possess separate valid Labour license from appropriate government for each contract in line with CL(R&A) Act before deploying their employees.
- 22.1.3 In case the number of employee desired to be deployed by the contractor against the contract during execution exceeds the number of employees allowed in the license then the contractor shall obtain prior amended valid labour license for the contract for the requisite number of employees.
- 22.1.4 The contractor cannot deploy the contract worker without obtaining requisite Labour licence from the Appropriate Government (Central Govt.) authority. Till then the contractor shall be allowed to deploy maximum 19 workers or the numbers required whichever is less.
- 22.1.5 The contractor shall also have to submit copy of PAN card and latest IT return.
- 22.1.6 The contractor must possess Service Tax Registration number under relevant code head.
- 22.1.7 The contractor should possess VAT/TIN Number if material is supplied/consumed. The contractor should not be disqualified from bidding in case the contractor does not have TIN No. However, he shall have to produce TIN No. before opening of Price bid.

22.2 APPOINTMENT AND ENTRY IN FACTORY PREMISES

- 22.2.1 The contractor shall submit the request for issuance of gate passes of their workers along with following documents to HR Department through contracting department in the format given by BHEL:
- a. Identity Proof (Voter ID/ Aadhar).
 - b. Police Verification Certificate by appropriate authority or Character certificate issued by District Magistrate's Office or Proof of remittance of fees for character certificate at District Magistrate's Office. Further, he should submit the character certificate within 30 days failing which he will be discontinued.
 - c. Copy of employment card issued by contractor to his own worker.



- d. The firm shall arrange the working permission beyond normal working hours on their own, if required.
- 22.2.2 After submission of documents as in Para 2.1, the contractor shall issue photo identity card to the labour and submit to HR department. This identity card shall be forwarded by HR department to BHEL Security, which shall then authorize the labour to enter the factory premises initially for a period of one month.
- 22.2.3 The photo identity card shall have to be revalidated in every three month on last working day of the month or any other date fixed to do so. In absence of such revalidation, duly forwarded by HR department, BHEL Security shall not allow any labour to enter the premises of BHEL FSIP Jagdishpur.
- 22.2.4 The contractor shall maintain a register of persons employed by him in the format prescribed under Rule 75 of Contract Labour (R&A) Central Rules.

22.3 BILLS PAYMENT, ATTENDANCE AND PAYMENT OF WAGES:

- 22.3.1 The Contractor shall pay wages to all his Laborers as prescribed by the BHEL HR from time to time based on U.P. government norms.
- 22.3.2 In addition to minimum daily wages above, an **additional wage** has also to be paid by the Contractor to all his Labourers as per following rates as per BHEL guidelines:

Sl. No.	Type of Labour	Additional daily wage to be paid in (Rs.) as on date
1	Unskilled Worker (USW)	NIL
2	Semi-skilled Worker (SSW)	NIL
3	Skilled Worker (SW)	NIL
4	Highly Skilled Worker (HSW)	NIL

This additional amount will also attract all statutory deductions and payments.

- 22.3.3 Contractor shall ensure payment of wages as applicable on or before seventh day of each month.
- 22.3.4 Wages payment shall be made by Contractor to the Laborers through bank only and shall maintain proper records of their timely disbursement. Contractor shall issue wages slips to his laborers.
- 22.3.5 The payment of wages to the workers shall not be subject to payment against the bills by BHEL. Bills to be issued within period specified in GST.
- 22.3.6 The contractor shall submit bills to the contracting department only after payment of wages for previous months.
- 22.3.7 The contractor's bills should be accompanied with the following:-
- Copy of Measurement Book entries / Statement of work done / work completion report by the Contractor duly verified by concerned BHEL representative(s).
 - Self-Declaration of Minimum Wages of labours deployed by him under the Service contract, PF/ESI no., statutory deductions etc.
 - PF and ESI challans for previous month-separate for concerned Service contract. Print of online challan along with list of contributing contract workers for ESI duly certified by the contractor.
 - Wage payment sheet for the bill period.
 - Statement of material supplied by the contractor, if any
 - Copy of Labour Licence if increase in no. of labours deployed against Work Order if applicable.
 - In cases where the payment to the contractor is due only after completion of work and the payment is not made monthly then the contractor shall have to produce documents as enumerated in respect of all workers deployed by him against the contract, for each month separately, along with final bills.



22.3.8 The contractor shall remit the cheques favouring RPFC and ESI Office with the appropriate banks with such period as stipulated under relevant provisions. Last date for remittance of PF is 15th and that in case of ESI is 21st of each month.

22.4 PROVIDENT FUND (PF)

22.4.1 The contractor should get independent EPF code before deployment of his contract worker against work contract.

22.4.2 The Contractor should allot PF account number and get the nomination form, duly filled in, from each worker deployed by him at the time of joining. Each worker must have his/her Provident Fund KYC completed and his respective UAN must have been allocated.

22.4.3 In case the worker already has PF/pension account number, allotted to him, previously, then the contractor shall get the transfer form filled up at the time of joining and send to the office of concerned Regional Provident Fund Commissioner.

22.4.4 After termination of contract the contractor shall provide due assistance to the labour for withdrawal of PF/pension amount, when due.

22.4.5 The Contractor shall liaison with the PF officials to get the annual PF slips and distribute amongst his own workers. Security deposit shall be released only after submission of PF slips of workers.

22.4.6 PF CONTRIBUTION:

Employee's Contribution

12.00%

Employer's Contribution

13.00 %

The PF Contribution may change as per Govt. notification.

22.4.7 The Contractor shall submit annual returns in Form-6A and Form 3A, prescribed under statutory EPF scheme, 1952, in respect of each worker deployed by him with a copy to HR.

22.5 EMPLOYEES STATE INSURANCE (ESI)

22.5.1 The Contractor should allot ESI account number and get the nomination form, duly filled in, from each labour deployed by him at the time of joining.

22.5.2 At the time of joining the contractor shall get the self/family registration form filled by the workers and submit to the local ESI office.

22.5.3 The contractor shall facilitate collection of issued ESI cards by his worker. Only those workers shall be allowed entry into factory premises who have valid ESI Card.

22.5.4 ESI CONTRIBUTION :

Employee's Contribution

0.75%

Employer Contribution

3.25%

The ESI Contribution may change as per Govt. notification

22.5.5 The Contractor shall submit annual returns in Form-6 prescribed under ESI Act, deployed by him with a copy to HR and finance department.

22.5.6 The Contractor shall produce the following Registers and forms as per Contract Labour (R & A) Rules 1971 for inspection by the concerned BHEL Officer(s):

a. Form XIII - Register of Workmen employed by contractor (Rule 75)

b. Form XIV - Employment Card issued by contractor (Rule 76)

c. Form XVI - Muster Roll 78(1)

d. Form XVII - Register of Wages (Rule 78 (1) (a) (i))

e. Form XVIII - Register of wages-cum Muster Roll (in case of weekly Payment)

f. Form XIX - Wage Slip (Rule 78)(1) (b)

g. Form XX - Register of deduction for damages of loss (Rule (78)(1) (a) (ii))

h. Form XXI - Register of fines (Rule 78) (1) (a) (ii)



- i. Form XXII - Register of advance (Rule 78) (1) (a) (ii)
- j. Form XXIII - Register of overtime (Rule 78) (1) (a) (iii)
- k. Form XXIV - Return to be sent by the contractor to licensing officer (Rule 82)
- l. Form XII – Register of Adult Workers
- m. Form XIV – Leave with wage register

22.6 PERSONAL ACCIDENT INSURANCE POLICY:

- 22.6.1 Contractor shall buy Personal Accident Insurance (24x7) policy for all of his employees deployed under the contract before the start of work. No employee should enter the BHEL factory premises or working area without insurance cover as stated below.
- 22.6.2 The policy should cover the accidental death of workers for 24 Hrs for all the seven days of week.
- 22.6.3 The policy should be purchased from Govt. under taking company.
- 22.6.4 The coverage shall be of Rs. 5 lakhs per individual. The sum assured (Rs. 5 lakhs) shall become payable to the nominee/legal heir in the event of death due to accident of insured person.
- 22.6.5 In the event of death of any contract worker deployed by the contractor without proper insurance cover, the contractor shall be liable to pay Rs. 5 lakhs to the nominee/ legal heir of such deceased contract worker.
- 22.6.6 The copy of policy along with bill shall be submitted.

22.7 BONUS

The contractor shall be liable to pay statutory bonus under payment of Bonus Act, 1965 and the payment of bonus (amendment) act, 2015.

22.8 DISCIPLINE

- 22.8.1 The Contractor shall be responsible for the discipline of his own laborers deployed under the service contract. In case of any loss to the BHEL FSIP Jagdishpur on account of indiscipline of contract laborer then such loss shall be assessed and recovered from the running bills of the contractor or from the security deposit.
- 22.8.2 The contractor shall not employ any person who has not completed his 18 years of age and person who has attained 60 years of age. Contractor to ensure that the employees deployed in the premises of BHEL are physically and mentally fit and do not have any criminal record. Such employees should possess requisite skill, proficiency, qualification, experience etc. acceptable to concerned department.
- 22.8.3 The contractor, on advice of authorized BHEL official, shall immediately remove any person employed by him, who may in the opinion of such authorized BHEL official is involved in misconduct. Such person shall not be re-employed by the contractor without prior permission.

22.9 LEAVE WITH WAGES TO CONTRACT LABOUR

- 22.9.1 Guidelines as per Factories act 1948 & U P factories Rules 1950 should be strictly observed with regard to crediting / availment of leave. Register as prescribed under the said Rules should be maintained by the contractor.
- 22.9.2 The contractor will give three paid National Holidays to his employees.

22.10 SAFETY OF OPERATION

The total safety of operation and laborers is Contractor's responsibility. Contractor should provide the following Personnel Protective Equipment (PPE) and Consumables, as applicable, to each laborer during execution of the contract, at his own cost:-

- a) One pair of Uniform within two weeks of start of contract and one pair within next six months. The contractor shall be responsible to provide to his workers uniform and safety gears such as shoes, helmet and PPE. The uniform should be dark blue trousers and light blue shirt for males and dark blue



trousers/salwar and light blue kurta/ kameez/top for female. The uniform should have logo of the contractor's firm/ company which shall be affixed by the contract labor on the left side of his pocket. The uniform shall be kept in neat, tidy and wearable condition. The stitching and logo charges should be borne by the contractor. Contractor shall ensure that the employees are in neat and tidy uniform and safety gear on duty. Penalty of 5% of monthly bill may be imposed if the workers are not found in prescribed uniform and safety gears.

- b) One safety helmet per annum, (within two weeks of start of contract).
- c) One pair of safety shoes along with two pairs of socks per annum, (within two week of start of contract).
- d) One pairs of leather hand gloves per week.
- e) Two pairs of Ear plugs per month
- f) Cora cloth / Cloth Waste 1/2 Mt. per month
- g) One soap per month.
- h) Any other relevant safety PPEs, if required.

Quantities mentioned above are minimum and may increase depending upon operation / job and contractor has to provide these items at his own cost. Each PPE items should follow BHEL Safety Engineering Standards. The contractor shall maintain a register for record of above items.

22.11 SUPERVISION OF CONTRACTOR LABORERS:

The contractor shall appoint one identified supervisor for monitoring and controlling of work and laborers. All issues regarding discipline at the works are to be supervisor's responsibility. The Contractor shall submit Power of Attorney in name of his supervisor. No extra supervision charges shall be paid by BHEL.

22.12 CONTRACT LABOUR ACCIDENTS WHILE AT WORK:

In case of medical emergencies faced by contract worker at work, first aid medical facilities in the interest of the well-being of the worker shall be provided by BHEL. Responsibility of medical treatment lies with the contractor through ESI.

22.13 PROHIBITION ON INFLUENCING AND INTERFERING ON BEHALF OF CONTRACTOR:

The Contractor shall neither try to influence, chase or interfere into the working of BHEL officials nor engage BHEL employee or any other third person for the same. In case such incident does occur, it may lead to disqualification/debarring from the contract. Any contractor shall be debarred from consideration if any of his relations is working in the product/functional group in which the contract is being issued. Before issuing tender form to any contractor for limited tender enquiry a confirmation has to be given by contractor that none of his relations are working in that product/functional group."

23. GENERAL GUIDELINES TO CONTRACTOR:

- 23.1 BHEL shall have the privity of the contract with the contractor only and will give instructions to the contractor or his authorized representative. BHEL will have nothing to do or be concerned with the employment of employees working for the contractor. The relationship between BHEL and the Contractor will be that of independent entities and nothing herein contained will amount to joint venture, partnership or an employer-employee relationship.
- 23.2 The contractor shall maintain regular contact with the designated employee(s) of BHEL and will interact on matters relating to the work awarded under this contract.



- 23.3 Contractor will ensure that the job is executed through his employees on his rolls and under no circumstances, the contractor will deploy any casual employee to carry out the job nor shall sub-contract the job.
- 23.4 Contractor shall observe Provisions of the Factories Act in respect of working hours, holidays, rest intervals, leave and overtime to his employee. No work shall be done on overtime, Sundays or on other declared holidays without written permission.
- 23.5 Contractor to should submit a copy of standing orders if engaging 100 or more workmen and shall comply with the provisions of Factories Act.
- 23.6 The contractor will comply with all the provisions regarding licensing, welfare and health, procedures, maintenance of various records and registers etc., as provided under the contract Labour (Regulation & abolition) Act, rules amendments, orders, notifications there under issued by the Appropriate Government from time to time. For non-compliance of any provisions, statutory compliance under law, the contractor shall be responsible for penalties levied by the appropriate authority under the Act. The contractor shall also be liable to comply with all other Labour and Industrial Laws and such other acts and Statutes (including Factories Act, Payment of Bonus Act, minimum wages Act, Maternity Benefit act, etc.,). Depositing of ESI, PF contribution as may be applicable is the responsibility of the contractor. For any default in compliance, the contractor shall be held responsible.
- 23.7 The Contractor shall compensate BHEL for any loss or damage to the plant/property, material of BHEL due to his workmen/representatives' negligence or otherwise during execution of work.
- 23.8 The contractor shall be responsible for all acts and omissions of their staff and liabilities arising out of the acts and omissions of such staff shall be borne by the contractor, BHEL shall in no way be responsible for any such acts, omissions or any liabilities arising there from.
- 23.9 If any accident/injury/loss/ occurs due to the operation of any equipments, to any other persons/public and the properties of BHEL/client/other agencies/third party, the contractor shall have to pay necessary compensation and other expense, so decided by the appropriate authorities/victims.
- 23.10 Only the authorized staff attached to the contracted work or representative nominated by the contractor shall be allowed entry inside the company's or any other premises during the period of contract.
- 23.11 The persons employed by the Contractor in respect of work will treated as the authorized representative(s) and shall also be held responsible along with the contractors, for any breach of the terms and conditions as provided in this contract.
- 23.12 If BHEL Executive feels that the persons deployed on job are not having required skill to perform the job, the contractor will have to replace those persons by adequately trained staff.
- 23.13 The Contractor will have to indemnify BHEL against:
- a) All claims for injury or damage to any person or property caused by his negligence of his employees whilst in BHEL premises.
 - b) Observance of Labor & Industrial Laws, including regular remittance to EPF and ESI.
 - c) All claims by way of compensation and all other types of unforeseen claims, which may arise in the period of contract.
 - d) The Contractor will accept liability for compensation in accordance with the provision of the Indian Worker's Compensation Act, 1948, amendments thereafter and or other law for the time being in force for personal injury caused to any workmen by accident arising out of and in the course of this contract.
 - e) The Contractor will indemnify the company against all payments by way of compensation or otherwise which the company may be called upon to make under the provisions of the said Acts to any workmen as aforesaid, and any cost incurred by the company in connection with any claim preferred by such workmen and or against all actions, claims and demand whatsoever in respect thereof or in respect of any loss, injury or damages whatsoever to any third person arising out or



occasioned by the negligent, imperfect or improper performance of this contract by the Contractor, their workmen servants or agents.

- f) The Company shall not be held liable for any loss, damage or compensation to third parties arising from or in relation to transport operation done by the bidder, such loss, damage or compensation shall be reimbursed by the Contractor to the company together with the costs incurred by the company on any legal proceedings pertaining there to.

The Contractor will be required to submit Indemnity Bond in favor of BHEL on a Non Judicial Stamp paper of Rs. 100 value.

24. BHEL FRAUD PREVENTION POLICY:

The Bidder along with its associate/ collaborators/ sub-contractor / sub vendors /consultants /services providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

25.DEALING WITH BANNED SUPPLIERS/CONTRACTORS IN BHEL:

The offers of the bidders who are on the banned list as also the offer of the bidders who engage the services of the banned firms shall be rejected. The list of banned firms is available on BHEL website www.bhel.com.

26.SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/CONTRACTORS:

Suspension of business dealings with Suppliers/Contractors shall be dealt as per the guidelines available on BHEL website www.bhel.com.

- 27.“BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life/permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below. a). Victim: Any person who suffers permanent disablement or dies in an accident as defined below. b). Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing/operation and works incidental thereto at BHEL factories/offices and precincts thereof, project execution, erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works/ during working at BHEL units/officers/townships and premises/ project sites. c). Compensation in respect of each of the victims: (i) In the event of death or permanent disability resulting from Loss of both limbs: Rs.10,00,000/- (Rs. Ten lakh) (ii) In the event of other permanent disability: Rs.7,00,000/- (Rs. Seven lakh) d). Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to section 2 (I) of the Employee's Compensation Act, 1923.



LIST OF ANNEXURES TO GTC

SR. NO.	NAME OF ANNEXURE	DETAILS OF ANNEXURE
1	ANNEXURE-A	DECLARATION SHEET
2	ANNEXURE-B	CERTIFICATE OF DECLARATION CONFIRMING THE KNOWLEDGE OF SITE CONDITION
3	ANNEXURE-C	CERTIFICATE OF DECLARATION CONFIRMING FIRM IS NOT BLACKLISTED / UNDER HOLD FROM BHEL JAGDISHPUR OR BANNED BY ANY UNIT/REGION/OFFICE OF BHEL AND FIRM IS NOT GUILTY BY A COURT OF LAW IN INDIA FOR ANY OFFENCE INVOLVING FRAUD, DISHONESTY AND MORAL TURPITUDE
4	ANNEXURE-D	CERTIFICATE BY CA FOR MSE BIDDERS
5	ANNEXURE-E	PROFORMA FOR SECURITY DEPOSIT BANK GUARANTEE
6	ANNEXURE-F	CONTRACT AGREEMENT FORMAT
7	ANNEXURE-G	THIRD PARTY NON-DISCLOSURE AGREEMENT
8	ANNEXURE-H	TECHNICAL BID FORMAT
9	ANNEXURE-I	INDEMINITY BOND FORMAT



ANNEXURE A

(to be made on Bidder's letter head)

DECLARATION SHEET

I / We hereby certify that, all the information and data furnished by me / us with regard to this Tender are true and complete to the best of my / our knowledge. I / We have gone through the specification, conditions and stipulations in detail and understand fully the scope of work and agree to comply with the requirement and intent of specification.

I/We, further certify that I/We am/are the duly authorized representative(s) of the under mentioned bidder and a valid power of attorney to this effect is also enclosed.

I / We hereby also give our consent in acceptance of all terms and conditions of this tender without any deviation.

Date:

Name & Signature of the bidder

(Seal)



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
फैब्रिकेशन, स्टैम्पिंग ऐन्ड इंसुलटर प्लांट
Fabrication, Stamping & Insulator Plant (FSIP)
जगदीशपुर / Jagdishpur

ANNEXURE B

(to be made on Bidder's letter head)

CERTIFICATE OF DECLARATION CONFIRMING THE KNOWLEDGE OF SITE CONDITION

I/We hereby declare and confirm that we have visited the project site under the subject given in NIT and acquired full knowledge and information about the site conditions, wage structure, industrial climate and total work involved. We further confirm that the above information is true and correct and we will not raise any claim of any nature due to lack of knowledge of site condition.

Date:

**Name & Signature of the bidder
(Seal)**



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
फैब्रिकेशन, स्टैम्पिंग ऐन्ड इंसुलटर प्लांट
Fabrication, Stamping & Insulator Plant (FSIP)
जगदीशपुर / Jagdishpur

ANNEXURE C

(to be made on Bidder's letter head)

TO WHOM SO EVER IT MAY CONCERN

This is to certify that our firm is not blacklisted / under hold from BHEL Jagdishpur or banned by any unit/region/office of BHEL.

This is to certify that we / our firm is not guilty by a Court of Law in India for any offence involving fraud, dishonesty and moral turpitude

Date:

(Signature of Authorized Signatory)



ANNEXURE D

(Certificate by Chartered Accountant on letter head)

This is to Certify that M/S.
(Hereinafter referred to as 'company') having its registered office at
.....is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-11dated:
Category: (Micro/Small) (Copy enclosed).
Further verified from the Books of Accounts that the investment of the company as on date
as per MSMED Act 2006 is as follows:

I. For Manufacturing Enterprises: Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.I722(E) dated October 5, 2006 :

Rs.Lacs

2. For Service Enterprises: Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:

RsLacs

(Strike off whichever is not applicable)

The above investment of Rs Lacs is within permissible limit of Rs -----Lacs for
..... Micro/Small (Strike off which is not applicable) Category under MSMED Act 2006.
Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is -----
(dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide 5.0. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number

Seal of Chartered Accountant



ANNEXURE E

PROFORMA FOR SECURITY DEPOSIT BANK GUARANTEE

This deed of Guarantee made thisday of two thousand and by(Bank) herein after called the "The Guarantor" (which expression shall unless repugnant to the context or meaning thereof be deemed to include it's successors and assigns) in favour of M/s Bharat Heavy Electricals Limited (A Govt. of India Undertaking) a company incorporated under the Companies Act, 1956, having it's registered office at BHEL House , Siri Fort, Asiad, New Delhi 110049 through it's unit at Jagdishpur, distt, Sultanpur (UP) herein after called " The Company" (which expression shall unless repugnant to the context or meaning thereof by deemed to include it's successors and assigns)

WHEREAS(herein after referred to as the Contractor) have entered into contract arising out of Letter of Intent no. dt.....(hereinafter referred to as "the contract") for the construction of with the company.

AND WHEREAS the contract inter alia provides that the contractor shall furnish to the company a sum of Rs.....(Rupees) towards security deposit for due and faithful performance of the contract in the form and manner specified therein .

AND WHEREAS the contractor has approached the Guarantor and in consideration of the arrangement arrived at between the Contractor and the Guarantor, the Guarantor has agreed to give the Guarantee as hereinafter mentioned in favour of the company.

The Guarantor do hereby guarantee to the company the due and faithful performance, observance or discharge of the Contract by the contractor and further unconditionally and irrevocably undertake to pay to the Company without demur and merely on a demand, to the extent of Rs.....(Rupees.....) against any claim by the company on them for any loss , damage, costs, charges and expenses caused to or suffered by the company by reasons of the contractor making any default in the performance, observance or discharge of the terms, conditions, stipulations or undertakings or any of them as contained in the contract.

The decision of the company whether any default has occurred or has been committed by the contractor in the performance, observance or discharge of any of the terms, conditions, stipulations or undertakings or any one of them as contained in the contract and/ or as to the extent of loss, damage, costs, charges and expenses caused to or suffered by the company by reason of the contractor making any default in the performance, observance or discharge of any of the terms, conditions, stipulations or undertakings or any one of them shall be conclusive and binding on the Guarantor irrespective of the fact whether the contractor admits or denies the default or questions the correctness of any demand made by the company in any Court, Tribunal or Arbitration proceedings or before any other Authority.

The company shall have the fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the contract or extend time of performance by the contractor or to postpone for any time and from time to time any of the powers exercisable by it against the contractor and either enforce or forebear from enforcing any of the terms and conditions governing the contract or securities available to the company and the Guarantor shall not be released from it's liability under these presents by any exercise by the company of the liberty with reference to the matters aforesaid or by reasons of time being given to the contractor or any other forbearance act or commission on the part of the company or any indulgence by the company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing the Guarantor from it's liability under this guarantee.

The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the contract and it's claim satisfied or discharged and till the company certifies that the terms and conditions of the contract have been fully and properly carried out by the contractor accordingly discharges this Guarantee, subject however, that the company shall have no claim under this Guarantee after..... i.e, (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time, as the case may be) unless



a notice of the claim under this Guarantee has been served on the Guarantor before the expiry of the said period in which case the same shall be enforceable against the Guarantor notwithstanding the fact that the same is enforced after the expiry of the said period.

The Guarantor undertakes not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agrees that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the contractor or the Guarantor shall not discharge the Guarantor's liability hereunder.

It shall not be necessary for the company to proceed against the contractor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the company may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the Guarantor hereunder be outstanding or unrealized.

Notwithstanding anything contained herein before, our liability under the Guarantee is restricted to Rs(

Rupees.....). Our guarantee shall remain in force until....., i.e, (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time) unless a claim or demand under this guarantee is made against us on or before.....we shall be discharged from our liabilities under this Guarantee thereafter.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts having jurisdictions at Jagdishpur, Distt. Sultanpur (U.P.) only.

The Guarantor hereby declares that it has power to execute this guarantee and the executants have full powers to do so on behalf of the Guarantor.

IN WITNESS whereof the(Bank) has hereunto set and subscribed it's hand the day, month and year first, above written,

Signed for and on behalf of the Bank

(Signatory...no.....)

WITNESSES:

1 Name and Address

2 Name and Address

Notes:

1. The above BG shall be executed on the non judicial stamp papers of adequate value procured in the name of the bank in the state where the bank is located.
2. The above BG is required to be sent by the executing bank directly to BHEL at the address where tender is submitted/ accepted under seal cover.



ANNEXURE F

CONTRACT AGREEMENT FORMAT

Agreement No:

Date:

The agreement made on between M/s. Bharat Heavy Electricals Limited,, Jagdishpur, Distt Amethi (UP) having its registered office at BHEL House, Siri Fort, New Delhi-110049 (herein after called the contractee) the first party, (hereinafter called the Contractor) the 2nd party. Whereas through its tender enquiry no. and price bid/reverse auction held on, the contractee had called for

And whereas the contractor has submitted his offer in pursuance of said tender notice. And whereas the company has decided to accept contractors tender mentioned above as per the offered rates and conditions specified in offer subject to other terms and conditions specified in the tender enquiry/ proposed agreement and the company's contract hereto.

And whereas the contractor has agreed to enter into specified above at the rates mentioned, subject to the conditions contained hereunder:

01. This agreement shall be valid fromto.....

02. The contractor shall do as per scope of work as given in the tender document.

03. The rate for the aforesaid work shall be

04. For delays beyond the specified schedule given in tender document, if attributable to contractor, penalty shall be applicable as per terms given in NIT. Cost of rejection/rework, as appropriate shall be recovered from contractor as compensation for defective job done- **Agreed.**

05. Contractor will have to deposit Security Money as required in work order issued within seven days after award of work order.

06. Payment shall be made, on the Nos. of Measurement units, successfully executed, by the Contractor. The contractor shall submit their clear & legible bills (in duplicate) on Monthly basis, duly verified by concerned BHEL staff. Each bill must be enclosed with work/ activity completion report duly signed by contractor & and BHEL representative (s).

08. All other terms and conditions shall be as per issued to contractor by the contractee.

The security deposit and any other amount occurring to the contract will be liable for forfeiture in the event of the contractor violating any of the conditions of the contract and will be set against any claim or expenditure incurred by BHEL on account of acts of omission/negligence on the part of the contractor.

Settlement of Disputes/Arbitration- All disputes arising in connection with the contract shall be settled by mutual consultation. If no agreement is reached, the dispute shall be settled in accordance with Arbitration and conciliation Act, 1996 and the rules made there under. The dispute shall be referred for arbitration to any arbitrator to be appointed by the Head of Unit- FSIP, Jagdishpur. The award of the arbitrator shall be final and binding on both the parties. The venue of the arbitration shall be at Amethi. The award to be given by the Arbitration shall be a speaking award. All questions, disputes, differences arising under, out of or in connection with this contract shall be to the exclusive jurisdiction of Sultanpur (U.P.), court.

Indemnity- That BHEL-Jagdishpur will not, in any manner be responsible for any act, omission or



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
फैब्रिकेशन, स्टैम्पिंग ऐन्ड इंसुलटर प्लांट
Fabrication, Stamping & Insulator Plant (FSIP)
जगदीशपुर / Jagdishpur

commission of the workers engaged by contractor and no claim in this respect will lie against BHEL-Jagdishpur. If any such claim is made against BHEL-Jagdishpur by any worker or his heirs engaged/employed by the contractor, which BHEL-Jagdishpur is obliged to discharge by virtue of any statute or any provision of law and rules due to mere fact of the workers of the contractor working at BHEL-Jagdishpur premises or otherwise, the contractor will be liable to indemnify/reimburse BHEL-Jagdishpur all the money paid in addition to the expenses incurred by him. The contractor must indemnify and keep indemnified BHEL- Jagdishpur against all losses and claims for injuries or damage to any person or property whatsoever which may arise of or in course of the operation of the contract and against all claims, demands, proceedings, damages, cost, charges and expenses whatsoever in respect of contingencies depicted herein shall be deemed as expected risk.

In witness where the parties there to have here under signed the agreement.

Witness:

**1.Name
Address**

**2.Name
Address**

Signature of the Contractor

**Name
Designation**

Witness:

**1.Name
Address**

**2.Name
Address**

**For and on behalf of
Bharat Heavy Electricals Ltd.
FSIP, Jagdishpur**



ANNEXURE-G

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL on contract is confidential and that the nature of the business of the BHEL is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL. Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.

Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL all documents and property of BHEL, including but not necessarily limited to: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, and are reasonable given the nature of the business carried on by the BHEL. I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at _____ this ____ day of ____ 20__.

Name

Company

Signature



ANNEXURE-H

TECHNICAL BID FORMAT

TABLE-I

Sl. No.	Description	Please Fill
1	Name of the Firm (Bidder)	
2	Address of the Firm (Registered Office)	
3	Name of Contact Person	
4	Contact Numbers	
5	Fax No., if any	
6	Email ID	

TABLE-2

Sl. No.	Description	YES / NO	Remarks
1	Earnest Money Deposit (EMD)		EFT Details.....
2	Tender Document Cost, if applicable		EFT Details.....
3	Signed and stamped copy of tender documents		Signed and stamped Copy of all pages (all sections) of BHEL tender documents to be enclosed as a token of acceptance of all terms and conditions of the tender
4	Un-Priced bid (<i>Price bid format without prices</i>)		Signed and stamped copy Blank price bid to be submitted
5	Documents against Qualifying Requirements		Signed and stamped copies of all documents as asked under qualifying criteria of the tender to be enclosed
6	Authorization for signing Tender Documents		Valid copy of power of attorney / authorized signatory to be enclosed as a proof of authorized representative of the firm
7	Signed and stamped copies of all Annexures		Signed and stamped Copies of all Annexures A, B, C & D (D if applicable) to be submitted on firm's letter head
8	PF Code Number		Copy of the Certificate to be enclosed
9	ESI Code Number		Copy of the Certificate to be enclosed
10	PAN Number		Copy of the PAN Card to be enclosed
11	Income Tax Return (<i>of last 3 yrs</i>)		Copy of the ITR to be enclosed
12	GSTN No. & State Code		Copy of the Certificate to be enclosed
13	Validity of Offer		90 days from the date of tender Opening

Please mention "NA" if not applicable.

I / We hereby certify that, all the information and data furnished above with regard to this Tender are true and complete to the best of my / our knowledge.



ANNEXURE-I

INDEMNITY BOND

THIS INDENTURE made this _____ (Date) between M/s _____ (hereinafter called the 'Contractor' which expression shall, where the context or implies, be deemed to include their executors, administrators, legal heirs and assigns) as ONE PART and FSIP Bharat Heavy Electricals Limited (a Government of India Undertaking) company having its registered office at B.H.E.L. House, Siri Fort New Delhi-110049 (hereinafter called 'The Company' which expression shall, where the next so admits or implies, be deemed to include its succession in office and assigns) as the OTHER PART.

WHEREAS by _____ (Work Order No. & Date) issued by the Company which has been accepted by the contractor (hereinafter called "The said agreement") the Contractor has inter alias agreed to execute and perform the work _____ (Description of work).

The Contractor will have to indemnify BHEL against:

- a) All claims for injury or damage to any person or property caused by his negligence of his employees whilst in BHEL premises.
- b) Observance of Labor & Industrial Laws, including regular remittance to EPF and ESI.
- c) All claims by way of compensation and all other types of unforeseen claims, which may arise in the period of contract.
- d) The Contractor will accept liability for compensation in accordance with the provision of the Indian Worker's Compensation Act, 1948, amendments thereafter and or other law for the time being in force for personal injury caused to any workmen by accident arising out of and in the course of this contract.
- e) The Contractor will indemnify the company against all payments by way of compensation or otherwise which the company may be called upon to make under the provisions of the said Acts to any workmen as aforesaid, and any cost incurred by the company in connection with any claim preferred by such workmen and or against all actions, claims and demand whatsoever in respect thereof or in respect of any loss, injury or damages whatsoever to any third person arising out or occasioned by the negligent, imperfect or improper performance of this contract by the Contractor, their workmen servants or agents.
- f) The Company shall not be held liable for any loss, damage or compensation to third parties arising from or in relation to transport operation done by the bidder, such loss, damage or compensation shall be reimbursed by the Contractor to the company together with the costs incurred by the company on any legal proceedings pertaining there to.

Witness:

1. _____

2. _____

(Seal & Signed of Contractor)

Date:



SECTION II

SPECIAL TERMS AND CONDITIONS

(The 'Special Terms and Conditions' given hereunder supersede the relevant terms and conditions given in 'General Terms and Conditions')

A. Clause 21 of General Terms and Conditions regarding preferences for MSME stands withdrawn for this tender due to works contract. Therefore, Bidders to submit the Tender Cost and EMD as per NIT.

B. PRE-QUALIFYING CRITERIA:

Sl. No.	Description of Qualifying requirement	Documentary Proof enclosed
1.	Tenderer should have, successfully completed construction of RCC infrastructure or similar works (Similar work shall include RCC foundations or other RCC work excluding RCC road work or pavement work) in any industry or government organizations or other commercial establishments in the last seven years ending last day of month previous to the one in which applications are invited Values of such successfully completed RCC works should be as under: (a) Three completed/executed works each costing not less than the amount equal to Rs. 51.34 Lakhs. OR (b) Two completed/executed works each costing not less than the amount equal to Rs 64.17 Lakhs. OR (c) One completed/executed work costing not less than the amount equal to Rs 102.68 Lakhs Cumulative RCC qty against qualified work orders shall be 396 CuM (50% of estimated RCC qty) Copies of order/completion certificate for work completed will be considered. Equivalent document from executing authority shall be enclosed along with Techno-Commercial bid. In case of experience in other than BHEL, TDS Certificate from customer shall also be furnished by the bidder.	Yes/No
2	Average Annual Financial turnover during the last 3 years, should be at least Rs 38.50 Lakhs. Audited Profit & loss account and balance sheet to be submitted for FY 20-21, 19-20 & 18-19. In case turnover is less than threshold limit of Rs.1 Crore, in that case unaudited Profit & loss account, balance sheet along with turnover certificate for said 3 years duly certified by practicing Chartered Accountants to be submitted.	Yes/No

BHEL reserves the right to verify the documents submitted by the contractor. In case the Tenderers not fulfilling the above conditions, the offer is liable for rejection. The semi filled, incomplete Tender Documents will be rejected.



C. Total Quantum of Work (Annexure-I)

S.No.	DESCRIPTION OF WORK	UNIT	Total Qty	% Weightage of Item Amount against Total Amount
1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge. Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix)	Cum	9.00	0.056
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil	Cum.	763.00	0.876
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 200 m and lift upto 2.5 m.	Cum.	271.00	0.311
4	Supplying and filling sand including watering, raming consolidating, dressing complete	Cum.	44.00	0.308
5	For PCC work P & L in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)	Cum.	90.00	3.687
6	Providing and laying in position machine batched and machine mixed design mix M-35 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. All works upto plinth level	Cum	358.00	22.306
7	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level. 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III): 3 graded stone aggregate 20 mm nominal size)	Cum	13.00	0.710



8	Providing and laying in position machine batched and machine mixed design mix M-35 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. All works above plinth level	Cum	412.00	30.176
9	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level, excluding the cost of centering, shuttering, finishing and reinforcement with 1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size).	Cum	9.00	0.685
10	Centering and shuttering including strutting, propping etc. and removal of form for Foundations, footings, bases of columns, etc. for mass concrete	Sqm	326.00	0.467
11	Centering and shuttering including strutting, propping etc. and removal of form for Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc. for mass concrete	Sqm	832.00	3.950
12	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 12.5 in superstructure above plinth level in all shapes and sizes in :Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum.	11.00	0.591
13	12 mm cement plaster of mix1:4 (1 cement: 4 Coarse sand)	Sqm.	110.00	0.215
14	15 mm cement plaster of mix1:4 (1 cement: 4 Coarse sand) on rough side of brick masonry	Sqm	76.00	0.171
15	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge	Sqm	15.00	0.398
16	Taking Structural steel from BHEL from identified areas and carrying out fabrication work in single section, fixed with or without connecting plate, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.(Structural Steel Shall be provided by BHEL as a Free Issue Material)	Kg.	500.00	0.072
17 (a)	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete: Thermo-Mechanically Treated bars of grade Fe-500D or more.	Kg	53865.00	31.823



17(b)	Taking reinforcement steel material from BHEL, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements confirming to IS:1786 including cost of binding wire, labour, transportation to & from stores to work site etc complete all as per specifications, drawings and as directed by Engineer-In-charge (Reinf. steel shall be issued by BHEL as free issue, scrap generated as per specifications to be deposited at BHEL stores)	Kg	10.00	0.001
18	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS: 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete. Size of Tile 600x600 mm	Sqm.	44.00	0.514
19	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade on New work (two or more coats) over and including water thinnable priming coat with cement primer	sqm	170.00	0.203
20	Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade. Two or more coats on new work preparing the surface smooth with Putty.	Sqm	849.00	0.851
21	Carriage of good earth by mechanical transport including loading, unloading and stacking lead upto 2 km and lift upto 2.5 m	Cum	135.50	0.158
22	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 50x50 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge. Made of G.I. wire of dia 4 mm	Sqm	112.80	0.375
23	Providing and fixing precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineering- charge. The sheet shall be fixed using self-drilling /self-tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shapewherever required.	Sqm	163.00	0.672
24	Drill boring, lowering of 100 mm PVC Pipe of approved brand with 2 HP Submersible pump of Crompton, Kirloskar, complete including cable and other accessories upto 150 ft as per direction of Engineer-in Charge	Sqm	1.00	0.427
	Total %			100.00



D. OTHER TERMS AND CONDITIONS

The terms and conditions mentioned in this section are in addition to what are stated in General Terms & Conditions (GTC) of the tender document. In case of any contradiction between the terms and conditions given in GTC and those specified in this STC, the terms and conditions of this STC shall prevail

1 SITE LOCATION

The site location is about 80 KM south east of Lucknow on Lucknow Varanasi highway and approx. 55 KM from Sultanpur and 210 Km from Varanasi. The nearest Airport is at Lucknow.

2 SCOPE OF WORK

The scope of work of contractor shall broadly cover following Civil Structure Facilities:

- a) Construction of RT Enclosure hall comprising of 1.3 meter thick RCC wall of height 7 mtrs above ground level with pre-coated GI roof shed.
- b) Construction of Control Room with RCC roof
- c) Foundation Work for Electro-Mechanical Items like Sliding Door, Transfer Trolley, Turn table. (E&M Items in BHEL scope)
- d) Any other similar Work as asked by BHEL within the premises of BHEL Jagdishpur

Details of civil works for construction of above facilities shall be as under:

- 2.1 RCC Flooring in RT Hall as per direction of Engineer-in Charge.
- 2.2 Roofing Shed with MS Steel Structure & Pre-coated GI Sheet
- 2.3 Brick masonry work in wall of control room
- 2.4 Aluminum Door & Window
- 2.5 Tilling work in Control room
- 2.6 RCC Beam for rail track.
- 2.7 RCC Roof slab for control Room
- 2.8 Galvanized roof profile sheet for RT Hall
- 2.9 Chain Link Fencing Works
- 2.10 The bidder's scope shall broadly include construction of RT Enclosure HALL, CONTROL ROOM. All Buildings and foundations which includes earth work, plain & reinforced cement concrete, reinforcement, scaffolding, formwork, masonry work, floor finishing, skirting, plastering, MS embedment etc.; as well as supply of all materials, consumables, labor, tools and plants, transportation and storage, sample testing etc.; all complete as per BOQ, specifications and drawings.
- 2.11 In addition to above, the bidder's scope shall also include setting up of Testing Lab at Site, submission of Mix Design (M-35) accredited from Govt. Institute and submission of field test results etc, as applicable, along with source of supplies for the bought out items pertaining to his scope of supplies and execution for the following :
 - a) Bar bending schedule of reinforcement steel
 - b) Shuttering details including propping, scaffolding etc.
 - c) Sand, aggregates, bricks etc.
 - d) Plasticizers, additives
 - e) Metallic Hardener
 - f) Any other item as per BOQ and specifications.



- 2.12 The specific technical requirements for work to be executed under this Contract shall be as per BOQ. The applicability of specifications shall be limited to the scope of civil works only as specified in the BOQ. Mechanical /Electrical items indicated are for general information only.
- 2.13 The scope of work will also include such other related works although they may not be specifically mentioned above and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole and as desired and as directed by the engineer. The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.
- 2.14 Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the "Bill of Quantities" shall include but not be limited to the following.
- Furnishing all labor, materials, supervision, construction plans, equipment, supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown or specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.
 - Furnishing samples of all materials required by the engineers for testing / inspection and approval for use in the works. The engineer for final incorporation in the works may retain the samples.
 - Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
 - Giving all notices, paying all fees, taxes etc., in accordance with the General Terms & Conditions that is required for all works including temporary works.
 - Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
 - Establishing bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
 - Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.
 - Make necessary storage arrangement / sheds of adequate capacity to store cement within his normal scope without any extra cost to BHEL.
 - Arrange necessary T & P and IMTEs for carrying out the work. A list of such T & P and IMTEs required for such work as a minimum is given in **Annexure STC-I & STC-II**.
- 2.15 BHEL is ISO 9001-2015, ISO 14001-2015 and OHSAS 18001-2007 certified company.
The contractor in all respects shall organize his work, systems, environment, process control documentation, tools, plant, inspection, measuring and testing equipment's etc. as per instructions of Engineer.
- 2.16 The contractor shall also comply with applicable legislation and regulations with regards to Health, safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage.
- 2.17 BHEL shall provide Field Quality Plan (FQP) after award of work. The FQP shall have to be complied with by the contractor. All necessary tests and mix designs required as per field quality plan shall have to be performed by the contractor through site lab /



accredited labs / institute of repute at no extra cost to BHEL. List of tests to be conducted by the contractor shall be as per **Annexure-STC-IV**

- 2.18 BHEL and their Consultant may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works at no extra cost to BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.
- 2.19 The contractor under this contract shall also provide services of following manpower as per their quoted rate in the BOQ in the relevant item:
- Qualified **computer operator** (minimum 'O' level qualified) capable of operating the management software packages / other packages available at site or for office work.
 - **Skilled workers** for working in the area of masonry, plumbing, concreting and other skilled works of office, site etc.
 - **Unskilled workers** for working site & at office.
- 2.20 Persons so deployed shall have to work in extended hours whenever required. Workmen provided as per the above provisions shall be fully trained and experienced in the nature of work for which they are deployed. In case of requirement they may be redeployed as per requirements by the engineer.

3 TIME SCHEDULE

- 3.1 **The contractor is required to commence the work within 15 days from the date of issue of letter of intent / Work Order** unless BHEL decides to fix any other later date.
- 3.2 Entire work as detailed in tender specification shall be completed within **5 months from date of start of work** as per as per the programs / milestones as under:

Construction of RT Enclosure Hall & Control Room and Resolution of Punch Points
- Within 5 Months from intimation by BHEL

Foundation Work for Electro-Mechanical Items like (Sliding Door, Transfer Trolley Rails, Turn table) - Within 3 Months from intimation by BHEL

Any other programs / milestones as decided by BHEL from time to time.

- 3.3 Contractor has to mobilize adequate resources to meet his commitments to BHEL as indicated from time to time. **In case due to reasons not attributable to the contractor, the work gets delayed and additional manpower / resources have to be mobilized so as to expedite the work to meet various milestones, same shall be done within the quoted rates as per Rate Schedule, at no extra cost to BHEL.** In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet its commitments in line with the provisions of General Terms & Conditions.
- 3.4 In case due to reasons not attributable to the contractor, the work gets delayed and scheduled completion gets extended, time extension will be granted by BHEL but in no case over run compensation will be payable.
- 3.5 The work under the scope of this contract is deemed to be completed in all respects, only when all the works are carried out as per satisfaction of BHEL. The decision of BHEL on completion date shall be final and binding on the contractor.



4 TAKING OVER OF WORKS BY BHEL

- 4.1 All works shall be taken over by BHEL in part or in full when it has been completed in all respects and/or can be put to use satisfactorily. The complete work under the contract shall be taken over only after completion of all punch points, pending work, rework wherever required, site clearing and reconciliation of materials.
- 4.2 The guarantee period shall start only after the complete work under the contract has been taken over by BHEL.

5 PRICE

- 5.1 Price quoted shall be fixed and not subject to any escalation whatsoever during the period of execution of the Contract including the extended period, if any.
- 5.2 BHEL shall be releasing payments against the work order after deduction of income tax at source (TDS) as per requirement of income tax rules and BHEL will issue appropriate certificates in this regard. All statutory deduction as applicable, will be deducted from bills. Bidder shall inform his PAN to BHEL.
- 5.3 GST, as applicable, shall be paid, as per Govt. rules, to the bidder against running actual, on documentary evidence. The Bidder shall be required to deposit GST as applicable, before due date as per Act, if same is applicable as per rules in force from time to time. The amounts so spent can be claimed from BHEL after submitting the proof of the same.
- 5.4 All the terms & conditions of the contract with respect to Taxes & Duties are subject to the new taxation laws introduced from time to time (e.g., BOCW, GST- Amendments etc.). The terms & conditions will be modified in accordance with the provisions of new laws (e.g., BOCW, GST- Amendments etc.).
- 5.5 No interest shall be payable by BHEL on Earnest Money, Security Deposit or on any money due to the firm by BHEL.
- 5.6 No price variation /over run charges on account of any increase whatsoever, (irrespective of whether escalation is steep/ unanticipated) will be payable during the entire period of execution of Contract including extended period, if any.
- 5.7 Contractor has to make his own arrangement at his cost for completing the formalities, if required, with Sales Tax Authorities, for bringing their materials, plants, and equipment at site for the execution of the work under this contract.
- 5.8 In case any tax/levy/duty etc becomes applicable after the date of bidder's offer, the bidder/ Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of the Price Bid. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.
- 5.9 **No reimbursement on account of increase/ decrease in the rate of taxes, levies, duties etc on input goods/ services/ work shall be made. Bidder has to make his own assessment of the impact of future variation if any, in rates/ duties/ levies etc in his price bid.**

6 RATE SCHEDULE CUM BOQ

- 6.1 Contractor shall fully understand description and scope of work before quoting. The scope of work and responsibility of the contractor as mentioned under this specification shall be covered within the quoted amount / finally derived item rates.
- 6.2 The Tenderers are required to quote the 'Total Amount' for the complete scope of work in the Annexure PB-II of BOQ & Price Schedule both in words and figures.



- 6.3 Conditional price bids or price bids with any deviation / clarification etc. are liable to be rejected. No cutting / erasing / over writing shall be done.
- 6.4 Quantities mentioned in the rate schedules are approximate only and liable for variation both on positive and negative sides. The tentative contract value (CV) for entire scope of work shall be calculated as per finally quoted amount / derived item rates & the quantities indicated in Rate Schedule cum BOQ.

7 EVALUATION OF THE OFFERS

- 7.1 The Tenderers are required to quote the 'Total Amount' for the complete scope of work in the Annexure PB-II of BOQ & Price Schedule both in words and figures. In case of any discrepancy between 'Total Quoted Amount (in Figures)' and 'Total Quoted Amount (in Words)', lower of the two 'Amounts' shall be considered for evaluation purpose. Tenders for part of the work or incomplete in any respect are liable to be rejected. Tenders shall certify in the un-priced bid of Techno- commercial offer that 'Total Amount' quoted is for all the items of BOQ
- 7.2 Comparison of the prices & determination of lowest bidder shall be as per Price Schedule for the complete scope.

8 VARIATION IN SCOPE OF WORK / DEVIATION LIMIT

BHEL reserves the right to add or delete items of scope of work depending upon the final requirement. For such addition or deletion the Contract price shall be adjusted based on the quoted unit price. Such variation is not expected to be more than $\pm 15\%$. However, the quantities in the BOQ are tentative which may vary or deviate up to any limit provided the contract value is limited to $+15\%$. The price quoted by the Contractor shall be valid for such variation. Variation beyond the above limit shall be settled on mutually agreed rates.

9 EXTRA WORK

The Contractor shall, when requested by BHEL, perform extra work at mutually agreed rates.

10 TERMS OF PAYMENT

- 10.1 The Contractor shall be paid monthly running bill of **95%** of the value of the work actually executed on site provided the work has been executed to the satisfaction of the Engineer.
- 10.2 The balance **5%** of the bill value shall be released on taking over of all works by BHEL complete in all respects and along with passing of final bill.
- 10.3 From the amount payable, recovery such as advances, security deposit, taxes etc. would be made.
- 10.4 All payments shall be released through electronic-pay mode only.
- 10.5 Bidder shall arrange his own finance for smooth execution of contract, wages payment, other statutory payments to his employees and all other agreed conditions.
- 10.6 Normally, payment shall be made within 45 days of receipt of bill at BHEL.
- 10.7 BHEL Management shall have a right to deduct any sum from the bill of the bidder for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract, Non- payment of wages or of deduction made from his or their wages which are not justified by the terms of the contract or non-observance of the said contract Labor regulations.
- 10.8 BHEL shall be entitled to recover any payment made on behalf of the bidder under any law or otherwise.



- 10.9 The bidder shall submit the documentary evidence of payment on account of submission of statutory payments made to the concerned agencies before clearance of bill of next month.
- 10.10 Measurement of work completed shall be done by the Contractor and submitted to BHEL for checking and approval. For this purpose, Contractor shall submit hard copies as well as a soft copy containing abstract & detailed measurement sheets of the bill. The measurement sheets and the bill will be checked and approved by BHEL for further processing, or returned to the Contractor for correction and resubmission. The certificate of Engineer regarding such approval and passing of sums shall be final and conclusive against the Contractor.
- 10.11 The abstract of the measurements and RA bill shall be entered/pasted in BHEL Measurement Book and signed and dated by both parties as per the provisions of the General Terms & Conditions.
- 10.12 All running bill payments shall be regarded as advance payments against the final bill. Any certificate relating to the work done during monthly running bills may be modified by any subsequent interim certificates or by the final certificates and no certificate of the Engineer supporting an advance payment shall of itself be conclusive evidence that any work or materials to which it relates are in accordance with the contract.
- 10.13 In case any amount is withheld by BHEL during course of execution of work on account of non-compliance of contract requirement, the same shall be recovered / released from the contractors bills as deemed fit by the engineer-in-charge of BHEL and the decision of engineer-in-charge shall be final in this regard and binding on the contractor.

11 GUARANTEE

The works constructed by the Contractor shall be guaranteed for a period of 12 (Twelve) months from taking over of all works by BHEL. During this period the Contractor shall have to attend all maintenance / repair matters relating to the contract as required by BHEL.

12 PENALTY FOR DELAY

The Contractor shall complete the work as per the time frame given in the Letter of Intent / Work Order. For late completion of work, BHEL standard LD clause shall be applicable, which is 0.5% per week for unexecuted portion of work, subject to maximum 10% of work order value. Cost of rejection/rework, as appropriate shall be recovered from bidder as compensation for defective job done.

13 COMPLETION CERTIFICATES/ NOC FROM LOCAL STATUTORY BODIES

If required, contractor has to arrange at his own cost building/ work completion certificates from the local statutory bodies. However, any fees required for obtaining such NOCs shall be paid by BHEL on production of relevant depository challans/ receipts from such Govt. authorities.

14 COMPENSATION IN CASE OF DEATH/PERMANENT INCAPACITATION

BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life/permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below. a). Victim: Any person who suffers permanent disablement or dies in an accident as defined below. b). Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing/operation and works incidental thereto at BHEL factories/offices and precincts thereof, project execution,



erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works/ during working at BHEL units/officers/townships and premises/ project sites. c). Compensation in respect of each of the victims:

- (i) In the event of death or permanent disability resulting from Loss of both limbs: Rs.10,00,000/- (Rs. Ten lakh)
- (ii) In the event of other permanent disability: Rs.7, 00,000/- (Rs. Seven lakh) d). Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to section 2 (I) of the Employee's Compensation Act, 1923

15 BUSINESS/WORK DISTRIBUTION

The Full quantum of work i.e. 100% shall be placed on L-1 Contractor.

16 FINALISATION OF TENDER

“BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.”

- 17 In case there is any GST credit not available to BHEL due to lapse on part of bidder, GST amount shall not be reimbursed.
- 18 Bidder agrees to submit performance security required for execution of the contract within the period mentioned. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI Rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill become due, the amount of performance security due shall be recovered as per terms defined in NIT /Contract, from the bills along with due interest



19 Techno-commercial Deviation Sheet

TENDER ENQUIRY NO & DATE:

WORK DESCRIPTION:

DUE DATE OF OPENING:

Mention any deviations from Tender enquiry if any, else mention “No deviation “)

We hereby confirm that except for above, there are no other Deviation from all terms and conditions mentioned in Tender documents.

Signature of Authorized

Representative /Bidder

Name:

Designation:

Date:

Name of Organization



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
फैब्रिकेशन, स्टैम्पिंग ऐन्ड इंसुलटर प्लांट
Fabrication, Stamping & Insulator Plant (FSIP)
जगदीशपुर / Jagdishpur

20 PRICE BID

Price bid is required to be submitted in price bid format through e-tender portal:
<https://eprocurebhel.co.in/nicgep/app>



Annexure: STC-I

INDICATIVE LIST OF T&Ps TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

SL NO	EQUIPMENTS	QUANTITY
1.	Concrete Mixture Machine / Mobile Batching Plant.	AS PER REQUIREMENT
2	Concrete Vibrators	AS PER REQUIREMENT
3	Plate Compactors	1 NO
4	Water Tanker	AS PER REQUIREMENT
5	DG Sets Of Required Capacity & Lighting Arrangement	AS PER REQUIREMENT
6	Welding Machine	AS PER REQUIREMENT
7	Tippers/Tractor Trolleys For Shifting/Dumping Material	AS PER REQUIREMENT
8	Excavators	AS PER REQUIREMENT
9	Earth Compactor	AS PER REQUIREMENT
10	Dewatering Pump	AS PER REQUIREMENT
11	Concrete Pump	AS PER REQUIREMENT
12	Steel Shuttering	AS PER REQUIREMENT
13	Steel Scaffolding	AS PER REQUIREMENT
14	Reinforcement Steel cutting & bending set	AS PER REQUIREMENT

NOTES:

- 1 The above list specifies only major T&Ps (may not be complete to be deployed by the contractor). All additional / other tools and plants including trucks & devices, tackles, machines, measuring instruments etc. in good and safe working conditions which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate / price.



Annexure- STC-II

INDICATIVE LIST OF IMTEs TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

SL NO	EQUIPMENT	QTY
1	THEODOLITE ONE SECOND ACCURACY	1 NO
2	DUMPY LEVEL UPTO 350 MM	2 NO
3	CONSTRUCTION MATERIAL TEST EQUIPMENTS	AS PER REQUIREMENT
4	CONCRETE CUBE MOULDS (150 X 150 X 150) mm	6 SETS
5	CONCRETE SLUMP CONE	1 SET
6	COARSE AGGREGATE SIEVES & SAND SIEVER	1 SET
7	SIEVE SHAKER	1 NO
8	COMPRESSIVE STRENGTH TESTING EQUIPMENT	1 NO
9	AGGREGATE IMPACT TEST MACHINE	AS PER REQUIREMENT
10	PHYSICAL BALANCE FOR LAB WORK	1 NO
11	TOTAL STATION THEODOLITE	1 NO
12	Portable Ovens	1 NO

NOTES:

1. The above list specifies only major IMTEs (may not be complete to be deployed by the contractor). Contractor has to set up the field laboratory with facilities required for material & concrete testing. All additional / other IMTEs / measuring instruments etc. in good and safe working conditions which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate / price.
2. Other terms and conditions regarding above items please also refer clause 38 T&P/IMTEs).



Annexure- STC-III

ANALYSIS OF UNIT RATE QUOTED

Sl.no.	Description	Percentage of the unit rate quoted	Remarks
1.	Salary & Wages of Staff & workers		
2.	Consumables		
3.	Depreciation & maintenance for T & Ps		
4.	Depreciation & maintenance for other items		
5.	Establishment and administrative expenses of site		
6.	Overheads		
7.	Profit		

(Signature of Bidder)

Seal



INDICATIVE LIST OF TESTS TO BE CONDUCTED BY THE CONTRACTOR

Lab Tests:

1. Compressive Strength of Concrete (Cube Test)
2. Rebound Hammer Test after final completion.

Field Tests:

Concrete

1. Slump Cone Test

Aggregates

1. Elongation Index
2. Flakiness Index
3. Impact value

Reinforcement Bar (for steel provided by contractor)

1. Strength Test Certificate.

Coarse & Fine Sand

1. Fineness Modulus
2. Silt Content.

Cement

1. Setting time



21. TECHNICAL TERMS AND CONDITIONS FOR CIVIL WORKS

TECHNICAL TERMS AND CONDITIONS FOR CIVIL WORKS (PART - A)

1. CONTRACTOR'S SITE OFFICE

The Contractor shall establish an office at Site and keep posted an authorised, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the Engineer or his duly authorised representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.

2 CONTRACTOR'S SUPERVISION

- 2.1 The Contractor shall either himself supervise the execution of the Contract or shall appoint a competent Engineer / agent approved by the Engineer to act in his stead.
- 2.2 The Contractor shall employ an Engineer/ Agent having at least a 'Degree of Bachelor in Civil Engineering' from a recognised university with six years as post qualification experience or having atleast a 'Diploma in Civil Engineering' from a recognized college with ten years of post-qualification experience.
- 2.3 The employment of an Engineer / Agent as aforesaid shall not be necessary if the Contractor himself is in possession of a recognised technical qualification and is in the opinion of the Engineer capable of receiving instructions of the Engineer and of executing the work to the satisfaction of the Engineer.
- 2.4 If the Contractor fails to appoint a suitable Engineer /Agent as aforesaid, the Engineer shall have full powers to suspend the execution of work and stop payment of any money that may have become due until such date as a suitable Engineer / Agent is appointed and the Contractor shall be held responsible for the delay caused to the work and no extension of time on this account shall be given to him.
- 2.5 Orders given to the Contractor's Engineer / Agent shall be considered to have the same force as if they had been given to the Contractor himself.
- 2.6 The Contractor or his Agent shall be in attendance at the site during all working hours and shall superintend the execution of work with such additional assistance in each grade as the Engineer may consider necessary.
- 2.7 The Contractor or his accredited Agent shall attend, when required and without making any claim for doing so, either the office of the Engineer or the work site to receive instructions.
- 2.8 The BHEL Engineer shall have full powers to instruct the Contractor to arrange for immediate termination of services, in connection with this contract, of any Agent, servant or employee whose continued employment is, in his opinion, undesirable, without assigning any reason.

3 SUPERVISORY STAFF AND WORKMEN

- 3.1 The contractor shall deploy all the experienced skilled, semiskilled and unskilled workmen required for all the works under this specification. BHEL reserves the right to decide on the suitability of the workers and other personnel who will be deployed by the contractor. BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forth with removes him.



- 3.2 The supervisory staff including qualified Engineers deployed by the contractor shall ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor and in general see that the works are carried out in a safe and proper manner and in coordination with other labour and staff deployed directly by BHEL or other contractors of BHEL / other agency.
- 3.3 The work shall be executed under the usual conditions like rain, insufficient space, improper approach roads etc., and effecting major construction work and in conjunction with numerous other operations at site. The contractor and his personnel shall cooperate with other personnel contractor, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
- 3.4 The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerances given in the drawings /documents / instructions given by BHEL Engineer from time to time.
- 3.5 It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the targets set by BHEL. The contractor's finally accepted rates shall include all these contingencies.
- 3.6 During the course of construction, if the progress is found unsatisfactory, or in the opinion of BHEL, if it is found that the skilled workmen like welder, fitters, technicians etc. deployed are not sufficient, BHEL after giving reasonable opportunity to the contractor, will induct on the work the required workmen in addition to contractor's workmen to improve the progress and recover from the contractor's bills.
- 3.7 If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road kerb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wire, trees or any other property or to any part of erected components etc., the contractor shall make the same good at his own expense or in default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses (of which BHEL's decision will be final) from any money due to the contractor.
- 3.8 The month wise manpower deployment plan to be submitted as per format (at Annexure-Tech-I, Part B) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required manpower, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.
- 3.9 The Contractor shall ensure deposit of provident funds and get necessary ESI of their deployed workmen, employees at site and produce documents to BHEL in respect of these as desired by BHEL from time to time.

4 TOOLS AND PLANTS / IMTEs

- 4.1 All T&Ps and IMTEs which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition. Indicative lists of T&Ps and IMTEs to be arranged by the contractor are given **as per Annexure in Special Terms & Conditions.** In the event of the failure of contractor to bring necessary and sufficient T&Ps/ and IMTEs, BHEL will be at liberty to arrange the same at the risk and cost of contractor including transportation cost of same from any of BHEL site/place and hire charges as applicable shall be deducted from contractor's bill. Decision of BHEL in this regard shall be final and binding on contractor.



- 4.2 All distribution boards, connecting cables / welding cables, wire ropes, hoses etc. including temporary air/water / electrical connections etc. shall have to be arranged by the contractor at his own cost.
- 4.3 In case of non-availability of the T&Ps to be provided by BHEL due to breakdown, major overhauls, distribution pattern or any other reason, the contractor shall plan / amend / alter his activities to meet erection / commissioning targets in consultation with BHEL.
- 4.4 The contractor shall arrange at his own cost operators, fuel, and other consumables etc. for the operation. All lubricants such as mobile oil, gear oil, break oil, hydraulic oil, torque converter oil & grease shall be provided by contractor free of cost.
- 4.5 The contractor shall engage trained and experienced operators for the operation of T&Ps. BHEL Engineer will check their skill and performance before they are allowed to operate the same. However checking of skills by BHEL does not absolve the contractor of his responsibilities for proper & safe handling of equipment, consistent good performance of operators & regular performance evaluation of operators.
- 4.6 The day to day and routine maintenance of T&Ps should be carried out by contractor as per manufacturer's schedule at his cost. These shall be maintained in good working condition during the entire period of use. T&Ps in defective / damaged condition shall be rectified promptly to the full satisfaction of BHEL engineer. Contractor shall maintain records for maintenance of major T&Ps which shall be made available for Inspection whenever required. In case of any lapses on the part of the contractor BHEL at its own discretion get the servicing / repair of equipment done at the risk and cost of the contractor with BHEL overheads.
- 4.7 Increasing / shortening of the crane boom to suit work requirements shall have to be arranged by the indenting contractor at his cost. All necessary manpower, tools, support, consumables, illumination etc. will have to be arranged by contractor at his cost.
- 4.8 Consolidation of ground and arrangement of sleepers / sand bag filling etc. for safe operation / movement of equipment including cranes / trailers etc. shall be the responsibility of the contractor at his cost. Contractor shall ensure deployment of serviced and healthy T&Ps including cranes, lifting tackles, wire ropes, Manila ropes, winches and slings etc. History card and maintenance records for major T&Ps will be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required. Identification for such T&Ps will be done as per BHEL Engineer's advice.
- 4.9 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and Test equipment). The IMTEs shall have test/ calibration certificates from authorized / Govt. approved / accredited agencies traceable to National / International standards. Each IMTE shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL Engineer for control.
- 4.10 Retesting / re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer with in the contract price. The contractor will also have alternate arrangements for such IMTE so that work does not suffer when the particular instrument is sent for calibration. Also if any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument, failing which BHEL may deploy IMTEs and retake the readings at contractor's cost.
- 4.11 BHEL shall have lien on all T&P, IMTEs & other equipment of the Contractor brought to the site for the purpose of erection, testing and commissioning. BHEL shall continue to hold the lien on all such items throughout the period of contract. The Contractor and/or his Sub-contractors shall remove no material brought to the Site from the Site without the prior written approval of the Engineer.



- 4.12 The month wise T&P deployment plan to be submitted as per format (at Annexure-Tech-1) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required T&Ps, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.

5 MATERIALS

- 5.1 The contractor shall at his own expenses provide all materials e.g. good earth aggregates, screening material, sand, cement, bituminous material, Constructional finishing material like paver blocks, chain link fencing including paints, other consumables etc. required for the work. **Structural steel will be provided by BHEL. Reinforcement steel may also be provided by BHEL if available otherwise contractor has to arrange for this.**
- 5.2 All materials to be provided by the Contractor shall be of the best kind in conformity with the specifications laid down in the contract or as per relevant Indian standard and the Contractor shall, if requested by the Engineer, furnish proof to the satisfaction of Engineer that the materials so comply.
- 5.3 The Contractor shall, at his own expense and without delay, supply to the Engineer samples of materials proposed to be used in the works. The Engineer shall within seven days of supply of samples or within such further period as he may require will intimate to the Contractor in writing, whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer for his approval fresh samples complying with the specifications laid down in the Contract. Any delay in approval of samples (original or fresh ones) shall not make the contractor eligible for any compensation.
- 5.4 The BHEL Engineer shall have full powers for removal of any or all of the materials brought to site by the Contractor which are not in accordance with the Contract specifications or do not conform in character or quality to samples approved by him. In case of default on the part of the Contractor in removing rejected materials, the Engineer shall be at liberty to have them removed by other means. The BHEL Engineer shall have full powers to procure other proper material to be substituted for rejected materials and in the event of the Contractor refusing to comply; he may cause the same to be supplied by other means. All costs, which may attend upon such removal and / or substitution, shall be borne by the Contractor.
- 5.5 The Contractor shall indemnify BHEL, its representatives or employees against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or material or part thereof included in the Contract. In the event of any claim being made or action being brought against BHEL or any agent, servant or employee of BHEL in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by BHEL but the Contractor shall pay any royalties or other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings and / or specifications issued after submission of the tender.
- 5.6 The Engineer shall be entitled to have tests carried out as specified in the Contract for any materials supplied by the Contractor other than those for which, as stated above, satisfactory proof has already been furnished, at the cost of the Contractor and the Contractor shall provide at his expense all facilities which the Engineer may require for the purpose. If no tests are specified in the Contract, and the Engineer requires such tests, the Contractor shall provide all facilities required for the purpose and the charges



- for these tests shall be borne by the Contractor only. The cost of materials consumed in tests shall be borne by the Contractor in all cases except when otherwise provided.
- 5.7 In addition the Contractor shall perform / submit at his own cost such tests / samples as may be required by the Engineer out of the materials used by the company except for the costs of materials used in such tests / samples.
- 5.8 The concrete shall be prepared as **per mix design**. All ingredients of concrete shall be weighed and mixed as per the mix design. Weigh batching may be converted into corresponding volume batching, if desired. All concrete shall be mixed by concrete mixer and compacted with concrete vibrator only. All tests shall be carried-out by contractor at his own cost. During concreting, sample test cube shall be prepared as per the frequency prescribed in IS 456 (latest revision/amendment). To assess the strength of cube immediately, accelerated cube testing may also be conducted as required by the Engineer-in-Charge. If the results of the tests do not conform to the required standard and if the Engineer-in-Charge considers that the structural test is necessary, the same shall be carried-out by the contractor at his own cost. If the result of this comes out to be un-satisfactory against the contractor shall be bound to demolish and reconstruct that particular portion of work. The formwork shall be of steel or fresh ply to get smooth finish.
- 5.8.1 **Design of concrete mix** – It shall be done by the contractor at his own cost and the mix so designed shall be approved by a Govt. Engineering Institute of repute. Design mix shall be done as per standard code of practice as per IS.456 (latest revision/amendment).
- 5.9 After acceptance of the Contract, if Contractor desires BHEL to supply any other materials, such material may be supplied by BHEL, if available, at rates to be fixed by the Engineer along with prevailing departmental charges (current rate of 30%). BHEL reserve the right not to issue any material. The non-issue of such material will not entitle the Contractor for any compensation whatsoever either in time or in cost.
- 5.10 Material required for the works, whether brought by the Contractor or supplied by BHEL, shall be stored by the Contractor only at places approved by the Engineer. Storage and safe custody of material shall be the responsibility of the contractor.
- 5.11 BHEL's officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the Site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place (s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
- 5.12 All materials brought to the Site shall become and remain the properties of BHEL and shall not be removed off the Site without the prior written approval of the Engineer. But whenever the Works are finally completed and advance, if any, in respect of any such material is fully recovered, the Contractor shall, at his own expense, forthwith remove from the Site all surplus material originally supplied by him and upon such removal, the same shall re-vest in and become the property of the Contractor.
- 5.13 It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding suppliers, type of electrodes etc. before procurement of welding electrodes / TIG wires. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch No., date of expiry etc. and produce test certificate for each lot / batch with correlation of batch / lot number with respective test certificate. Without valid test certificate, the use of welding electrodes is prohibited.



5.14 All charges on account of taxes and other duties on materials obtained for the works from any source shall be borne by the contractor.

6 HANDLING OF CEMENT, REINFORCEMENT AND STRUCTURAL STEEL

- 6.1 Materials will be accounted only for permanent works and not for making templates, other temporary works, enabling works etc. and the same shall not be taken into account for purpose of material reconciliation for billable items. The coefficients for theoretical consumption of material shall be as per CPWD specifications.
- 6.2 The contractor shall bear all other costs including the lifting, carting from issue points to works site/contractor's stores, custody and handling etc.
- 6.3 All steel shall be accounted in available lengths / shapes and no claims for extra payment on account of receipt of non-standard lengths/shapes will be entertained. For the purpose of billing and accounting only linear measurement will be taken and weight will be calculated as per the SAIL / IS co-efficient. The difference in unit weight as per SAIL / IS and actual as issued, if any shall be to the contractor's account and contractor shall quote the rates for corresponding item to take care of such difference.
- 6.4 The theoretical weight of each bag of cement will be considered as 50 kg per Bag. No claim whatsoever shall be entertained on this. The weight of each consignment at suitable capacity of weighbridge, nearest to the plant shall be ensured in the presence of BHEL representative, if required, and ascertained by BHEL. Empty cement bags shall be the property of Contractor
- 6.5 The Contractor shall maintain good stores for storing the cement. The flooring of the storage house, the clearance of cement bags from the side walls, etc., shall be as per the instructions of the Engineer-in-charge.
- 6.6 The **cement stores** shall be open for supervision and verification by the Engineer-in-charge or his authorized representative by any time when the Engineer-in-charge feels the need to do so.
- 6.7 In the case of steel materials if weight of consignment is not available it will be considered as received based upon linear measurement basis and the corresponding weight in such cases will be calculated as per SAIL / Indian Standard. For the purpose of billing & accounting, only linear measurement will be taken and any difference in weight based on linear measurement & actual weight shall be to contractor's account. Quoted price shall be deemed to include the above & the permissible wastage mentioned. No claim whatsoever shall be entertained on account of wastage & difference in weight as referred to above.
- 6.8 The Contractor shall bear all incidental costs including site lifting, carting from issue points to site / contractor's store, custody and handling etc no separate payment for such expenditure shall be made.
- 6.9 The Contractor will have to submit their design mix duly certified by reputed govt. Engineering institute etc. for different grades of Concrete keeping in view the requirements stipulated in IS: 456, specifically regarding slump and Water Cement ratio and Specific Gravity of Materials brought to site as analyzed in the laboratories. The design shall be used upon absolute volume method and theoretical consumption of Cement shall be worked out on this basis. For other than above designated mix Concrete items, the coefficients for consumption of cement shall be adopted as per CPWD practice. The theoretical consumption of cement thus worked out shall be binding upon the Contractor for reconciliation of Cement issued by the Owner. For any excess /under consumption based on these coefficients, the Contractor shall be penalized as per contract provisions. Though, permissible wastage specified shall be considered, while effecting penal recovery, no other allowance whatsoever shall be taken for reconciliation purposes
- 6.10 The theoretical consumption of cement, reinforcement steel and structural steel required for the work will be calculated on the basis of approved drawings / joint measurements. In the case of Cement, the theoretical consumption shall be decided by the Engineer as mentioned



above and his decision in this regard shall be final and binding on the Contractor. Reinforcement and structural steel shall be measured by weight in tones. The weight will be arrived at by multiplying the used length by the sectional weight. The sectional weight will be same as were applied at the time of issue. Standard hooks, cranks, bends and authorized laps, chairs, separator pieces etc. specified in drawing or instructed by engineer as required shall be measured and paid for. No payment shall be made for binding wires, spacer block etc. required for keeping the steel in position unless otherwise specified in the contract. No extra payment will be made for modification of already embedded reinforcement, if required due to faulty fabrication or placement.

- 6.11 The contractor shall submit proper account of material / material reconciliation statement for the material drawn by him from stores with each RA bill. Failing compliance of this requirement further issue of steel to the contractor may be suspended and no claim of compensation for delay in execution on this account shall be entertained.
- 6.12 All excavated material shall remain the property of the BHEL. In case the Contractor wishes to utilize the boulders excavated by him during the excavation work at the site, the same may be issued to him at prevailing rates on the cost recovery basis as decided BHEL.

7 SCRAP & SERVICEABLE MATERIALS

- 7.1 All structural steel of length above 2 M except M.S. Plates shall be considered as serviceable materials provided the materials is in good and acceptable condition. Structural steel in length less than 2 M shall be treated as scrap. All reinforcement steel of length above 3 M shall be considered serviceable provided the material is in good & acceptable condition. Reinforcement steel of length less than 3 M shall be treated as scrap.
- 7.2 Plates having both sides greater than 1 Meter or If any side is less than 1 M but greater than 0.5 M and the total area is equal or greater than 2 Sq. Meter shall be considered as serviceable.
- 7.3 All pipes measuring 2 M and above in length shall be treated as serviceable materials provided they are in good and acceptable condition. Pipe in less than 2 M length shall be treated as scrap.

8 EXECUTION OF WORK

- 8.1 The work shall be executed in a workman like manner and to the entire satisfaction of the Engineer and as per technical specification issued with tender, IS codes, CPWD specifications as applicable. In case of conflict, the decision of the Engineer shall be final & binding.
- 8.2 The Engineer will communicate or confirm his instructions to the Contractor in respect of the execution of the work in a "Work Site Order Book" maintained at his office and the Contractor shall visit this office daily and shall confirm receipt of such instructions by signing the relevant entries in this book. Such entries will rank as order or notices in writing within the intent and meaning of these conditions.
- 8.3 Only BHEL approved make of electrodes will be used. All electrodes shall be heated and dried in the electric electrode drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to site will have valid manufacturing test certificate. The test certificate will have co-relation with the lot no. / batch no. given on electrode packets. No electrodes will be allowed to be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved / accredited test house traceable to National / International standards) will be submitted to BHEL before putting the oven in use. Periodical calibration for the same shall also be arranged by the contractor within the finally accepted rates.



- 8.4 Inspection and stage approval of all bought out items:** Contractor at his own cost shall make necessary arrangements for the prior approval and stage inspections of the supplied bought out items as per requirement of FQP and as directed by the Engineer-in-charge of BHEL. These inspections can either be carried out at site or at the works as per decision of engineer-in-charge of BHEL without any extra claim from contractor towards such inspections.

9 SETTING OUT

- 9.1** All the works shall be set out to the true lines, grades and elevation indicated on the drawing. The contractor shall be responsible to locate and set out the works. Only one grid reference line and benchmark all be made available for setting out the works under the contract. This reference lines shall be used as datum for the works under the contract and the contractor has to establish for his work area at available points horizontal and vertical control points. The contractor shall inform BHEL well in advance of the times & places at which he wishes to do work in the area allotted to him so that suitable datum points established by him are checked by BHEL / Customer to enable the contractor to proceed with the works. Any work done without being properly located may be removed and / or dismantled by BHEL / Customer at Contractor's expense.
- 9.2** The Contractor shall at his own expense take all proper and responsible precautions to preserve and maintain these datum marks to its true position. In the event of these marks being disturbed or obliterated by accident or due to any other cause whatsoever, the same may be deemed necessary placed by BHEL / Customer at contractor's expenses.

10 SITE DRAINAGE

- 10.1** All water including sub-soil water which may accumulate on the Site during the progress of the works or in trenches and excavations, including monsoon period shall be removed by the contractor from the Site to the satisfaction of the Engineer. It will also be responsibility of the contractor to de-water all the foundation pits, trenches with suitable de-watering methods like, pumping out, well point system etc. considering the depth of water table at plant site. All such expenditure on **de-watering** shall be deemed to be included in quoted rates.

11 INSPECTION AND STAGE APPROVAL OF THE WORK

- 11.1** The owner or his duly authorised representative shall have at all reasonable times access to the contractor's premises or works and shall have the power to inspect drawings or any portion of the work, examine the materials and workmanship and shall have the authority to reject any work. This would be implemented through joint inspection by the representative of the owner and BHEL and in the form of joint protocols without any extra claims and loss of time and amount.
- 11.2** All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer when each stage is ready. In default of such notice being received, the Engineer shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute; the decision of the Engineer thereon shall be final and conclusive.



12 UNCOVERING AND MAKING GOOD

The Contractor shall uncover any part of the Works and/or make openings in or through the same as the Engineer may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer. If any such part has been covered up or put out of view after being approved by the Engineer and is subsequently found on uncovering to be executed in accordance with the Contract, the expenses of uncovering and / or making opening in or through, reinstating and making good the same shall be borne by BHEL. In any other case all such expenses shall be borne by the Contractor.

13 DISCREPANCIES AND ADJUSTMENT OF ERRORS

13.1 The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small-scale drawings and figures dimensions in preference to scale and special conditions in preference to general conditions.

13.2 In case of discrepancies between schedules of quantities, the specification and / or the drawings, the following order of preference shall be observed.

(a) Description in schedule of quantities.

(b) Special conditions

(c) Drawings

(d) Technical Specifications

(e) General conditions of contract

If there are varying or conflicting provisions made in any one document forming part of the contract, the Engineer shall be the deciding authority with regard to the document.

13.3 Any error in description, quantity in schedule of quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprised therein according to the drawings and specifications or from any of his obligations under the contract.

13.4 If on check there are found to be differences between the rates given by the contractor in words and figures or in the amount worked out by him in the schedule of quantities and general summary, the same shall be adjusted in accordance with the following rules:

(a) In the event of discrepancies between description in words and figures quoted by a Tenderer, the lesser of the two will be treated as valid rate.

(b) In the event of an error occurring in the amount column of schedule of quantities as a result of wrong extension of the unit rate and quantity, the unit rate shall be regarded as firm and extension shall be amended on the basis of the rate.

(c) All errors in totaling in the amount column and in carrying forward totals shall be corrected.

(d) The totals of various sections of bill of quantities amended shall be carried over to the general summary and the tendered sum amended accordingly. The tendered sum so altered shall, for the purpose of tender, be substituted for the sum originally tendered and considered for acceptance instead of the original sum quoted by the Tenderer. Any rounding of quantities or in sections of bill of quantities or in general summary, by the Tenderer, shall be ignored.



- 13.5 If neither drawing nor specification contain any mention of minor details of construction which in the opinion of the Engineer whose decision shall be final and conclusive, are reasonable and obviously and fairly intended for satisfactory completion of work, such details shall be provided by the contractor without any extra cost, as if they were specially mentioned and shall be deemed to be included in his scope.

14 SAFETY CODE

- 14.1 Besides provision with regard to safety under Clause 8.12, Contractor shall note that Explosives shall not be used on the work by contractor except with permission in writing of the Engineer and in manner and to the extent to which he has prescribed. Where explosives are used, the same shall be stored in a special magazine to be provided by and at the cost of the contractor who shall be liable for all damages, losses and injury to any person or property and shall be responsible for complying with all statutory obligations in this respect. Further, the contractor is required to provide proper Safety Net System wherever the hazard of fall from height is present as per instructions of BHEL Engineer at site. The safety net shall be duly tested and shall be of ISI mark and the nets shall be located as per site requirement to arrest or to reduce the consequences of a possible fall of persons working at different heights.
- 14.2 The contractor will be responsible for Health, Safety & Environment management at site for the construction activities to be carried out by them in accordance with requirements of BHEL
- 14.3 Contractor shall arrange for following provisions of HSE
1. Contractor has to maintain contact with local hospital having scanning & other modern medical facilities required during emergency.
 2. Contractor may ensure pre-employment medical check for all staff & workers.
 3. However, emergency First Aid facilities as available at BHEL Hospital, Jagdishpur can be utilized in case of emergency on chargeable basis
- 14.4 The following are a few safety measures suggested while carrying the work. However all the items of work should be carried out in safe working manner taking all precautions?
- a) Proper and necessary precautions shall have to be taken wherever the work involves breaking of reinforced cement concrete slab and dismantling of brick work. These items of work will have to be carried in the presence of the Engineer-in-charge.
 - b) Proper and necessary scaffolding is to be erected wherever work is carried out at height more than 1.80 M.
 - c) The contractor shall keep supply all safety equipment like safety boots, goggles, helmets and safety belts, to all the workers.
 - d) The contractor shall keep a supervisor always at work site.
 - e) Power shut down shall be taken before commencement of the work wherever power cables are running.
 - f) Proper and necessary scaffolding and ladders are to be used for carrying out all types of works.
 - g) The contractor shall provide safety nets to the work force during the execution of work at height of more than 3 meters and as directed by the engineer in charge.
 - h) The contractor shall take all necessary safety precautions and arrange for appropriate appliance to its authorized officials to prevent loss of human lives, injuries to personnel engaged and damage to property.



k) The Contractor shall provide to the work force and ensure the use of the following personnel Protective Equipment as found necessary and as directed by the authorized BHEL Officials.

- i) Safety Helmets conforming to IS: 2925, 1981
- ii) Safety belts conforming to IS: 3521, 1983
- iii) Safety shoes conforming to IS: 1.4544. 1998
- iv) Eye, and face protection devices conforming to IS: 1179, 1967.
- v) Hand and body protection devices conforming to IS: 2573 - 1975, IS: 6994 - 1973 and IS 8520 - 1978, IS: 578-1985 and IS 6694.

SAFETY IN CIVIL ENGINEERING WORKS

1. While working at heights, a safe foot holds and hands holds should be provided.
2. No loose material should be allowed to remain in the vicinity of persons working at Heights due to which they may inadvertently loose there balance and fall down.
3. Wherever, it is reasonable practical, workers should be made to use safety belts.
4. Ladders, crawling ladders and crawling boards are to be provided if a person has pass across or work on or from any material liable to fracture under his weight and cause him to fall more than 1.98 meters.
5. In considering whether a material is likely to fracture beneath a person's weight, regard must be had to any additional weight he may be carrying or supporting.
6. Ladders crawling boards etc., to be securely supported and if necessary secured to prevent slipping.
7. Guard rails, coverings or other suitable means may be used to prevent person stepping on to fragile material, while working or passing near it if such material is likely to fracture under his weight and cause him to fall more than 1.98 meters.
8. While working on sloping roofs, suitable, crawling, boards or crawling ladders should be used. These crawling ladders should be properly supported and securely enhanced to the sloping surface or the roof ridge.
9. Suitable and sufficient means are to be provided to prevent fall of articles from a sloping roof.

DEMOLITION:

- a) Safe access should be provided to every place at which any person has to work. Scaffolds to be provided for all work that cement safety be done otherwise.
- b) Shoring or either steps are to be taken to prevent accidental collapse of the building or part of the building being dismantled.
- c) Similar precautions are to be taken against collapse of any adjacent building, if this would involve danger.
- d) No steel work or iron work is to be cut or released unless precautions are taken to avoid danger from sudden twist, spring or collapse.
- e) No framing is to be removed unless all practicable steps are taken to avoid collapse of the structure.
- f) Demolition work is to be placed under the supervision of a competent person experienced in demolition work.

EXCAVATIONS:



- a) Barriers are to be provided round excavations, shafts, pits and opening into which persons can fall a vertical distance of 1.98 meters. These barriers are to be as close as practicable to the edge of the excavations and are to be erected as soon as practicable after excavating begins. They are to be maintained in position except when necessarily removed for the access of persons or materials.
 - b) Adequate and suitable timbering should be used to prevent danger from falls or dislodgement of sides of excavations etc., or materials adjacent to it. Timbering is to be done as early as practicable in the course of work.
 - c) No person should be allowed to work in any excavation. Shaft or tunnels after explosives have been used in or near it, in a manner likely to affect stability, until a thorough examination has been made by a responsible person.
 - d) No person should be allowed to work in any excavation, Shaft or tunnels after an unexpected fall of work rock, earth or to her material or after substantial damager to timber or other supports, unless the part concerned is thoroughly examined by a responsible person declared safe.
 - e) No material should be placed near the edge of the excavation so as to endanger persons below. No load should be placed or removed near the edge of an excavation etc., where it is likely to cause the collapse of the side of the excavation and so endanger to any person.
 - f) If excavation is likely to affect the security of the structure (permanent or temporary) steps must be taken to safeguard persons employed from possible collapse of that structure.
 - g) Means of reaching a place of safety is to be provided, when there may be danger from rising water or irruption of water or materials.
 - h) Means to prevent over running are to be taken when vehicle is used to tip material into pit
- SCAFFOLDS:
- a) Materials used for scaffolds should be of sound and adequate strength.
 - b) The timber used should be suitable quality, good condition, bark complete stripped off, and without paint or other treatment, which would prevent defects from being easily seen.
 - c) Timber and material with projecting nails should not be used.
 - d) Metal parts should be of suitable quality, in good condition, free from corrosion or other patent defects likely to affect strength.
 - e) Defective parts or materials should not be used and no defective ropes or bonds should be used.
 - f) Standards or upright should be vertical or slightly inclined towards the building or other structure, where practicable and to be sufficiently close to ensure stability.
 - g) Displacement or sinking of standards or uprights to be prevented either by provision of base plates or either adequate means.
 - h) Ladders used as uprights to be adequate strength secured to prevent slipping and so placed that the two stiles of sides of each ladder are evenly supported.
 - i) Ladders are to be horizontal, as nearly as possible and should be secured to standards or uprights by efficient means.

WORKING PLATFORMS:

- a) All working platforms should be closely boarded, planked or plated.
- b) Boards should be of sufficient thickness having regard to the distance between putlogs other supports.
- c) All boards should be at least 51 mm thick and 210 mm wide.



- d) Boards should rest securely and evenly on their supports. Each board should have at least three supports unless the thickness and the distance between the supports are such as to present on due or unequal staging when, supported on the two pipes.
 - e) No board should project beyond for more than four times its thickness, unless secured to prevent tipping.
 - f) No board should project to an extent which makes it unsafe having regard to its thickness and strength and the weight likely to be on it.
 - g) The platforms should be of adequate width to give sufficient working space.
 - h) The platforms should extend at least 600 mm. beyond, the end of wall or working face if work is being done at that end of the wall of face.
 - i) The platforms should have guard rails to a height of between 920 mm and 1150 mm. above the platform or any raised part of it.
 - j) The platforms should have toe-boards high enough to prevent falls of persons, tools and materials, with a minimum height of 15.5 mm. space between the toe-boards and the lowest guard rail should not exceed 760 mm. guard rails and toe-boards should be on the inside of uprights unless there is some other means of preventing their outward movement.
 - k) Guard rails and toe-boards should always remain in position except when removal is necessary for the access of persons or materials, or other necessary purposes of the work.
- SAFETY NETS AND BELTS:

- a) If all or any of the above requirements is not practicable, resources may be taken to use suitable safety belts or nets to prevent persons falling from heights of 1.98 meters and above.
- b) Safety belts when used should be attached continuously to suitable and fixed anchorages.
- c) Safety nets should be maintained in all positions necessary to protect persons at work, except in so far as they have to be temporarily removed for the passage of materials or for any other purposes.

15 NUISANCE

- 15.1 The Contractor shall not at any time do, cause or permit any NUISANCE on Site or do anything which shall cause unnecessary disturbance or inconvenience to owners, tenants or occupiers of other properties near the Site and to the public generally.

16 MATERIAL OBTAINED FROM EXCAVATION

- 16.1 Materials of any kind obtained from EXCAVATION on the Site shall remain the property of BHEL and shall be disposed of as the Engineer may direct, at no extra cost.

17 TREASURE, TROVE, FOSSILS etc.

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall be the absolute property of BHEL and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing, shall immediately upon discovery thereof and before removal acquaint the Engineer with such discovery and carryout the Engineer's directions as to the disposal of the same.

18 PROTECTION OF WORKS



- 18.1 Trees designated by the Engineer shall be protected from damage during the course of the Works and earth level. Where necessary, such trees shall be protected properly.
- 18.2 The contractor shall provide and maintain at his own expense all lights, guards, fencing and watching when and where necessary or required by the Engineer for the protection of the Works or for the safety and convenience of those employed on the Works or the public.
- 18.3 The contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. No claim will be entertained by the Engineer for any damage or loss to the contractor's works and the contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the contractor's works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.
- 18.4 Contractor shall be fully responsible for the security of his workmen/ employees/ associates/all kinds of materials deployed by the contractor / tools and plants. Contractor shall also be responsible for the security of all the executed works, under execution works and completed works till the period it is fully taken over by BHEL.

19 RECORD FOR MATERIALS CONSUMED

- 19.1 The contractor shall maintain and furnish to the Engineer the RECORD OF MATERIALS consumed in the works for each activity. The statement showing the theoretical vis-à-vis actual consumption of specified materials, such as structural /reinforcement steel, cement, bitumen, lead, paint etc., shall be enclosed along with the Running Bills submitted by the contractor. Contractor has to also furnish the test results of the materials used in the work as per IS specifications.

20 PROTECTION OF EMBEDMENTS BOLTS ETC.

The contractor shall ensure proper protection to the satisfaction of the Engineer, of all bolts, inserts, embedment's etc. from weather etc/ by greasing, rapping them with gunny bags or canvas or by any other means as directed by Engineer. Cost of such protections shall be deemed to be included in the rates quoted for the item.

21 CLEARANCE OF SITE AND REPAIRS.

Contractor has to clear the site / area where mechanical and electrical erection work is to be commenced / or in progress. The contractor shall remove construction materials and equipment lying in the vicinity and causing obstruction in the erection work within 24 hrs notice. In case, he fails to clear the site, this will be done at his risk & cost by BHEL.

22 QUALITY ASSURANCE

The contractor has to establish / arrange at site the field testing facilities for testing of civil construction materials and concrete cubes for ensuring the proper quality, grade and strength of the materials used in the construction in line with approved field quality check list of BHEL. Contractor has to submit detailed report for testing of all material used etc. All testing shall be



done as per IS code specifications/ BHEL's quality plan. If further test is required by the engineer to be carried from outside laboratory, the cost of the same shall be borne by the contractor.

23 COMPLETION OF WORK

- 23.1 The works shall be completed to the entire satisfaction of the Engineer and in accordance with the completion schedule as specified in the Contract, and all unused stores and materials, tools, plant, equipment, temporary buildings, site office, labour hutments and other things shall be removed and the site and work cleared of rubbish and all waste materials and delivered up clean and tidy to the satisfaction of the Engineer at the Contractor's expenses.
- 23.2 BHEL shall have power to take over from the Contractor from time to time such sections of the work as have been completed to the satisfaction of the Engineer. Such work however shall not be treated as have been completed until the extra works are executed to the satisfaction of Engineer. The Guarantee period shall commence only after handing over of the entire works.
- 23.3 The Engineer shall certify to the contractor the date on which the work is completed and the date thereof.

24 RECORDS AND MEASUREMENTS

- 24.1 All items having a financial value shall be entered in BHEL measurement Book so that a complete record is obtained of all works performed under the Contract.
- 24.2 Lump sum omissions will be entered for deduction. Measurement shall be restricted to that required to ascertain the financial liability of BHEL under the contract.
- 24.3 Work, which fails to be measured in details, shall be measured physically without reference to any local custom that may obtain excepting where it may otherwise be directed in the tender documents. The measurements shall be taken jointly by any person duly authorised on the part of BHEL and by the Contractor.
- 24.4 The Engineer shall give reasonable notice in writing to the Contractor of appointment for measurement.
- 24.5 **The Contractor shall, without extra charge, provide assistance with appliances and other things necessary for measurement and shall bear all the cost of measurement of his work.**
- 24.6 Measurement shall be entered in BHEL Measurement Book and signed and dated by both parties each day at the site on completion of measurement. If the Contractor objects to any of the measurements recorded on the behalf of BHEL, a note to that effect will be made in BHEL Measurement Book or against the item or items objected to and such note shall be signed and dated by both the parties engaged in taking the measurement.
- 24.7 If, as a result of such objection, it becomes necessary to re-measure the work wholly or in part the expense of such re-measurement shall be borne by the contractor.
- 24.8 **If the Contractor's representative fails to attend when required, the Engineer shall have power to proceed by himself to take measurements and in that case these measurements shall be accepted by the Contractor as final.**
- 24.9 **The Contractor shall, once in every month, submit to the Engineer details of his claims for the work done by him up to and including the previous month which are not covered by this Contract Agreement in any of the following respects:**
- a) Deviation from the items and Specifications provided in the Contract documents.
 - b) Extra items/new items of work.
 - c) Quantities in excess of those provided in the Contract Schedule.
 - d) Items in respect of which rates have not been settled.



25 METHOD OF MEASUREMENT

Method of measurements shall be as per standard specifications included in the tender. For other items measurements shall be as per relevant IS Codes.

26 DEVIATION

- 26.1 The Contractor shall not make any alteration in, addition to or omission from the work as described in the tender documents except in pursuance of the written instructions of the Engineer. No such deviation from the work described in the tender documents shall be valid unless the same has been specifically confirmed and accepted by the Engineer in writing and incorporated in the Contract.
- 26.2 The Engineer may deviate, either by way of addition or deduction, from the work so described, provided that the Contract sum be not thereby varied on the whole by more than the percentage set out in the tender documents. The value of all additions and deductions shall be added to or deducted from the Contract sum. (Whenever the Engineer intends to exercise such a right his intentions shall specify the deviations which are to be made, the lumpsum assessment or the proposed basis of payment, the extra time allowed, if any, and the date for completion of the entire contract). Any objection by the contractor to any matter concerning the order shall be notified by him in writing to the Engineer within seven days from the date of such order, but under no circumstances shall the work be stopped (unless so ordered by the Engineer) owing to differences or controversy that may arise from such an objection. In the absence of such a notification of objection by the Contractor, he will be deemed to have accepted the order and the conditions stated therein.

27 VALUATION OF DEVIATIONS

Rates for deviated items or new items of work shall be as follows:

- 27.1 If the rates for the additional, altered or substituted work are specified in the Contract for the work, the Contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the Contract for the work.
- 27.2 If the rates for the additional, altered or substituted work are not specifically provided in the Contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the Contract for the work.
- 27.3 If the rates for the altered, additional or substituted work cannot be determined in the manner specified in above clauses the rate for such part or parts will be determined by the Engineer on the basis of prevailing market rates when the work was done and the decision given in this behalf shall be final and binding on the Contractor. Rate analysis will be worked on CPWD manual of rate analysis as guidance.
- 27.4 If the rates for the altered, additional or substituted work cannot be determined in the manner specified in above clauses, then the contractor shall within 7 days of the date of receipt of order to carry out the work inform the Engineer of the rate at which it is his intention or charge for such class of work, supported by analysis of the rate or rates claimed, and the Engineer shall determine the rate or rates on the basis of prevailing market rates and pay the Contractor accordingly. However, the Engineer, by notice in writing, will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner, as he may consider advisable. But under no circumstance the Contractor shall suspend the work on the plea of non-settlement of rates falling under the clause or claim any



compensation on that account. Elements of profit, overheads, supervision and establishment charges, depreciation and maintenance will be taken as 15% over direct cost.

28 COMPLIANCE TO REGULATIONS AND BYELAWS

The Contractor shall conform to the provisions of any statute relating to the work and regulations and bylaws of any local authority and of any water and lighting Companies or Undertaking with whose system the work is proposed to be connected. He shall, before making any variation from the drawings or the specifications that may be necessitated for such connections give the Engineer, notice specifying the variation proposed to be made and the reasons therefore and shall not carry out any such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulations or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

29 FACILITIES TO BE PROVIDED BY BHEL / CONTRACTOR

29.1 BHEL shall provide limited open space for office and store/ workshop at site free of rental charge as and where made available. It is the responsibility of the contractor to develop the space for construction of office sheds, to provide all utilities like electricity, drinking water etc., as a part of his scope of work within the accepted rates. Contractor shall make water arrangement from the water pipe line of local network area.

29.2 **Electric power for office and workshop will be provided on chargeable basis based upon prevailing rates** at one point within the plant premises as decided by BHEL. Further distribution will have to be made by contractor. The Contractor at his own cost shall install the calibrated Energy meter for the electricity metering.

29.3 All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply. Required calibrated energy meter for measurement of power consumed has to be arranged / installed by Contractor at his cost. Non-availability of power supply from BHEL source shall not be an excuse for delay in completion of work. **Sufficient DG sets** have to be arranged by the contractor in case of non- availability/ interrupted power supply from BHEL.

The Contractor shall not affect any change in the temporary installation unless permission is obtained from BHEL or their authorized representatives.

Contractors are requested to take above into account while quoting. The Contractor confirms that unit rates quoted above take care of such variation during execution stage.

- i. The land along with facilities and lease rent etc for labour colony shall be arranged by the contractor himself near to the site.
- ii. On completion / termination of the work, the Contractor shall remove all temporary structure built by him and restore the land in its original condition and the land shall be handed over to BHEL. The Contractor at his cost shall remove debris generated from demolition of temporary structure. If the contractor fails to give vacant possession of the land as aforesaid in the original condition BHEL reserves the right to withhold payment of Contractors bill till handing over of the vacant possession of the land and contractor shall be liable to pay compensation determined by BHEL for such unauthorized



occupation of land. The compensation shall be recovered from the bills of contractor, without any notice.

- 29.4 Provision of distribution lines of power from the central points to the required place with proper distribution boards observing the safety rules laid down by the authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS / Copper / Brass clamps, copper conductor, change over switches pipes etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shift / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.
- 29.5 In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.
- 29.6 Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. within finally accepted rates.
- 29.7 No claim for damages will be entertained by BHEL on account of interruptions of water supply or limitation of quantity of water as aforesaid or on account of the water so taken being not fit for construction purposes or on any other account in connection with such water supply.
- 29.8 **Construction water shall be supplied by BHEL @ Rs 2000 per month at a single point** within a distance of 500 meter from the battery limit. The construction water shall be ground water. The Contractor shall make his own arrangements to lay and maintain necessary distribution lines at his own cost.
- 29.9 **In** the event of poor or interrupted water supply by BHEL at site, the contractor then has to make his own arrangement for uninterrupted construction water supply so that work doesn't get affected. This arrangement of water supply shall be without any extra cost to BHEL.
- 29.10 The Contractor should make arrangements for storage of sufficient quantity of water to meet his requirement of two days in well-built water storage tanks with covered tops. The Contractor shall ensure that there is no wastage of water. The contractor shall obtain prior approval of NLCL / BHEL of the distribution scheme before laying the pipelines.
- 29.11 The Contractor shall during the progress of the work, provide, erect and maintain at his own expenses all necessary temporary workshops, stores, consumables, offices, etc. required for the proper and efficient execution of the work. The planning, setting and erection of these buildings shall have the approval of the Engineer and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer.
- 29.12 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, same will be got done by the Engineer and expenses incurred shall be recovered from the contractor along with prevailing overhead. The decision of BHEL Engineer in this regard shall be final.
- 29.13 **No residential facilities shall be provided by BHEL for contractor's employees/workmen and associated agencies.**



30 Gate Passes:

It is the responsibility of the contractor to arrange gate pass for all his employees, T & Ps etc. Necessary coordination with security officials is the responsibility of the contractor. Contractor shall follow all the laid down procedures for obtaining these gate passes. Contractor shall arrange to receive necessary permits for working beyond normal working hours, working on holidays and during night.

31 PROGRESS REPORTING

- 31.1 Contractor is required to draw mutually agreed monthly program in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.
- 31.2 Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled programme shall be discussed for actions to be taken for achieving targets. Contractor for discussions shall also present the programme for subsequent week. The contractor shall constantly update / revise his work programme to meet the overall requirement. All quality problems shall be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of non-conformities.
- 31.3 The contractor shall submit weekly and monthly progress reports, materials reports, consumables report and other reports as per proforma considered necessary by the Engineer.
- 31.4 The progress report shall indicate the progress achieved against planned , with reasons indicating delays , if any, and shall give the remedial actions which the contractor intends to take to make good the slippage or lost time , so that further works again proceed as per the original programme and the slippages do not accumulate and effect the overall programme.
- 31.5 The daily manpower reports shall clearly indicate the manpower deployed, category-wise specifying also the activities in which they are engaged.
- 31.6 Contractor shall submit periodical reports in respect of the following aspects of operation:
- Consumption of construction power.
 - Daily Manpower report
 - Progress report- daily, weekly and monthly
 - Field Quality checks carried out.-report
 - Accident/ unfortunate mishap report
- BHEL at site shall inform formats for these reports

32 DELAY AND EXTENSION OF TIME

- 32.1 The Contractor shall not be allowed any time extension of completion except in the following cases:
- (a) Force majeure conditions
 - (b) Major changes or substantial addition to work ordered by the BHEL adversely affecting the completion time.



- (c) Any other circumstance of any kind whatsoever which may occur making the contractor entitled to an extension of time which, however, shall be in the absolute discretion of BHEL. By reason of any other cause, which in the absolute discretion of the Engineer is beyond the Contractor's control, then in any such case, the Engineer (or higher authority) may make fair and reasonable extension in the completion dates of the individual items of work or the Contract as a whole. Such extension, which will be communicated to the Contractor by the Engineer in writing, shall be final and binding on the Contractor. No other claim in this respect for compensation or otherwise howsoever is admissible. Upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer but shall nevertheless use constantly his best endeavor to prevent or make good the delay and shall do all that may reasonably be required to the satisfaction of the Engineer to proceed with the work.

The Contractor, upon happening of any such event shall immediately present the case. The request for extension of time shall be submitted by the Contractor in writing and based on the merit the case shall be considered.

The contractor shall not be eligible for any time extension on account of delay in procurement of materials.



Annexure- Tech-I

(A) STATUS OF TOOLS & PLANTS :

S.No.	Name of	Quantity	Registration No	Documents	Present	Quantity
to						
deployed	Equipment	Owned	wherever	enclosed for	Location	be
			applicable	proof of		for this
	job			ownership		



(B) MONTHWISE T&P DEPLOYMENT PLAN

S.NO.	Description of T & P	Months					
		(indicate No. to be deployed in each month)					
		Ist	2 nd	3 rd	4 th	5 th	6 th and so on

1.

2.

3.



TECHNICAL SPECIFICATIONS (PART – B)

1 FREE ISSUE MATERIALS

Reinforcement steel may be supplied as free issue material by BHEL. All other material will be in the Scope of contractor. If Reinforcement steel will be provided by BHEL then Payment will be done with quantity in Item---17(B)- of BoQ. If reinforcement steel provided by contractor, Payment will be done with quantity in Item- -17 (A) -- of BoQ.

2 DISMANTLING OF EXISTING STRUCTURES

The contractor will have to carry out dismantling of buried/ semi buried structures, if any, encountered within the battery limit and disposal of it within plant boundary as directed by BHEL at no extra cost to BHEL.

3 STATUTORY REQUIREMENTS

Bidder shall comply with all the applicable statutory rules pertaining to Factories Act. Fire Safety Rules of Tariff Advisory Committee, Water Act for pollution control, Explosives Act, etc.

Provisions of safety, health and welfare according to Factories Act shall be complied with. These shall include provision of continuous walkway minimum 500 wide along the crane-girder level on both sides of building, comfortable approach to EOT crane cabin, railing, fire escape, locker room for workmen, pantry, toilets, rest room, etc.

Provisions for fire proof doors number of staircases, fire separation wall, lath plastering/encasing the structural members (in the fire prone areas), type of glazing etc. shall be made according to the recommendations of Tariff Advisory Committee.

Statutory clearances and norms of State Pollution Control Board shall be followed.

Bidder shall obtain approval of Civil/Architectural drawings from concerned authorities before taking up the construction work.

4 LAYOUT

Before starting the work, the Contractor shall carry out the setting out of foundation and structures and provide levels, with reference to general existing grid and bench mark. If the contractor uses the grid,, bench mark and reference pillar made by other Contractors, he shall coordinate with the Contractor and shall satisfy himself of the accuracy of the reference marks. If he is required to set out the foundation afresh, he shall do so independently with reference to the one existing grid and bench mark which has been followed by other agency at the instruction of the Engineer. In case any discrepancy be found. It shall be immediately brought to the notice of the engineer for any rectification/modification necessary. No complaint shall be entertained at a later stage. The Contractor shall accurately set out the position for holding down bolts and inserts.

If required, in the opinion of the Engineer, he shall construct and maintain pillars for Grid, references and bench marks and maintain them till the completion of the construction. He shall also help the Engineer with instruments, materials and labours for checking the detailed lay outs and levels. The Contractor shall be solely responsible for the correctness of the layout and levels, and Engineer's approval shall not be deemed to imply any warranty in carrying out the work correctly.



5 WORKMANSHIP

Workmanship shall be of the best possible quality and all work shall be carried out by skilled workmen except for those which normally require unskilled persons. Welding shall be done by experienced and certified welders in proper sequence using necessary jigs and fixtures. Fabrications shall be done in shops having proper equipment for accurate edge planning and milling of column shall ends, base late surfaces etc. and shaping and dimensioning of anchor bolt assembly, inserts and other misc. items. In addition to the requirement specified above, if the bye-laws of the local Govt., Municipal or other authorities require the employment of licensed or registered workmen for various traders, the contactor shall arrange to have the work done by such registered or licensed personnel. In case of manufactured materials, the Contractor shall have, with no additional cost the owner, the services of the supervisors of the manufacturers to achieve that the work is being done according to the manufacturer's specifications.

6 TEMPORARY WORK

All scaffoldings, staging, temporary bracing and other necessary temporary work required for proper execution of the Contract shall be provided by the Contractor at his own cost and inclusive of all materials, labour, supervision and other facilities.

The layout and details of such Temporary work shall have the prior approval of the Engineer as agreed, but the Contractor shall be responsible for proper strength and safety of the same. All Temporary work shall be so constructed as not to interfere with any permanent work or with the work by other agencies. If it is necessary to remove any of the temporary work at any time to facilitate execution of the work or with the work of other agencies, such removal and re-erection, if required, shall be carried out by the Contactor at the discretion of the Engineer without any delay and any extra cost on this account shall be borne by the Contractor.

7 INTERFACE WITH STRUCTURES UNDER OTHER'S SCOPE

- In cases of interface e.g. structures under other's scope of supply being supported on structures under scope of this contractor, the same will be discussed and suitably addressed.
- Modification in layout of foundation/structure during detail engineering stage may be necessary to avoid fouling with those under other's scope. Necessary changes on this account will be made without any extra cost to Owner.
- Necessary engineering is to be done and provisions are to be kept accordingly by the Contractor to construct foundations/underground structures, etc. without disturbing/endangering the constructions done under the scope of other contracts.

8 INSPECTION, TESTING AND QUALITY CONTROL FOR CIVIL WORKS

Sampling and testing for major items of civil works viz earthwork, concreting, structural steel work (including welding) etc. shall be carried out in accordance with the requirements of this specification and field quality plan (FQP).

The bidder shall submit for BHEL's approval a detailed field quality assurance programme for civil works before starting of the construction work. This shall include frequency of sampling and testing nature/type of test, method of test, setting of a testing laboratory, arrangement of testing apparatus/equipment, deployment of qualified/experienced manpower, preparation of format for record, Field Quality Plan, etc. Tests shall be done in



the field and/or at a laboratory approved by the Engineer and the Bidder shall submit to the Engineer, the test results in triplicate. In addition, the bidder shall furnish the original test certificate from the manufacturers of various materials to be used in the construction.

If any work found to be of inferior quality or sub-standard, the same shall be dismantled and shall be redone as per approved quality or relevant standard. BHEL reserve the rights to reject the work of inferior quality. All expenses on account of dismantling and rework shall be borne by contractor.

Contractor shall arrange for conducting the initial and field CBR test for the road construction as per latest IRC guidelines. The contractor's finally accepted rates shall include cost of such field tests with standard equipment's and IMTEs

9 CONSTRUCTION / ERECTION METHODOLOGY

- Construction excavation activities shall be fully mechanized from the start of the work.
- All excavation and backfilling work shall be done using excavators, loaders dumpers, dozers, poclains, excavator mounted rock breakers, rollers, sprinklers, water tankers, etc. Manual excavation can be done only on isolated place with specific approval of engineer.
- For concreting, weigh batching plants, transit mixers, concrete pumps, hoists, etc. shall be used.
- All fabrication and erection activities of structural steel shall be carried out using automatic submerged arc welding machines, cutting machine, gantry cranes, crawler / wheel mounted heavy cranes and other equipment's like heavy plate bending machines, shearing machines, lathe, milling machines etc. Use of derricks shall not be permitted.
- All handling of materials shall be with cranes. Heavy trailers shall be used for transportation.
- Mechanized modular units of scaffolding and shuttering shall be used.
- Grouting shall be carried out using hydraulically controlled grouting equipment.
- All finishing items shall be installed using appropriate modern mechanical tools.
- Manual punching etc. shall not be permitted.
- Heavy duty hoist for lifting of construction materials shall be deployed.
- Compressors for cleaning of foundations and other surfaces shall be used.
- Field laboratory shall be provided with all modern equipment for survey, testing of aggregates, concrete, bricks, cement etc.
- All persons working at site shall be provided with necessary safety equipment and all safety aspects shall be duly considered for each construction/erection activity. Moreover, only the persons who are trained in the respective trade shall be employed for executing that particular work.

10 Specification for material for construction:

10.1 Cement

The cement to be used for the Works shall be Portland Pozzolana Cement (fly ash based) conforming to IS: 1489 (Part 1)

10.2 Coarse Aggregate



Aggregates for use in concrete (other than light-weight concrete) shall comply with the requirements of IS 383. As far as possible preference shall be given to natural aggregates.

The maximum quantities of deleterious materials in the coarse aggregate shall not exceed the limits indicated in the IS 383 when tested as per IS 2386 Part-I & Part-II "Method of Tests for Aggregate for Concrete".

Once a specific source of supply of coarse aggregate is accepted, the source shall not be changed without prior approval of the Engineer. If quality of any other source is good then it can be accepted after approval of the Engineer-in-charge.

Coarse aggregate to available sizes shall be stored at site as separate stacks over clean and well maintained hard floor and areas not liable to flooding. Alternatively, they will be stored in bins.

Contamination with foreign matters and earth during storage and while heaping the materials shall be avoided. It shall be kept in layers not exceeding 1.2m. in height to prevent coning or segregation.

Each type and grading of aggregate shall be stored separately in bins, in such a manner that mixing of the various size particles does not occur and shall be sloped sufficiently to ensure adequate drainage of surplus water.

Sufficient quantities of each type of aggregate shall be maintained on site at all times to ensure continuity of work.

Coarse aggregate, which is not clean, shall be washed with clear fresh water before use in the job. Screening should be done, if considered necessary by the Engineer, without extra cost.

10.3 Fine Aggregate

Fine aggregate for different end uses (other than light-weight concrete) shall conform to the following standards:

- | | | |
|----|-------------------------|--|
| a. | For structural concrete | IS: 383 (between Grading Zones I & II) |
| b. | For mortar & grout | IS 2116 |
| c. | For plastering | IS 1542 (Class A Grading) |

Fine aggregate shall consist of natural sands or machine crushed rock/gravel. It shall be clean, sharp, hard, strong and durable and free from dust, vegetable substances, adherent coating, clay, loam, alkali, organic matter, mica, soluble sulphate, gypsum or any other deleterious substances which can be injurious to the setting qualities / strength / durability of concrete. The use of sea sand is prohibited.

10.4 Water

Water for construction shall be provided by BHEL on chargeable basis.

10.5 Steel Reinforcement



Steel reinforcing bars shall conform to the following standards:

Mild steel and medium tensile steel bars	IS 432 (Part I)
High strength deformed steel bars	IS 1786
Hard drawn steel wire fabric	IS 1566
Structural steel, Grade A	IS 2062

Binding wire shall conform to IS 280 and shall be soft drawn mild steel wire of size not less than 1.5 mm. in dia. (16 g.) soft annealed/galvanized steel wire.

All reinforcement shall be free from loose mill scales, loose rust and coats of paints, oil, mud or any other substances, which may destroy or reduce bond.

All reinforcement for the Works shall be arranged by contractor as per requirement.

Storage of materials shall be as described in IS 4082.

11.0 Specification for Workmanship

11.1. GENERAL

In case of omissions or discrepancies, the specifications mentioned in IS 456-2000 shall be final. Surplus of cast concrete and completed plaster shall be marked with the completion dates.

STANDARD

In all cases the work shall be carried out in accordance with the latest Indian Standard Specifications and the best engineering practice. In the absence of such specifications, work shall be executed in accordance with any other relevant standards issued elsewhere as approved by the Engineer or as per the instructions and directions of the Engineer.

CONSTRUCTIONAL PLANT

The CONTRACTOR shall be responsible for the supply, use and maintenance of all Constructional Plant and Equipment so as to ensure smooth and efficient working of the job. The Engineer shall have access to the Plant at all times. In case of total/partial break down of plant, stand-by/alternative arrangements be made available.

WORKMEN AND STAFF

The CONTRACTOR shall ensure that he employs only capable and experienced labour force, foremen, other tradesmen and supervisory staff on the job capable of handling the types of work they are required to handle in a workman-like and efficient manner to the satisfaction of the Engineer. He shall also ensure that his Sub-Contractors or nominated Sub-Contractors also employ all workmen and supervisory staff capable of delivering work of high standard.

For all concrete work, a fully qualified and experienced quality control engineer shall be employed by the CONTRACTOR and he shall be available on Site at all times when concreting operations are in



progress. Operators for mixers, mechanical vibrators and personnel in-charge of placing of concrete shall be fully trained and experienced for their class of work.

DEFINITIONS

Engineer-in-charge: PMO/Owner-designated engineer who is in charge of the site and its authorized representative(s).

Approved/Approval: Approval by the Engineer-in-charge.

CONCRETE – PLAIN AND REINFORCED

GRADES OF CONCRETE

Various grades of concrete shall be as per IS 456-2000 with specified characteristic compressive strength against these grades in accordance with Table 2 in the said IS. In the grade designation, letter M refers to the mix and the number to the specified characteristic compressive strength of 15-cm. cube at 28 days expressed in N/mm². The characteristic strength is defined as the strength of material below which not more than 5 percent of the test results are expected to fail.

The mix shall be designed to produce the grade of concrete having the required workability and characteristic strength not less than appropriate values given in Table 2 of IS 456:2000. The target mean strength of concrete mix should be equal to the characteristic strength plus 1.65 times the standard deviation.

12 EXPANSION JOINTS

Expansion joints in the watertight structures shall always be provided with water-stop for the entire length of joints or as specified. The work shall be carried out in strict accordance with the manufacturer's instructions.

13 CONSTRUCTION KEYS AND JOINTS

Concrete shall be placed without interruption until completion of the part of the work between predetermined constructions as specified hereinafter. Time lapse between the pouring of adjoining units shall be as specified on the drawings or as directed by Engineer.

If stopping of concreting becomes unavoidable anywhere, a properly formed construction joints shall be made where the work is stopped. Joints shall be either vertical or horizontal, unless shown otherwise on drawings. In case of an inclined or curved member, the joint shall be at right angles to the axis of the member. Vertical joints in walls shall be kept to a minimum. Vertical joints shall be formed against a stop board, horizontal joints shall be level and wherever possible, arranged so that the joint lines coincide with the architectural features of the finished work. Battens shall be nailed to the formwork to ensure a horizontal line and if directed shall also be used to form a grooved joint. For tank walls and similar work joints shall be formed as per IS 3370. Concrete that is in the process of setting shall not be disturbed or shaken by traffic either on the concrete itself or upon the shuttering. Horizontal and vertical construction joints and shear keys shall be located and shall conform in detail to the requirements of the plans unless otherwise directed by Engineer. Where not described, the joint shall be in accordance with the following:



Column Joint: In a column, the joints shall be formed 75mm below lowest of soffit of the beams including haunches if any. In flat slab construction, the joint shall be 75 mm. below the soffit of column capital. At least 2 hours shall elapse after depositing concrete in columns, piers or walls, before depositing in beams, girders or slabs supported thereon.

Beam and Slab Joints: Concrete in a beam shall be placed throughout without a joint but if the provision of a joint is unavoidable the joint shall be vertical and at the centre or within the middle third of the span unless otherwise shown on drawings. Where a beam intersects a girder, the joints in the girder shall be offset a distance equal to twice the width of the beam and additional reinforcement provided for shear. The joints shall be vertical throughout the full thickness of the concrete member. A joint in a slab shall be vertical and parallel to the principal reinforcement. Where it is unavoidably at right angles to the principal reinforcement, the joint shall be vertical and at the middle of the span.

Joints in Liquid Retaining Structures: Vertical construction joints in watertight construction will not be permitted unless indicated on the drawings. Where a horizontal construction joint is required to resist water pressure, special care shall be taken in all phases of its construction to ensure maximum water tightness.

Where the work has to be resumed on a surface which has hardened, any skin or laitance shall be removed and the surface roughened by hammering with an approved power-operated "bush" hammer followed by wire brushing to remove all loose practices. When using this

procedure, great care shall be taken to avoid breaking of the arises of the joint face and stunning the stones. The surface is then thoroughly wetted. Fresh concrete should thoroughly be vibrated near the construction joint so that mortar from the new concrete flows between large aggregates and develop proper bond with old concrete. Where high shear resistance is required at the construction joints, shear key may be provided. Sprayed curing membranes and release agents should be thoroughly removed from joint surfaces.

Where the concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire on bristle brushes, care being taken to avoid dislodgment of particles of aggregate. The prepared surface should be in a clean saturated surface dry condition when fresh concrete is placed, against it. Fresh concrete should be thoroughly vibrated near construction joint so that mortar from new concrete flows between large aggregates and develop proper bond with old concrete.

I. SAMPLING AND TESTING OF CONCRETE

For preliminary tests, test specimen shall be prepared with at least two different water-cement ratios for each class of concrete consistent with the workability required for the nature of the work. The materials and proportions used in making preliminary tests shall be similar in all respects to those to be actually employed in the works. All the cubes shall be made, cured and tested in accordance with IS 516.

Facilities required for sampling materials and concrete in the field, if Engineer so desires, shall be provided by CONTRACTOR at no extra cost. The following equipment with operator shall be made available at Engineer's request (all must be in serviceable conditions):



Concrete cube-testing machine suitable for 15 cm. cubes of 100 Tonnes capacity with providing calibration ring	1 No.
Cast Iron cube moulds 15 cm. Size	18 Nos. (min.)
Slump cone complete with temping rod	1 Set
Laboratory balance to weight upto 5 Kg. with sensitivity of 10 gm.	1 No.
1.5 sieves for coarse & fine aggregates	1 Set
A set of measures from 5 l to 0.1 l	1 Set
Laboratory balance of 2 Kg. capacity and of sensitivity of 1 gm.	1 No.

Note: Arrangement can be made by CONTRACTOR to have the cubes tested in an approved laboratory in lieu of a testing machine at site at his expense, with the prior consent of the Engineer.

Three test specimens shall be made from each sample for testing at 28 days. Additional samples shall be taken for determining the strength of concrete at 7 days or at the time of striking the formwork, or to determine the duration of curing or to check the testing error. Additional samples may also be required for testing samples cured by accelerated methods as described in IS 9103. The specimen shall be tested as described in IS 516.

For works test, samples from fresh concrete shall be taken as per IS 1199 and cubes shall be made, cured and tested in accordance with IS 516 unless specified or instructed otherwise by the Engineer. Minimum frequency for sampling of concrete of each grade shall be in accordance with the following:

Quality of concrete in the Work, m ³	Number of samples
1 – 5	1
6-15	2
16-30	3
31-50	4
51 and above	4 plus one additional sample for each additional 50 m ³ as part thereof.

Note: At least one sample shall be taken from each shift when concrete is produced at continuous production unit, such as ready-mixed concrete plant, frequency of sampling subjected to the approval of Engineer-in-charge.

The acceptance criteria of concrete tests shall be as per Clause 16.1, 16.2, 16.3, 16.4, 16.5 & 16.6 of IS 456-2000.



ii. CONCRETE BELOW SPECIFIED STRENGTH

Should the concrete tests fail to meet the minimum specified strength requirements for the respective grades of concrete, the Engineer may take one of the following decisions.

Instruct the CONTRACTOR to carry out such additional tests (e.g. core test, load-test etc.) and/or remedial measures to ensure the soundness of the structure at the CONTRACTOR's expense.

The Consultant may accept the work provided it meets the relevant acceptance criteria as stipulated in IS 456-2000. Any decision to accept the work shall be entirely at the discretion of the Engineer who may make a reduction in the rate of the appropriate item.

The work will be rejected and any consequential action as needed shall be taken at the CONTRACTOR's expenses including cutting out and replacing a part or whole of the work.

iii. REPAIR AND REPLACEMENT OF UNSATISFACTORY CONCRETE

Immediately the shuttering is removed, the surface of concrete shall be very carefully gone over and all defective areas called to the attention of Engineer who may permit patching of the defective areas or also reject the concrete unit either partially or in its entirety. **Rejected concrete shall be removed and replaced by CONTRACTOR at NO additional expense to Owner.** Holes left from belts, etc., shall be filled up and made good with mortar composed of one part of cement to one and half parts of sand passing 2.36 mm. IS sieve after removing loose stones adhering to the concrete. Mortar filling shall be struck off flush at the face of the concrete. Concrete surfaces shall be finished as described under the particular items of work.

Superficial honey compound surfaces and rough patches shall be similarly made good immediately after removal of shuttering, in the presence of Engineer and superficial water and air holes shall be filled in. The mortar shall be well worked into the surface with a wooden float. Excess water shall be avoided. Unless instructed otherwise by Engineer, the surface of the exposed concrete placed against shuttering shall be rubbed down immediately on removal of shuttering to remove fine or other irregularities, care being taken to avoid damaging the surface. Surface irregularities shall be removed by grinding.

Use of Epoxy: The use of epoxy for bonding fresh concrete used for repairs will be permitted upon written approval of Engineer. Epoxies shall be applied in strict accordance with the instructions of the manufacturer.

Method of Repair: Small size holes having surface dimensions about equal to the depth of the hole, holes left after removal of from bolts, grout insert holes and slots cut for repair of cracks shall be repaired as follows. The holes to be patched shall be roughened and thoroughly soaked with clean water until absorption stops.

A 5 mm. thick layer of grout of equal parts of cement and sand shall be well brushed into the surface to be patched, followed immediately by the patching concrete which shall be well consolidated with a wooden float and left slightly proud of the surrounding surface. The concrete patch shall be built up in 10 mm. thick layers. After an hour or more, depending upon weather conditions, it shall be worked off flush with a wooden flat and a smooth finish obtained by wiping with hessian, a steel trowel shall be used for this purpose. The mix for patching shall be of the same materials and in the



same proportions as that used in the concrete being repaired, although some reduction in the concrete being repaired, although some reduction in the maximum size of the coarse aggregates may be necessary and the mix shall be kept as dry as possible

Mortar filling by air pressure (guniting) shall be used for repair of areas too large and / or too shallow for patching with mortar. Patched surfaces shall be given a final treatment to match the colour and texture of the surrounding concrete. White cement shall be substituted for ordinary cement, if so directed by Engineer, to match the shade of the patch with the original concrete.

Curing of Patched Work: The patched area shall be covered immediately with an approved water retaining, water saturated material such as gunny bags which shall be kept continuously wet and protected against sun and wind for a period of 24 hours. Thereafter, the patched area shall be kept wet continuously by a fine spray or sprinkling for not less than 10 days.

Approval by Engineer: All materials, procedures and operations used in the repair of concrete and also the finished repair work shall be subject to the approval of Engineer. All fillings shall be tightly bonded to the concrete and shall be sound, free from cracks after the fillings have been cured and dried.

iv. Finishing

This specification is intended to cover the treatment of concrete surfaces of all structures. Areas requiring special finish not covered by this specification shall be clearly indicated on the drawings and special specifications shall be furnished.

Finish for Formed Surfaces: The type of finish for formed concrete surfaces shall be as follows, unless otherwise specified by the Engineer:

For surface against which backfill or concrete is to be placed, no treatment is required except repair of defective areas.

For surfaces below grade, which will receive, waterproofing treatment the concrete shall be free of surface irregularities, which would interfere with proper application of the waterproofing material, which is specified for use.

Unless specified, surfaces which will be exposed when the structure is in service shall receive no special finish, except repair of damaged or defective concrete, removal of fins and abrupt irregularities, filling of holes left by form ties and rods and clean up of loose or adhering debris.

Surfaces which will be exposed to the weather and which would normally be level, shall be sloped for drainage. Unless the drawing specifies a horizontal surface or shows the slope required, the tops of narrow surface such as stair treads, walls, curbs and parapets shall be sloped across the width approximately 1 in 30. Broader surface such as walkways, roads, parking areas and platforms shall be sloped about 1 in 50. Surfaces that will be covered by backfill or concrete, sub-floors to be covered with concrete topping, terrazzo or quarry tile and similar surfaces shall be smoothing screeded and levelled to produce even surfaces. Surface irregularities shall not exceed 6 mm. Surfaces which will not be covered by backfill, concrete or tiles toppings such as outside decks, floors of galleries and sumps, parapets, gutters, side walks, floors and slabs, shall be consolidated, screeded and floated. Excess water and laitance shall be removed before final finishing. Floating may be done with hand or



power tools and started as soon as the screeded surface has attained and stiffness to permit finishing operations and these shall be the minimum required to produce a surface uniform in texture and free from screed marks or other imperfections. Joints and edges shall be tooled as called for on the drawings or as directed by the Engineer.

Standard Finish for exposed concrete: Exposed concrete shall mean any concrete, other than floors or slabs, exposed to view upon completion of the job. Unless otherwise specified on the drawings, the standard finish for exposed concrete shall be a smooth finish. A smooth finish shall be obtained with the use of lined or plywood forms having smooth and even surfaces and edges. Panels and form linings shall be of uniform size and be as large as practicable and installed with closed joints. Upon removal of forms the joint marks shall be smoothed off and all blemishes, projections etc. removed leaving the surfaces reasonably smooth and unmarred.

Integral Cement Concrete Finish: When specified on the drawings an integral cement concrete finish or specified thickness for floors and slabs shall be applied either monolithic or bonded, as specified on the drawings, as per IS 2571. The surface shall be compacted and then floated with a wood float or power floating machine. The surface shall be tested with a straight edge and any high and low spots eliminated. Floating or trowelling of the finish shall be permitted only after all surface water has evaporated. Dry cement or a mixture of dry cement and sand shall not be sprinkled directly on the surface of the cement finish to absorb moisture or to stiffen the mix.

Protection: All concrete shall be protected against damage until final acceptance by Engineer/Owner.

b. FORMWORK

i. GENERAL

Formwork (or shuttering) comprises of all forms and moulds made up of planks and sheeting, etc., shores, bracings and struts, ties, anchors and hangers, steel rods, bolts and allied inserts, uprights, walling, wedges and all other temporary supports for concrete work during the process of concreting and setting.

ii. MATERIAL

Formwork may be of timber, plywood, steel or other metal, plastic or concrete or any suitable material. For special finishes, the formwork may be lined with plywood, steel sheets, oil tempered hard board, etc. Dented steel plates will not be allowed and shall not be used at all.

Timber shall be easily workable without splitting and shall not warp when exposed to sun or rain or wetted during concreting. Plywood shall be 12 mm. thick complying with IS 4990 and steel shall be 3 mm. black sheets suitably stiffened with angles or appropriate equivalent.

Sliding forms and slip forms may be used for special purpose construction with the approval of the Engineer.

iii. DESIGN

Formwork shall be adequately designed to cater to all the vertical (dead load of wet concrete, superimposed live loads during working, materials, equipment, etc.) and lateral loads, without causing displacement, deflection or movement of any kind. The CONTRACTOR shall be entirely



responsible for the design and stability of formwork regardless of whether he is instructed to furnish the design calculation, drawings and other particulars of his proposal or not, and regardless of whether his proposal has been approved by the Consultant or not. All the expenses arising out of defective shuttering resulting in dismantling/redoin the work, etc., shall be made to the Contractor's account. For details regarding design, detailing, etc., reference may be made to IS 14687.

iv. ERECTION OF FORMWORK

Forms shall be true to shape, lines, levels and dimensions of the concrete work as shown on the drawings and shall be rigidly constructed using adequate number of props, struts, ties, braces, etc. Where props rest on natural or filled-up ground, the soil shall be thoroughly compacted to avoid any settlement. False-work shall be so constructed that vertical adjustments can be made to compensate the settlements. Wedges may be used at the top or bottom of timber shores, but not at both ends to facilitate vertical adjustments or dismantling of the formwork. No bamboo and wooden bullies shall be permitted to be used for props or cross beams.

Proper precautions shall be taken to see that all joints in the formwork are watertight to prevent escape of slurry, by using masking tapes.

Connections in formwork shall be constructed to permit easy removal of the shuttering and shall be adequately secured by screws, bolts, clamps, wire, etc. so as to be strong enough to retain the correct shape during consolidation.

Faces in contact with concrete shall be free from adhering ground, projecting nails, splits or any defects so that when stripped, any formation of blemishes is avoided. All formwork shall be carefully cleaned and thoroughly wetted or treated with an approved composition, care being taken to keep all reinforcement away from contact from such composition.

Unless specifically allowed in writing, wire ties passing through the walls and through bolts are not permitted. For fixing of formwork, alternative arrangements such as coil nuts shall be adopted at the CONTRACTOR's cost.

Plywood shall be used for all concrete surfaces; where called for. Sawn and wrought timber may not be used unless allowed or approved by EIC. Inside faces of forms for concrete surfaces which are to be rubbed finished shall be planed to remove irregularities or unevenness in the face. Formwork with linings will be permitted.

All new and used from timber shall be maintained in good condition with respect to shape, strength, rigidity, water tightness.

Excessive construction camber to compensate for shrinkage, settlement, etc., that may impair the structural strength of members will not be permitted.

Forms for substructure concrete may be omitted when, in the opinion of Engineer, the open excavation is firm enough to act as the form. Such excavations shall be slightly larger than required by the drawings to compensate for irregularities in the excavation and to ensure the design requirements.



Forms shall be so designed and constructed that their removal will not damage the concrete. Face formwork shall provide true vertical and horizontal joints, conform to the architectural features of the structure as to location of joints and be as directed by Engineer.

Where exposed smooth or rubbed concrete finishes are required, the forms shall be constructed with special care so that the resulting concrete surface requires a minimum finish.

v. BRACINGS, STRUTS AND PROPS

Shuttering shall be braced, strutted, propped and so supported that it shall not deform underweight and pressure of the concrete and also due to the movement of men and other materials. Bamboo shall not be used as props or cross bearers.

The shuttering for beams and slabs shall be so erected that the shuttering on the sides of the beams and under the soffit of slabs can be removed without disturbing the beam bottoms. Re-propping of beams shall not be done except when props have to be reinstated to take care of construction loads anticipated to be in excess of the design load. Vertical props shall be supported on wedges, or other measures shall be taken whereby the props can be gently lowered vertically while striking the shuttering.

vi. MOULD OIL

Care shall be taken to see that the faces of formwork coming in contact with concrete are perfectly cleaned and two coats of mould oil or any other approved material applied before fixing reinforcement and placing concrete. Such coating shall be insoluble in water, non-staining and not injurious to the concrete. It shall not become flaky or be removed by rain or wash water. Reinforcement and/or other items to be cast in the concrete shall not be placed until coating of the forms is complete. Adjoining concrete surfaces shall also be protected against contamination from the coating material. Use of form oil will not be permitted on the surfaces which require painting.

vii. CHAMFERS AND FILLETS

All concrete and angles exposed in the finished structure shall be formed with moldings to form chamfers or fillets on the finished concrete. The standard dimensions of chamfers and fillets, unless otherwise specified, shall be 20 mm. x 20 mm. Care shall be exercised to ensure accurate moldings. The diagonal face of the molding shall be planed or surfaced to the same texture as the forms to which it is **attached**.

viii. VERTICAL CONSTRUCTION JOINT CHAMFERED

Vertical construction joints on faces which will be exposed at the completion of the work shall be chamfered as above except where not permitted by Engineer for structural or hydraulic reasons.

ix. WALL TIES

Wire ties passing through the walls shall not be allowed. In their place, bolts passing through sleeves shall be used.



x. REUSE OF FORMS

Before reuse, all forms shall be thoroughly scraped, cleaned, nails removed, holes that may leak suitably plugged and joints examined and when necessary, repaired and the inside retracted to prevent adhesion, to the satisfaction of Engineer. Warped timber shall be resized. Number of repetitions will be decided on the quality of plywood used after successive repetitions.

xi. REMOVAL OF FORMS

CONTRACTOR shall record on the drawing or a special register, the date upon which the concrete is placed in each part of the work and the date on which the shuttering is removed there from.

In no circumstance shall forms be struck until the concrete reaches a strength of at least twice the stress due to self-weight and any construction/erection loading to which the concrete may be subjected at the time of striking formwork.

In normal circumstances, generally where ambient temperatures are above 15 Degree C and ordinary Portland cement is used, forms may be struck after expiry of the following periods:

Type of formwork		Ordinary Portland Cement Concrete
a)	Vertical formwork to columns, walls, beams	16-24 hrs
b)	Soffit formwork to slabs (Props to be prefixed immediately after removal of formwork)	3 days
c)	Soffit formwork to beams (Props to be prefixed immediately after removal of formwork)	7 days
d)	Props to slabs 1) Spanning up to 4.5 m 2) Spanning over 4.5 m	7 days 14 days
e)	Props to beams and arches: 1) Spanning up to 6 m 2) Spanning over 6 m	14 days 21 days

For other cements and lower temperature, the stripping time as above may be suitably modified with prior approval of the Engineer-in-charge.



XII. REMOVAL

No formwork shall be removed or otherwise allowed to move until concrete attains sufficient strength against own weight and external loads as per stipulations of clause 11.3 of IS 456: 2000.

2.14.2. The stripping of formwork shall be done without shock or vibration so that no damage is caused to cast concrete. Any damage resulting from premature removal of shutters or from any other cause whatsoever shall be made good by the CONTRACTOR at his own expense as directed by the Engineer.

XIII. SPECIAL PROVISION

Where exposed smooth or rubbed concrete finishes are required, the forms shall be constructed with special care so that the resulting concrete surfaces will required a minimum finish.

All corners and angles exposed in the finished structure shall be formed with mouldings to form chamfers or fillets on the finished concrete. The standard dimensions of chamfers and fillets, unless otherwise specified, shall be 20 mm. x 20 mm. Care shall be exercised to ensure accurate mouldings. The diagonal face of the molding shall be planed or surfaced to the same texture as the forms to which it is attached. Vertical construction joints on faces which will be exposed at the completion of the work shall be chamfered as above except where not permitted by Engineer for structural or hydraulic reasons.

Wherever the concreting of narrow members is required to be carried out within shutters of considerable depth, temporary openings in the sides of the shutters shall, if so directed by the Engineer, be provided to facilitate the pouring and consolidation of the concrete. Small temporary openings shall be provided as necessary at the bottom of shutters of columns, walls and deep beams to permit the expulsion of rubbish, etc.

c. REINFORCEMENT

i. FABRICATION

Bar bending schedule shall be prepared by the CONTRACTOR and approved by consultants/ Engineer-in-charge before commencement of work. Bending of reinforcement shall be in accordance with IS 2502-1963 and as required by the Drawings and sketches and any written instructions in this connection, bars shall not be bent or straightened in a manner injurious to the materials. All bars shall be bent cold except for bars over 25 mm. dia. which may be bent hot if specifically approved by the Engineer. Bars which depend on their strength on cold working shall not be bent hot. Bars bent hot shall not be heated beyond cherry red colour (not exceeding 645 Degree C) and after bending shall be allowed to cool slowly without quenching.

No reinforcement bar shall be bent when in position without the Engineer's approval, whether or not it is partly embedded in hard concrete.

Spiral reinforcement shall have 1 ½ finishing turns at both top and bottom unless shown otherwise. Where reinforcement bars are bent aside at construction joints and afterwards bent back into their original position, care shall be taken to ensure that at no time is the radius of the bend less than 4 bar diameters for plain M.S. bars and 6 bar diameters for deformed bars. Care shall also be taken when bending back bars, to ensure that concrete around the bar is not damaged.

Cut ends of galvanized rods shall be given a protective coat of an approved zinc paint immediately after cutting.



ii. BINDING

All bars shall be bound tightly together where they cross, with black annealed steel binding wire. The free ends of the binding wire shall be bent inwards. The binding wire shall satisfy IS 280.

iii. PLACING AND FIXING

The reinforcement as per the Drawings and instructions shall be placed, fixed and maintained in the forms within a tolerance of ± 10 mm. for effective depth 200 mm. or less and ± 15 mm. for effective depth over 200 mm. during the placing and compaction of concrete.

Precast concrete blocks, MS chairs and spacers as required shall be provided to maintain the steel in position. In fair faces of concrete temporary spacers only shall be used and withdrawn as compaction of concrete proceeds.

Tack welding of crossing bars shall be done without any extra cost any only if permitted by the Engineer.

iv. COVER

Spacing of reinforcement shall be governed by Clause 25.3 and cover to reinforcement by Clause 25.4 of IS 456. Increased covers, if shown on the drawings or instructed by the Engineer, shall be provided at the respective locations. Cover to reinforcement shall be as per IS 456. Fully cured cement mortar blocks of 1:2 max shall be used as cover blocks where no grade of concrete is specified and where grade of concrete as specified it shall be as per proportion of cement and sand in the approved mix of concrete. Any other cover blocks shall be used only on approval by the Engineer. However, use of pebbles or stones shall not be permitted. Where the bars cross, the outer one shall have the minimum cover. Minimum curing of cover blocks shall be 14 days.

v. SPLICING AND LAPPING

Where splicing and / or overlapping in reinforcement are required, the bars shall be provided with such splices or overlaps as are shown on the drawings or directed by the Engineer. Laps shall be staggered only as approved by the Engineer.

vi. WELDED LAPS

Butt welding of reinforcing steel bars shall be used only when specified or shown on the drawings or expressly permitted in writing by the Engineer. When butt-welding is carried out, the ends of the bars shall be prepared with single 45 Degree C and a backing plate shall be used. The minimum root face will be one quarter of the bar diameter. Welding shall be done in accordance with the recommendations of IS 2751 and 816. Electrodes shall comply with IS 814. The maximum size of electrodes shall be based on following table:

Diameters of Bars in mm.	Diameters of Bars in inches	Maximum size of Electrodes	Amperage corresponding to maximum size of mm. Electrodes
12 to 25	½" to 1"	10 3.25 mm. (0.128)	}



Diameters of Bars in mm.	Diameters of Bars in inches	Maximum size of Electrodes	Amperage corresponding to maximum size of mm. Electrodes
25 to 32	1" to 1 ¼"	8 4.06 mm. (0.160)	} As specified by the manufacture of Electrodes
	Double bevel	10 3.25 mm. (0.128)	
32 to 50	1 ¼" to 2"	10 3.25 mm. (0.160)	
	Double bevel	8 4.06 mm. (0.160)	
25 to 50	1" to 2"	6 4.06 mm. (0.160)	}
		6 4.88 mm. (0.192)	}

Before doing the welding of bars at site, the CONTRACTOR shall make minimum 3 No. joints and get them tested in an approved laboratory (including X-ray testing of welds if necessary). Only on these tests proving satisfactory, the CONTRACTOR would be permitted to weld at site.

The following precautions shall be taken while providing welded laps:

If the cold twisted deformed bar has an untwisted end at the lapping point, the said portion shall be cut off for a minimum length of 10 cm. from such end prior to welding. Bars shall be aligned on a proper axis to avoid crookedness after welding. The joints to be welded shall be rust free. Weld slag shall be chipped off and removed by brush.

14 FIELD LABORATORY FACILITIES AT SITE FOR MATERIAL TESTING:

Contractor shall provide field testing facilities at site laboratory built by the contractor as per list of apparatus at annexure-A-1.

15 MAKE OF BOUGHT OUT MATERIAL:

Contractor shall supply bought out items as per the list attached at annexure-A-2 of this section.



Annex-A-1

BIDDER SHALL PROVIDE MINIMUM FOLLOWING FACILITIES IN SITE IN THE FIELD LABORATORY FOR MATERIAL TESTING.

S.No	Description	S.No	Description
1	Balances	10	Burette Stand
2	Drier	11	Pipette
3	Thermometer	12	Wooden mallet
4	Hydrometer	13	Hair Brush
5	Hand Scoop	14	Wire Brush
6	Glass Breaker	15	Bucket
7	Measuring Cylinder	16	Test Tube
8	Desiccator	17	Working platform
9	Burette	18	Alcometer

Annex-A -2

INDICATIVE LIST OF APPROVED MAKE OF BOUGHT OUT MATERIAL TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

The following list may be read in conjunction with the relevant make/ makes of materials mentioned in the BOQ or elsewhere in this tender document.

S.NO	MATERIAL NAME	MAKE / QUERY
1	PPC Cement	ACC/UltraTech/Jaypee/Birla Samrat/ Ambhuja
2	COARSE SAND	BADA/KALPI /DUDHI
3	LOCAL SAND	GHAGHARA/ GANGA
4	STONE BALLAST FOR BASE CONCRETE	SHANKERGARH/ DALA/ JHANSI
5	STONE GRIT, 20MM, 12MM, 8MM FOR RCC WORK	JHANSI/ BHARATKROUP/ DALA
6	TMT Bar	Jindal/Tata/Sail/Apollo/Essar/Gallant/Kamdhenu
7	Floor Tile	Kajaria, Somany, Johnson, City Tile, Orient Bell