TENDER NOTICE FOR WORKS CONTRACT

Bharat Heavy Electricals Limited
Ramachandrapuram:: Hyderabad – 32

TENDER NOTICE

Name of the department: Maintenance & Services Division

Tender Notice No : **M&S/P&C/2015/16**
Date : 20.05.2015

1. Bharat Heavy Electricals Limited, a Government of India Public Sector undertaking having its Registered Office at Siri Fort, New Delhi. BHEL Ramachandrapuram, one of its manufacturing Units, invites sealed tenders in two part bid from eligible /Contractors, who fulfill qualification criteria as stipulated in NIT, for the work,
   "Electrical Works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-Station, R.C.Puram"
2. Sealed quotations in single cover consisting of two inner sealed covers (containing Technical bid as Part A and Price bid as Part B super scribing the Name of work, Part Number and Tender reference will be received at this office up **to 10.00 AM on or before 11.06.2015** at vendor complex, beside administrative building, BHEL Ramachandrapuram. Technical bid will be opened at 13.30 Hrs on the same date and further information if any, may be obtained from the office.
3. The tender documents are also available in the Web Site of BHEL www.bhel.com. Those who wish to download in the same may do so. While submitting the tender documents, a demand draft/cash paid at BHEL cash office towards cost of tender document should be enclosed. The tender documents downloaded from the website without demand draft for the specific value will be summarily rejected. Corrigendum if any will be published in BHEL web site only. The brief scope of the work and information is provided below:
4. The salient features of the tender documents are as follows :

i. Notice inviting Tender
ii. Instruction to Tenderer
iii. General terms and conditions
iv. Duties and Responsibilities of Contractor
v. Manpower
vi. Contract Work description
vii. Pro-forma for offering technical bid
viii. Special terms and conditions of Contract
ix. Price Bid Format
x. Declaration by Contractor
xi. Period of contract
xii. Failure to comply with contract

xiii. Payment to Contractor
xiv. Sub-contract
xv. Statutory requirement
xvi. Copy of agreement between BHEL & Contractor

5. A set of tender documents (non-transferable) may be purchased on any working day (Monday to Saturday) between 09:00 hrs. and 14:00 hrs. from **P&C Section of M&S** Dept., BHEL-HPEP, RC PURAM, HYDERABAD-32 by paying the prescribed Tender fee of Rs 500/- only in the form of cash in the Cash Counter of BHEL, /RC Puram or crossed Demand Draft in favor of "BHEL-RC PURAM, HYDERABAD-32".
6. In case, tender documents are requested by post, BHEL-HPEP shall not be responsible for any delay due to any reasons (including postal delay) either in receiving the Agency's request nor receipt of tender documents by the Agency.

(Signature & Designation of Official)

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1.0 NOTICE INVITING TENDER

i. Tender Number & date : M&S/P&C/2015/16
Date: 20/05/2015

Name of the Work: "**Electrical Works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-Station, R.C.Puram"**

ii. EMD : Rs. 1,50,000/-

iii. Approximate Estimated value of work : Rs.59.81 lacs

iv. Cost of tender documents : Rs. 500/-

v. Last date for sale of tender documents : 10/06/2015, 1400 Hrs

vi. Last date for receipt of tender (Mention date and time) : 11/06/2015 , 1000 Hrs

vii. Date, time and place of tender opening (Mention date, place and time) : 11/06/2015, 13:30 Hrs vendor complex, beside administrative building, BHEL Ramachandrapuram.

viii. Period of completion (Mention duration of the contract ex.2 months) : 2 months

ix. Maintenance period / Warranty : 6 months

2.0 PREQUALIFICATION REQUIREMENTS:

The following conditions have to be satisfied by the tenderer, with documentary proof to be enclosed with tender bid (Technical):

i. Average annual financial turnover during the last 3 years, ending 31st March of the previous financial year (should submit balance sheet & P&L account for last 3 years – **2011-12, 2012-13, 2013-14** , preferably certified by Charted Accountant), should be at least 30% of the estimated cost. Further, if the tenderer fails to submit the figure (s) for 3 years, non-submitted year will be considered as "0" (Zero) for averaging the turnover. In the 3 years turnover, previous year turnover is compulsory.

ii. Particulars of experience / credentials for the works executed of similar nature during not older than 7 years (Completion and experience certificate of the works to be enclosed) ending last day of month previous to the one in which applications are invited should be either of the following:

a. Three similar completed works each costing not less than the amount equal to 40% of the estimated cost.

OR

b. Two similar completed works each costing not less than the amount equal to 50% of the estimated cost.

OR

c. One similar completed work costing not less than the amount equal to 80% of the estimated cost.

Similar Work Means " **Electrical Works for 33 kV line erection / 33kV Bay expansion in Sub-Station**"

Note: Experience certificate issued by BHEL, RC Puram in case any work executed in BHEL, RC Puram for past three years. Any adverse remarks in the experience certificate will be a disqualification factor.

iii. "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 firm shall be rejected. The list of banned firms from BHEL is available on BHEL website www.bhel.com".
iv. Valid ESI Code Number and P.F. Code Number
v. It is required to furnish Service Tax registration certificate in respect of all works.
vi. PAN No. (In case not available, proof of having applied with acknowledgement from concerned authority).
vii. Valid "A" grade Electrical License issued by CEIG for 33 kV or above voltage grade.

2.1 INSTRUCTIONS TO TENDERER

2.1.1 Tender is a two part bid system. The tender documents consist of Part – A and Part - B as detailed below:

Part 'A': Techno-commercial Bid (*To be submitted in sealed cover enabling us to open on 11.06.2015*)
Part 'B': Price Bid to be submitted in sealed cover as per Tender conditions.

2.1.2 Part 'A' must be duly completed and super-scribed "Tender Enquiry No. **M&S/P&C/2015/16 dtd. 20.05.2015.** Part 'A' Techno-commercial Bid". The tenderer shall not indicate the price or rate in the PART-A: Techno-commercial bid. The tenderer shall expressly accept all the terms and conditions of the Tender. The tender which does not comply with the BHEL's Terms & Conditions may be rejected as Non-responsive/non-conforming and non-acceptable.

2.1.3 Part 'B' must be duly completed with reference to the tender conditions and put in a separate sealed envelope super-scribed "**Tender Enquiry No. M&S/P&C/2015/16 dtd. 20.05.2015 Part 'B' - Price Bid** ".

2.1.4 The Techno commercial Bid (Part - A) and general terms and conditions shall be attached to Techno-commercial offer with each page duly signed by the tenderer (at the bottom of each page) as a token of acceptance.

2.1.5 Part ‘B’ – the price Bid should not carry any conditions. Price / rate should be quoted in clear terms in the format given by BHEL.

2.1.6 Part 'B' Price bid will be opened only in respect of those tenderers who are qualified in Techno- Commercial Bid.

2.1.7 The tender forms both Part ‘A’ & ‘B’ duly filled in all respects shall be signed on each page by the tenderer. Any alteration, erasure or over-writing will render the tender invalid. Alteration neatly carried out and duly attested over with the full signature of the tenderer however is permitted.

2.1.8 The tenderer should submit the tender documents intact without detaching any page or pages.

2.1.9 The Name of the tenderer should be written or the contractor’s seal to be put on the sealed envelope.

2.1.10 Before making the offer, the tenderers are advised to carefully go through the terms and conditions, which form part of the Agreement.

2.1.11 All entries in the tender document should be in one Ink. Corrections, over writing, cuttings etc. are not permitted. All the columns in the tender form should be filled without leaving any column blank in any page of the tender. In case any of the columns is left blank, the tender would be rejected.

2.1.12 The price/rate should be quoted in figures as well as in words.

2.1.13 Each and every page of tender documents should be stamped & signed by the tenderer.

2.1.14 Tender documents consisting of Part 'A' & 'B' duly sealed in separate envelopes should be sealed in another envelope and should be deposited in the Vendor Complex, BHEL-RC Puram, Hyd-32 addressed to Senior Manager/Purchase, Co-ordn., BHEL, RC Puram, Hyderabad-32 so as to reach on or before **10:00 hrs. on 11/06/2015**. The tender documents may also be sent either by registered post / Speed Post / Courier so as to reach on or before the said date and time. Part 'A' of tender form i.e. Techno-commercial Bid will be opened on **at 13:30 hrs**. the same day in the presence of tenderers or their representatives who are present for the tender opening. Tenderers who qualify in the Techno-commercial Bid will be intimated to attend the tender opening of part 'B' - price bid at a date to be notified separately. Part 'B' i.e. price Bid will be opened at the specified date in the presence of the tenderers or their representative who are notified to attend the tender opening.

2.1.15 For any further details required, **Manager/ M&S/P&C**,BHEL, RC Puram, Hyderabad-32 may be contacted in person or through Telephone Nos. **+91-40-23184577/3599.**

2.1.16 BHEL reserves the right to assess the capacity and capability of the parties for pre-qualification. The company also reserves the right to accept or reject any or all the

tenders or any part thereof at any stage of process without assigning any reason whatsoever. The company has no obligation to accept the lowest tender. Offer of the Tenderer if prima-facie found not comparable with the quantum of work envisaged and the bid is a desperate effort to be L1, then the offer is liable to be rejected. BHEL's decision in this regard shall be final and binding. BHEL reserves the right to reject the tender of bidder, who committed default and having bad track record in execution of previous contracts in BHEL. For the purpose of this clause default and bad track record means violation of labour laws (such as non-payment of wages within time, non-payment of ESI,PF contribution , payment of bonus) and backing out from contract after reverse auction or after receipt of LOI / entering of agreement etc.,

2.1.17 PRICE BID - The tenderers are required to submit their quotation for all the items listed in the Price Bid format given along with the tender documents. The price should be quoted for each activity after careful study of the actual job requirement so that, in case the contract is awarded, contractor should not express any difficulty in execution of the contract.

2.1.18 The Minimum Wages as per statute or BHEL FAIR WAGES revised (whichever is higher) from time to time are payable. The tenderer would be required to pay allowances/incentives as decided and communicated by BHEL.

2.1.19 VALIDITY OF RATES**:** The rates quoted should be valid for 120 days initially from the date of opening of the Techno-Commercial bid.

2.1.20 The tenderer will be required to quote the rates against each item of work under each group (both in figures and words).

2.1.21 REVERSE AUCTION: BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non- acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit "online sealed bid" in the Reverse Auction. Non-submission of online sealed bid by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
Start price for Reverse Auction will be the estimate or L1 of on-line sealed bids, whichever is less.

2.1.22 DISCREPANCY IN WORDS & FIGURE QUOTED IN PRICE BIDS:

i. 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.

ii. 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

iii. 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 (i) and (ii) above.

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

2.1.23 Wherever it is quantity based work, including main work and sub-work, the tenderer should quote his rates against each item /work (main as well as sub-work/item).

2.1.24 In case of quantity based work contracts, the tenderer should quote the rates against each item keeping in view the prevailing applicable Minimum wages / BHEL Fair Wages whichever is higher, statutory payments and other payments if any and other obligations as per the statutory provisions and amendments thereto and also as directed by BHEL from time to time.

2.1.25 BHEL reserves the right to award the contract to one or more contractors simultaneously as deemed fit at the initial stage or during the contract period.

2.1.26 BHEL reserves the right to reject any bid, which is technically unacceptable and unworkable. Further, BHEL also reserves the right to reject any or all tenders without assigning any reasons thereof.

2.1.27 BHEL reserves the right to cancel the contract at the initial stage or during the contract period without assigning any reason to the tenderer.

2.1.28 Wherever prescribed formats are specified for the tenderers use, he shall use the same for making his Claims.

2.1.29 Tender document should be complete in all respects.

2.1.30 Successful tenderers shall enter into an Agreement on stamp paper of 100/- for having accepted the rates, terms and conditions of the contract as per the pro-forma given by BHEL.

2.1.31 The Offers should be in full conformity with the terms and conditions of this tender. No contra conditions are acceptable. Incorrect and incomplete tenders are liable to be rejected. Tenders not submitted in the prescribed forms will be rejected.

2.1.32 BHEL reserves the right to accept or reject any tender in part or full at their discretion without assigning any reason.

2.1.33 If a tenderer deliberately gives wrong information in his tender or creates conditions favorable for the acceptance of his tender, then BHEL reserves the right to reject such tender at any stage.

2.1.34 If the tenderer indulges in any unethical practice for securing the contract, the offer of such tenderer shall be rejected.

2.1.35 Any written communication required to be sent to the contractor in writing shall be sent at the address mentioned on the tender form or to any other address subsequently intimated by Contractor in writing to BHEL HPEP for the contract purposes or to his e-mail address.

2.1.36 SITE VISIT**:**

a. Before quoting, the tenderers are advised to inspect the site of work and its environments and be well acquainted with the actual working and other prevailing conditions, position of materials and labour related procedures & practices. They should be well versed with BHEL General Conditions of Contract, Instructions to tenderers, drawings wherever applicable and specifications and all other documents which form part of the agreement to be entered into subsequent to award of work. The tenderers shall specially note that it is the tenderer's responsibility to provide any item which is not specially mentioned in the specification or drawing, but which is necessary to complete the work..
b. The tenderer/Bidder and any of his authorized personnel or agents will be granted permission by the BHEL to enter upon its premises and lands for the purpose of site visit. However the bidder shall express condition that he, his personnel, and agents will be responsible against all liability in respect thereof, including death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
c. The Bidder should inform the BHEL at least **two** days (time may be fixed in consultation with tender issuing authority) in advance about the proposed site visit. The Bidder, at his own responsibility and risk is encouraged to visit, inspect and survey the Site and its surroundings and satisfy himself before submitting his bid as to the form and nature of the Site, the means of access to the Site, the accommodation he may require, etc.
d. In general, Bidders shall themselves obtain all necessary information. A Bidder shall be deemed to have full knowledge of the Site, whether he inspects it or not and no extra claims due to any misunderstanding or otherwise shall be allowed. The cost of visiting the Site shall be at the Bidders' own expense. Any deviations of information in the report and the actual site will not be the responsibility of the BHEL.

3.0 GENERAL TERMS AND CONDITIONS

i. Contractor shall obtain Labour License (Central / State Government) before commencement of work as applicable.
ii. In case Contractor engages labour from outside A.P. State to execute the said work, he is required to obtain licence under Inter State Migrant Workmen (RE&CS) Act 1979 .
iii. BHEL reserves the right to split up the work into convenient portions and award them to different contractors.
iv. The tenderer shall keep the contents of his tender and rates quoted by him to be kept confidential.
v. The rate for each item shall be reasonable and not unbalanced / impracticable. In case BHEL come across any unbalanced / impracticable rates i.e. 10% or less than 10% estimated value, Tenderer / Bidder may require to furnish detailed analysis to justify the same. If after its examination, BHEL still feels the rates are unbalanced / impracticable, BHEL may asks the tenderer for additional Performance Security or other safeguards to protect BHEL / Employer's interest against financial loss which may occur to BHEL on account of such unbalanced / impracticable rates, failing which the tender submitted by the tenderer, shall be liable to be rejected by the BHEL, who may award the Contract to any other tenderer.
vi. All expenses in preparation and submission of bids and visits to the office or any place in connection with the preparation of Bid shall be borne by Bidder. BHEL in no case

shall be responsible or liable for these costs regardless of the outcome of the Bidding process.

vii. The bid prepared by the Bidder including all correspondence etc. relating to his offer/ bid shall be in ENGLISH language only.

3.1 ELIGIBILITY CRITERIA

3.1.1 In case the contractor is a Partnership Firm or a Company, the same should be a registered under the relevant Indian Partnership Act 1932 or Companies Act, 1956 and well established organization having at least three years existence in business consecutively for the past three years.

3.1.2 The Successful tenderer has to get the license from Labour Dept., under Contract Labour (Regulation & Abolition) Act 1970 for the areas and nature of work, which they will be performing as part of the contract.

3.1.3 Tenderer should have independent ESI Employer code under ESI Act 1948.

3.1.4 Tenderer should have independent PF code under Employee Provident Fund and Miscellaneous Provisions Act 1952.

3.1.5 Photocopy of letter from ESI Corp. and PF Commissioner's Office to establish that tenderer is independently registered as an employer under ESI and PF to be produced.

3.1.6 The tenderer shall also mention the PAN Number issued by Income Tax Department, copy of the PAN card or PAN number allotment letter shall be submitted along with the tender documents.

3.1.7 There should be no litigation or charge under investigation / enquiry / trial against the Tenderer, or conviction in a court of law or suspension or blacklisting by any organization on any ground. Tenderer shall confirm this in the Declaration. During the course of work, if any such information comes to light, the contract may be terminated.

3.1.8 The opinion / decision of BHEL regarding the bid shall be final and conclusive. BHEL reserves the right to reject any or all the bids at any time without assigning any reason.

3.1.9 In case the tenderer has a relative employed in BHEL, the authority inviting tender shall be informed of this fact in writing at the time of submission of tender, failing which the tender may be disqualified, or if such fact comes to light subsequently, the contract may be terminated.

3.1.10 For the works which are continuous in nature, and which require regular interaction and monitoring, the contractor shall have an Office/Establishment in Hyderabad. Absence of such an arrangement may lead to disqualification of the Tenderer.

3.2 **EARNEST MONEY DEPOSIT**:

3.2.1. An amount of Rs. 1,50,000/- towards EMD shall be paid in cash at BHEL cash office or by Demand Draft/Banker's cheque drawn on any nationalized bank / scheduled bank in the name of "Bharat Heavy Electricals Limited" payable at Hyderabad and shall be enclosed to the tender bid. No other means of payment shall be accepted. EMD / any money due to the tender by BHEL shall not carry any interest.

3.2.2 Tenders received without EMD as specified above shall be rejected. If EMD accompanies price bid, such bids shall not be considered and will be rejected. If EMD is not in line with amount called for, the EMD as well as the quotations will be returned and unopened to the tenderers.

3.2.3 EMD of unsuccessful bidders shall be returned promptly upon award of Contract and

EMD of successful bidder will be returned upon the bidder's accepting the contract and furnishing the requisite security deposit.

3.2.4 EMD may be forfeited if after opening of tenders, a tenderer revokes his tender or increases his earlier quoted rates or after acceptance of his tender does not commence the work in accordance with the instructions of BHEL.

3.2.5 The EMD will be forfeited if the accepted tender is withdrawn. If only a part of the work included in the tender had been awarded to the tenderer, proportionate amount of EMD will be retained.

3.2.6 The Contractors who are having one time EMD certificate shall submit copy of the certificate towards exemption for payment of EMD for the work.

3.3 SECURITY DEPOSIT

3.3.1 Upon acceptance of his tender bid, the successful tenderer must deposit Security Deposit within the time specified in the letter of intent. Security Deposit should be collected from the successful tenderer. The rate of Security Deposit will be as below:

Upto 10 lakhs : 10%
Above 10 lakhs : 1 lakh + 7.5% of the amount exceeding 10 lakhs
Above 50 lakhs : 4 lakhs + 5% of the amount exceeding 50 lakhs

3.3.2 The successful tenderer on receipt of letter of indent can convey his acceptance in writing for conversion of EMD into security deposit.

3.3.3 If the work is awarded, the agency has to pay 50% of SD in advance on contract value before commencement of work after adjusting of EMD amount.

3.3.4 Security Deposit may be furnished in any one of the following forms.

i. Cash (as permissible under the Income Tax Act)
ii. Pay Order, Demand Draft in favour of BHEL
iii. Local cheques of scheduled banks, subject to realization.
iv. Securities available from India Post such as National savings Certificates, Kisan Vikas Patras etc.
v. Bank Guarantee from scheduled Banks / Public Financial Institutions as defined in the Companies Act subject to a maximum of 50% of the total security deposit value. The balance 50% has to be remitted either by cash or in the other form of security. The Bank Guarantee format should have the approval of BHEL.
vi. Fixed Deposit Receipt issued by scheduled Banks / Public Financial Institutions as defined in the companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
vii. Security Deposit can also be recovered at the rate 10% from the running bills. However in such cases at least 50% of the Security Deposit should be deposited before start of the work and the balance 50% will be recovered from the running bills.
viii. EMD of the successful tenderer shall be converted and adjusted against the security deposit.

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

3.3.5 Failure by the successful tenderer/bidder to deposit the security deposit amount as mentioned above within the stipulated time, which will include any extension that may be granted by the authorities, will render his earnest money deposit liable to forfeiture and his tender shall be consider as withdrawn. Security Deposit shall not be refundable to the contractor except in accordance with the terms of the contract.

3.3.6 The Security Deposit will be released along with the final bill or after completion of maintenance period for the work, whichever will be later, subject to the condition that nothing is outstanding against the Contractor.

3.4 STATUTORY REQUIREMENTS:

3.4.1 While quoting the rate, the tenderers are advised to take note of minimum wages / BHEL Fair Wages / Central Govt., / State Govt., (whichever is higher) payable to workmen.

3.4.2 The tenderer will be required to comply with all the statutory provisions such as Bonus (% as prevailing in BHEL RC Puram), PF (12%), EDLI (0.5%), ESI, Gratuity, Service Tax and other applicable taxes, BHEL Fair Wages prevailing at the time of payment or arrears thereof, declared Holidays, leave, AP Labour Welfare Fund etc. The contractor shall submit the documentary evidence of payment on account of submission of statutory payments made to the concerned agencies every month and same may be submitted for clearance of bill.

3.4.3 The tenderer shall comply with the provisions of the Factories Act 1948, Contract Labour (Regulation and Abolition) Act 1970, ESI Act 1948, Employees Provident Fund and Miscellaneous Provisions Act 1952, Minimum Wages Act 1948, Payment of Gratuity Act 1972, Industrial Disputes Act, 1947, Payment of Bonus Act 1965, Employers Liability Act 1938, Inter State Migrants Workmen (Regulation of employment and conditions of Service) Act 1979 AP Labour Welfare Fund Act, and or any other Laws and Rules that may be applicable from time to time to the workers engaged by him. The tenderer, when required by the Company shall produce the registers and records for verification and comply with other directions issued by the company for compliance of the statutory provisions.

3.4.4 The tenderer shall fully indemnify the loss if any caused to BHEL due to any default or non-observance of any of the laws, or any omission or commission or inability on the part of the Tenderer or his representative.

3.4.5 The tenderer shall, keep and produce for inspection at all times, forms, registers and other records required to be maintained under various statutes in order to enable scrutiny by the Company whenever required.

3.4.6 The tenderer shall produce to the Company, the documentary proof of payment of the said statutory dues. Non-observance of the provisions will be construed as default by the Tenderer in making such payment, and payment of his bill will be deferred despite other legal action.

3.4.7 The Income tax as applicable will be deducted from the bill of the contractor.

3.4.8 Each tenderer will be required to maintain the daily attendance of his labours in the prescribed Pro-forma for accounting payment of wages, deduction towards ESI & PF Contributions, payment of Bonus, leave etc.

3.4.9 The tenderer will have to follow the provisions of Payment of Bonus Act 1965 and Rules 1975, and is liable to pay Bonus to his workers. Minimum prescribed bonus at present is 20% of annual wages subject to a maximum wage ceiling of 3500/= per month. However,

the quantum of Bonus payable by the tenderer to his workmen will be decided and notified at appropriate time.

3.4.10 The tenderer will have to extend paid National Holidays and Festival Holidays to their workmen as per BHEL RC Puram direction or as per the provisions of the relevant Act and the Rules thereof. However, if due to exigencies of work the contractor engages his workmen on National Holidays or Festival Holidays contractor shall pay additional wages as prescribed under the provisions of the Act.

3.5 MANPOWER:

3.5.1 The Contractor shall provide the required manpower for executing the contracted work. The contractor shall not engage a person who is less than 18 years of age.

3.5.2 The contractor shall be responsible for safety of his workers while they are engaged for work connected with the contract. The Contractor shall be responsible for the appropriate usage of the Uniform and PPE's by their workmen.

3.5.3 The contractor, as the employer of his workmen, shall manage them. In the event of any dispute arising between the Tenderer and his employees, the Tenderer alone is solely responsible for resolving the dispute between them and BHEL will in no way be responsible for settling the dispute either statutory or otherwise.

3.5.4 The contractor will be solely responsible for executing the agreed work and the employees of BHEL will only oversee the proper execution of work. The contractor or his representatives shall be available in the factory to control and supervise his workers and take down instructions from the designated officials of BHEL. The cost of deployment of Supervisor has to be borne by the Contractor.

3.5.5 The contractor shall have full control over his workmen w.r.t determining service conditions, discharge, dismiss, or otherwise terminate their services at any time. The contractor shall be solely responsible for any claim arising out of employment or termination of employment of his employees and for statutory payments.

3.5.6 The contractor shall employ only such personnel who are medically fit. The company has right to direct the contractor to remove from the premises such of his personnel who may be physically, hygienically, clinically or medically unfit.

3.5.7 The contractor shall employ only such personnel who have not been found unfit for employment in Organizations such as Central/State/Public Undertakings by the Police authorities. Persons against whom criminal cases are pending or under investigation and persons found guilty of offences involving moral turpitude shall not be engaged for executing work.

3.5.8 The Contractor shall comply with all the operational rules and regulations, including safety and security rules framed by the company from time to time wherein the Contractor or his workmen happen to be operating / working. In the event of any of the workmen of the contractor violating any of the said rules and regulations, the Contractor would be required to remove forthwith such workmen from the company's premises.

3.5.9 Out of total manpower to be deployed the Contractor shall to the extent possible to deploy 15% scheduled castes and 7.5% of scheduled tribe community.

3.5. A. SAFETY:

i. All safety equipment such as safety belts, helmets & other equipment (as required for this work) are to be positioned by the contractor & used as per requirement.

ii. Any casualty or damage caused to the property or person by any untoward incidents while executing this contract will be at the contractors risk & cost.
iii. Violation of applicable safety, health & environment related norms, a penalty of 5,000.00 (Rupees Five thousand) per occasion shall be imposed.
iv. Violation as above resulting in any physical injury a penalty of 0.5% of the contract value shall be imposed (maximum of 20,000.00) per injury in addition to 5,000.00 as mentioned above.
v. In case of fatal accidents, a penalty of 1% of the contract value (maximum of 10,00,000.00 (Rupees Ten lakhs) per fatality in addition to 5,000.00 as mentioned above.

3.6 PERIOD OF CONTRACT

i. The contract shall be, initially, for a period of **2 months.**

ii. BHEL is at liberty to terminate the Agreement by giving 30 days' notice in writing.

3.7 FAILURE TO COMPLY WITH CONTRACT

i. Notwithstanding anything contained in any other clause, BHEL reserves the right to terminate the contract due to any failure on the part of the Tenderer in discharging his obligations under the contract or in the event of his becoming insolvent or going into liquidation. The decision of the BHEL about the failure on the part of the Tenderer shall be final and binding on the tenderer.
ii. In case of any damage to the existing building, structures, materials, tools, furniture and fixtures, machines etc., caused from contractor's end directly or indirectly, the cost of its repairs or replacement will be recovered from the contractor. If there is any work stoppage in any area of the Plant due to the fault of the contractor, the contractor is liable to compensate the same.
iii. In the event of any failure on the part of the tenderer, BHEL shall have the right without prejudice to any other right or remedies, to get the work done through any other agency and the Tenderer shall be liable to compensate BHEL for any losses on this account. The additional cost, loss, if any incurred by BHEL will be recovered from the bills, security deposits, other dues, directly from the Tenderer or by initiating appropriate legal action.

3.8 PAYMENT TO THE CONTRACTOR

i. Normally, the periodicity of payment to the contractor shall be on a calendar month basis. The Contractor shall raise the bill for payment as per the contractual terms & conditions mentioned in the contract, which should be duly certified by the BHEL official in charge of the contracted work.

In certain cases due to direct association of work with customer project, payment is made after completion of work. In such cases same will be specified in the NIT/enquiry and the agreement entered into post award of job.

The Contractor shall raise the bill for payment as per the contractual terms and

conditions mentioned in the contract, duly supported by attendance sheet for all the contract labours capturing therein for each of the Contract labour total time engaged during each day on the job and the same to be duly certified by the BHEL official in charge of the contracted work.

Contract is to be expressed both in terms of required categories of labour and number of labours against each category to ensure that the contractor discharges all the contractual and statutory obligations in respect of labours engaged on the job. At the same time required output in terms of units, tonnage etc. is also to be stated to correlate achieved output vis-à-vis desired output.

Following conditions shall be adhered strict during the contract period:

a. In case there is fall in the achieved output vis-à-vis desired output, contractor is to be warned in two spells.
b. If the unsatisfactory performance repeats, contract is liable to be short closed.

ii. The Contractor shall initially pay the wages, and other statutory payments etc., with in the specified time, related to his workmen and then claim bills from BHEL. The contractors would be required to submit their Claims along with the proof of payment of wages, PF, ESI etc., to the respective Departments. The claims will be scrutinized and certified for payment by the respective department and forwarded to Accounts Department along with HR/IR clearance certificate for effecting payment.

iii. The Contractor shall provide two pairs of Uniform to each of his workmen along with stitching charges and catering cap as specified by BHEL. The Contractor is required to submit their claims along with proof of expenditure incurred and acknowledgement from his workmen for providing uniform, subject, however, the maximum reimbursement of claim amount will not exceed a total amount of 1000/- (including all) for two pairs of Uniform to each workmen. BHEL will not entertain any additional / excess claims than the ceiling limit provided herein and contractor agrees to accept the same.

iv. The contractor shall pay bonus to all his workmen as per the applicable provisions of the payment of Bonus Act 1965 and its rules for contract period and also as per the instructions / guidelines of BHEL regarding payment of Bonus (at present 20%). In this connection, the Contractor shall submit actual Bonus payable statement for the relevant period before submission of final bill. BHEL shall release actual bonus payable amount after verification of necessary documents such as attendance & wage registers.

v. The contractor shall provide Personal Protective Equipment including one pair per year safety shoe of standard specified by BHEL safety department and two pairs of socks to all his workmen during the contract period. The contractor is required to submit their claims with proof of expenditure incurred in providing Personal Protective Equipment to his workmen, subject, however, the maximum reimbursement of claim amount will not exceed a total amount of 800/- for Personal Protective Equipment to each workmen for the whole contract period. BHEL will not entertain any additional / excess claims than the ceiling limit provided herein unless the contractor offers such additional / excess claims in the Price Bid and BHEL accepts to the same.

vi. **IMPLEMENTATION OF PRICE VARIATION CLAUSE:** Any increase in consolidated wages of BHEL RC Puram or increase in Variable Dearness Allowance by appropriate government to the eligible workmen of contractors, will be reimbursed by BHEL RC Puram to the contractor to that extent of increase on production of proof of payment to the workmen by the Contractor duly verified by the Contract Executing Officer, HR/IR and Finance. In case of decrease in the Variable Dearness Allowance by the Appropriate Government, the same will be deducted from the running bills of the Contractor to that extent. (Note: Increase is admissible on the variable components such as wages, Dearness Allowance, PF, ESI, and leave wage etc., which will be notified by the HR/IR from time to time).

3.9 SUB-CONTRACTING

The contractor shall not sub-contract or transfer or assign the contract in full or any part thereof to any other person or firm or company without the previous express written approval of BHEL.

3.10 LAWS GOVERNING THE CONTRACT

i. The contract will be governed by the Laws of India for the time being in force and as amended or made from time to time.
ii. All disputes shall be settled in accordance with the Laws of India for the time being in force and as amended from time to time.
iii. All disputes arising out of or in relation to this contract or Agreement shall be settled by mutual discussions through Conciliation and in the event of failure of conciliation, such disputes shall be referred to Arbitration in accordance with the provisions of Arbitration and Conciliation Act, 1996.

3.11 LEGAL JURISDICTION:

i. In respect of all matters arising out of or pertaining to the contract, the cause of action thereof shall be deemed to have arisen only at RC Puram, Hyderabad, where BHEL - HPEP / BHEL PE&SD is situated. All legal proceedings pertaining to the above matters or dispute shall be instituted only in courts having territorial jurisdiction over the place where BHEL-HPEP / BHEL PE&SD is situated and no other court shall have the jurisdiction.

4.0 DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR:

4.1 The duties, responsibilities and obligations of the contractor including statutory responsibilities mentioned in this document are indicative and not exhaustive. Contractors are required to confirm with the concerned authorities for proper and complete compliance.

4.2 The contractor will abide by the provisions of Child Labour (Prohibition & Regulation) Rules 1988. He should issue appropriate Appointment Letter to his Workmen.

4.3 The following documents / forms under Contract Labour (Regulation & Abolition) Act 1970 and relevant rules therein shall be maintained by the contractor:

i. A notice showing the wage period and date of disbursement of wages to be displayed at the place of work and a copy sent by the contractor to the HR Department (Rule 75).
ii. A register of workmen Form XIII (Rule 75)
iii. Employment card Form XIV (Rule 76)
iv. Service Certificate Form XV (Rule 77)
v. Muster Roll, Wage Register, Deductions Register, overtime Register Etc.
vi. Half yearly return to be sent (In duplicate) by the contractor to the licensing officer. Form – XXIV (Rule 82 (I)) with a copy to HRM Department regularly.
vii. All statutory registers and records shall be preserved in original for a period of Ten years and should be made available even after the contract is over for verification.

4.4 The contractor shall comply with the provisions of Contract Labour (R & A) Act 1970 including provisions relating to welfare and Health facilities as provided under the Contract Labour (R& A) Act 1970 and relevant rules.

4.5 All the Contractors shall submit the half yearly / yearly returns to Regional Labour Commissioner (Central), Hyderabad or appropriate authority as required under contract Labour (Regulation & Abolition) Act 1970 and forward a copy to HR Department.

4.6 BHEL, HPEP, RC PURAM – Hyderabad is a Notified Area under the provisions for ESI Act 1948. The contractor shall comply with the provisions of ESI Act, and will be responsible for any liability arising during the tenure of the work contract under the Act. The contractor should ensure ESI coverage and facilities to his workers (i.e. ESI code no. and ESI card etc.) as per ESI Scheme from ESI authorities including Medical Benefit etc. The contractor shall arrange for filing of family declaration forms in respect of their contract labors and deposit the same in ESI office for issue of Identity card by ESI authorities. The contractor may deduct required ESI contribution from the wages of their employees as per law and deposit the same (Employees share) along with his contribution to the ESI authorities.

4.7 Workmen insured under ESI Act only shall be deployed in contract work. For the Persons not covered under the provisions of ESI Act, the contractor shall take required insurance under Employees Compensation Act 1923 with medical benefit.

4.8 The tenderer shall submit bi-annual return in Form 6 along with monthly Challans to the appropriate authority under the provisions of Employee's State Insurance Act 1948, under intimation to HR Dept.

4.9 Notwithstanding anything contrary to this, in the event of accident, the contractor shall be required to submit accident / injury report to the concerned authorities with a copy of the same to the designated BHEL Executive immediately and ensure the compliance of the ESI Act and rules made therein.

4.10 The tenderer shall submit the following returns to the appropriate authority under the provisions of Employee's Provident Fund and Misc. Provisions Act 1952, Employees' Pension Scheme 1995 under intimation to HR Dept.

i. Monthly return in Form 12 A along with form 5 & 10 (addition and deletion) and monthly Challan or any other form as modified by PF authorities.
ii. Annual Return in Form 6A along with Form 3A. (till this procedure is discontinued by the PF authorities)

4.11 The Contractor shall maintain the following records as required under the Employees

Provident Fund and Miscellaneous Provisions Act 1952, Employee's Pension Scheme 1995.

- Declaration of Nomination, Form No.2 Para 33 and 61 (1).
- Attendance.
- Wage Register.
- Any other documents / registers as required

4.12 The contractor shall regularly on or before prescribed date of every month pay the amount of contribution (employer's contribution as well as the employee's contribution) as per the Employee's Provident Fund and Miscellaneous Provisions Act 1952, Employees' Pension Scheme 1995 and Employee's State Insurance Act 1948.

i. The contractor may recover from his workmen, the employee's contribution in accordance with the provisions of the said act and the Scheme but shall not recover the employer's contribution or the other charges from his employees in any manner.
ii. The contractor shall submit along with monthly bills to BHEL, statement showing the recoveries of contributions in respect of employees employed by or through him along with the proof of Deposit of such contribution with the Concerned Authority and shall also furnish to BHEL such information, in the capacity of principal Employer, as required to be furnished under the provisions of the schemes under the Employees P.F. and Misc. Provisions Act 1952 and ESI Act, 1948 to the authorities under the said Acts.
iii. The Contractor shall arrange for his own P.F. and ESI Code Number from the PF and ESI authorities respectively. The expenditure incurred by the contractor towards payment of the Employers Contribution and PF Administrative charges is already included in the estimated price of BHEL.
iv. In case of revision of Wage/DA by appropriate Government or by BHEL after the award of work, BHEL will bear the difference of increase during the currency of the Contract. Any failure to comply with the statutory requirements on the part of contractor shall disqualify such contractor from all contracts awarded to him and his name shall be black-listed for further tenders / contracts. In addition, the Contractor's security deposit shall be forfeited apart from consequential legal action against him.

4.14 The contractor shall maintain Form D as per Rule 5 of the Payment of Bonus Act, 1965. The contractor is further liable to pay bonus to his employees in accordance with the payment of Bonus Act 1965 (Max. 20%) on completion of contract and to keep all the records in Form C as per the said Act.

4.15 The contractor will be required to contribute towards gratuity payment of his employees (contract workers) required as per Payment of Gratuity Act. He will also be responsible to pay retrenchment compensation under the Act. In case of short closing of contract by either side, the Contractor shall settle all dues payable to workmen including Bonus on last working day.

4.16 In case the contractor employs women, he will discharge his obligation under law in respect of such women workers such as prohibition of engaging them during night hours, prohibition of employing them more than 9 hours per day, provision of crèche facility,

grant of maternity leave as per rules etc.

4.17 The Wage period for the Workmen of Contractors engaged on long contracts shall be Calendar Month and the contractor shall be responsible for making payment of wages within 7 days of the closure of the wage month (on 07th day of the calendar month following the wage month) The disbursement shall be proponed to the 6th day, if the 7th day happens to be a holiday. The Contractor would be required to open an Account for Electronic Fund Transfer (EFT) of his Bills/Claims from BHEL as well as EFT of wages/OT/other payments of his workmen from his Bank Account to the Bank Accounts of his workmen so that risks associated with cash transactions can be avoided.

4.18 The Contractor shall be required to issue monthly Wage slips /OT Slips to their workmen. Further, the Contractors claims are to be accompanied by a Certificate from BHEL Official certifying that "the Wage /OT Slips for the previous month/current month have been issued by the contractor to all their workmen". Further, the contractor would be required to issue Annual PF Statement from the PF Authorities for all his workmen engaged in BHEL HPEP, RC PURAM, HYD-32 before submitting Claim for refund of Security Deposit for the respective years.

4.19 In case contractor fails to make payment of wages to his employees or remittance of contribution to the concerned authorities, the Security deposit / other dues payable under the contract can be utilized by BHEL to discharge the liability of the contractor.

4.20 The workmen of the contractors shall wear uniform while attending duty in BHEL campus. The uniform shall be provided by Contractor to his workmen. The Contractor/his authorized representative shall ensure wearing of the Uniform by his workmen in the BHEL premises.

4.21 The liability for compensation on account of injury sustained by an employee of the contractor will be exclusively that of the contractor.

4.22 NATIONAL & FESTIVAL HOLIDAYS (as declared by BHEL): The contractor will give paid National Holidays and Festival Holidays to the workers as per Section 5 of National and Festival Holidays Act. However, if due to the exigency of work if any of his workmen is required to work on National Holiday or Festival Holiday, the contractor has to pay wages as per Section 5, sub section 2 and 3 of the said Act.

4.23 Besides the four national holidays i.e. 15th August, 26th January, 2nd October and 1st May (May day) if Govt. declares any other day as a national holiday same will be treated as paid holiday for the purpose of this contract. Accordingly the contractor shall be required to provide paid holiday to its workers for the same. If any of the contract worker works on such additional declared national holiday, he will be entitled to additional wage for the said day.

4.24 In addition to the above holidays mentioned at Clause 39, in the event the Central / State Government declares any other holiday/s and if such Holiday/s is/are applicable to BHEL, RC Puram, Hyderabad also, then the tenderer/contractor shall extend paid Holiday/s to his workmen. The tenderer shall take into account all such occasions while quoting in the tender.

4.25 GENERAL ELECTIONS:
If the general elections are held for State Assembly / Parliament and Government

declares public holiday for exercising the franchise, the contractor shall give their workmen half day leave in "First" shift only. The contractor's workmen working in “Second” and “Night” shifts will be required to exercise their franchise during their own time.

4.26 The Contractor shall maintain the following Documents, Registers, Forms as required under the FACTORIES Act 1948 and Rules 1950 thereof.
i. Leave Register Form No. 15
ii. Nomination Form No. 25

4.27 The contractor will extend leave with wage to his workers @ of one day for every 20 days work. To facilitate the proper execution of the Factories Act, these leaves shall be allowed during the same calendar year. The contractor will pay the un-availed portion of leave in cash along with monthly wages / at the end of Contract period.

4.28 Contractor has to ensure that all his workmen are granted one day weekly off after every 48 hrs. of working. The workmen working for more than 48 hours in any week shall be paid wages twice the ordinary rate of wage in accordance with the provisions of Section 59 of the Factories Act, 1948 read with the A.P Factories Rules 1950.

4.29 The contractor shall follow safety rules and regulations as per provisions of Factories Act 1948, and Rules at his own expense and arrange for the safety provisions as appended to these conditions or rules framed by the government from time to time.

4.29 A. **Refund of Security Deposit**: Security Deposit of contractor will be refunded only after the expiry of the contract period and based on the certification of successful completion of the contract and payment of PF, ESI and applicable statutory dues by the concerned Officials / department and submission of an Undertaking from the contractor, that in case of Claims from any of the statutory authorities, the same would be indemnified by the Contractor.

4.30 The Contractor shall be required to deposit Service Tax as applicable as assessed by Central Excise Authority (Service tax cell) Hyderabad before 15th of the following month, if same is applicable as per rules in force from time to time. The amount so spent can be claimed from BHEL after submitting the proof of the same.

4.31 Contractor shall inform his PAN to BHEL. Income tax as applicable will be deducted at source by BHEL from the bills of contractor.

4.32 All the Registers and Records, forms, Notices maintained under the relevant Acts and Rules should be produced on demand before the Inspector or any other authority under the Act, failing which the contract may be terminated without any notice.

4.33 Contractor shall be required to submit a list of his workers to be deployed for the works contract giving details regarding Name of contract worker, Fathers Name, permanent and Present Address, Date of Birth, Qualification, Caste-SC/ST/OBC, ESI No, PF No. and the family details.

4.34 The contractor shall abide by all the labour legislations and other laws including the provisions of Contract Labour (Regulation & Abolition) Act, 1970, the Factories Act, 1948, the Payment of Wages Act, 1936, the Minimum Wages Act, 1948, ESI Act, 1948, Employee Provident Fund Act, 1952, AP Labour Welfare Fund Act, Payment of Bonus Act 1965, Payment of Gratuity Act 1972, and other relevant Acts applicable to his workmen under this Contract.

4.35 BHEL shall be indemnified against all losses, Claims, prosecutions etc. under any law.

4.36 The contractor shall promptly furnish all information and document required by BHEL authorities for the purpose of complying with the responsibilities of Occupier of the factory and shall render all the necessary assistance for the same.

4.37 The contractor will maintain proper discipline of his workmen and will ensure that his workers do not cause any loss or theft or damage to any company's property. The contractor will also be responsible for the good conduct of his workmen.

4.38 The contractor shall ensure and maintain uninterrupted progress of the work in accordance with instructions given to him on behalf of BHEL from time to time.

4.39 In case the contractor makes default in commencing the work within the time specified by BHEL without any reasonable cause, disputes any of the terms and conditions of the contract or refuses to execute the contract or any part thereof at any stage, the contract shall, without prejudice to any other right or remedies available to BHEL, be liable to be cancelled / terminated in part or in whole. In the event of such cancellation / termination of contract, the contractor shall be liable; to compensate BHEL for all losses incurred by BHEL including the loss suffered on account of having the work executed through any other contractor or department as may be convenient to BHEL, in accordance with the exigencies of the work. In case only a part of the contract is cancelled, the remaining portion of contract may be allowed be executed by the contractor.

4.40 The Contractor shall without fail give up-to-date information in writing of the attendance of the workers engaged by him. The Contractor will also submit the required documents and certificates as prescribed from time to time for the clearance and the payment of the Bill.

4.41 Whenever any sum of money is found to be recoverable from or payable by the contractor, the same will be deducted from any sum that may due or which at any time there after becomes due to the contractor under this contract or under any other contract or from his security deposit. In case the recoveries are not complete even after such deduction, the contractor shall pay the same or the balance thereof from the security deposit. The contractor shall immediately thereafter pay such further sums as may be required to replenish the shortage caused by such recoveries in the amount of security deposit.

4.42 During the currency of contract, if the contractor is awarded any other job work contract in BHEL, the contractor will have to inform the designated BHEL official before accepting the other work.

4.43 In case of failure on the part of the contractor to execute the work awarded to him within the stipulated time, the sum equivalent to the EMD as per BHEL Works Policy shall be forfeited as per the Undertaking provided by tenderers, after a week’s notice issued by the awarding officer and BHEL may in its discretion award the contract to any other party.

4.44 In case of any extra work executed by the contractor, the contractor will be paid on pro-rata basis.

4.45 All the Terms and Conditions as mentioned in Work Order will also form a part of the Agreement.

4.46 BHEL shall have the right to deduct any sum from the bill of the contractor 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 Labour regulations.

4.47 The contractor shall be responsible for observance of local laws, employment of

personnel, payment of taxes etc. As far as possible, workers shall be engaged from the local areas in which the work is being executed.

4.48 The contractor shall be wholly responsible for the behavior of the workmen at the work place and outside, in the BHEL premises.

4.49 The contractor shall be responsible for safe custody of BHEL's property like materials, tools etc., entrusted to him and if necessary arrange insurance at his own expense.

4.50 The contractor shall be responsible to make good and rectify at his own expense any defect, which may develop or may be noticed within the period of the contract.

4.51 BHEL shall be entitled to recover any payment made on behalf of the contractor under any law or otherwise.

4.52 BHEL Officer In-charge shall have the right to stop the work at any stage or at any time by giving the contractor seven days' notice in writing.

4.53 **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 the provisions of the 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 the Unit/his nominee as per the extant rules of the Company read with the provisions of The Arbitration and Conciliation Act, 1996 and amendments thereto. The award of the arbitrator shall be final and binding on both the Parties. The venue of the Arbitration shall be Hyderabad in India. The Award to be given by the Arbitrator/Arbitral Tribunal 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 Sangareddy Courts.

5.0 **CONTRACT WORK DESCRIPTION:**

SCHEDULE 'A'

Contract period : 2 (Two) Months

Work Title: Electrical Works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-Station, R.C.Puram

6-A TECHNO-COMMERCIAL BID APPLICATION

To,
Bharat Heavy Electricals Limited
H.P.E.P., RC PURAM,
HYDEDRABAD-32

Dear Sir,

I / We hereby offer to carry out the work "**Electrical Works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-Station, R.C.Puram**" against Tender Enquiry No. **M&S/P&C/2015/16** Date**: 20.05.2015**

I /We have carefully perused the following documents connected with the above mentioned work and agree to abide with the same.

1. Notice Inviting Tender
2. Bid Application
3. Bid Questionnaire – A
4. Bid Questionnaire – B
5. Declaration by Tenderer
6. Instructions to tenderer
7. General terms and conditions
8. Specific terms and conditions
9. Evaluation of price bid
10. Scope of Work & Schedule-A

(Part – A)

11. Price Bid Format

(Part – B)

I/ We further agree to execute all the works referred to in the said documents as per the General terms and conditions.I am /We are in possession of independent PF/ESI Code. I/We undertake to obtain applicable the PF/ESI coverage of all our workmen to be deployed for the above work and also agree for recovery of appropriate PF/ESI contribution from wages/bills

Signature of Tenderer

PART - A
TECHNICAL BID - I

Tender Enquiry No. : **M&S/P&C/2015/16 Date: 20/05/2015**

Details of the Contractor:

a) Name and address of the Firm :

b) Name and address of the proprietor :

c) Is any contract being operated under the : Yes / No

control of the tenderer in BHEL .
(If yes furnish the details) :

Location/ Address	Value	Date of Completion
1.		
2.		
3.		
4.		

d) Is any relative of tenderer employed in BHEL Yes / No

(If yes Furnish the detail)

Name	Staff no	Location / Area

Signature of the Tenderer
Date**:.**

TECHNICAL BID-II

01	ESI Code No. (enclose copy of ESI code allotment letter of ESI authority)	
02	PAN No.	
03	PF Code No. (enclose copy of PF code allotment letter of EPF authority)	
04	Service Tax Registration No. (enclose copy)	
05	VAT/TIN No (enclose copy)	
06	Valid A grade Electrical License for 33kv or above (enclose copy)	
07	Experience credentials	
08	Financial Turnover for preceding three years duly certified by qualified Chartered Accountant: ex. 2011-12, 2012-13 & 2013-14	
09	Have you quoted rates for all the activities, as indicated in the price bid (Part – B)	YES / NO
10	Any other comments	

Note:

I. Photocopy in support of above wherever applicable should be attached.

II. Please note that if answer of Sl. No.01, 03, 06, 07, 08 is not available or 'No' then the bid is liable to be rejected.

III. Duly filled up attached compliance statement in all respects should be submitted.

Signature of the Tenderer

Date:

(In case the department concern requires specific information same may be sought by modifying the above proforma appropriately)

SPECIAL TERMS & CONDITIONS OF CONTRACT

i. The quantity of raw materials drawn, if any from the Stores and balance unused should be accounted and returned to the Stores.

ii. Ensure cleanliness of the preparation area/work spot before and after the work on daily basis.

iii. The quantity will be counted, measured and weighed and certified by the authorized persons.

iv. The quantity may slightly vary depending on the requirement which will be informed in advance by BHEL.

v. The payment will be as per actual quantity prepared, executed and accounted.

vi. In case of delay of payment of wages to the contract labour by the contractor, for more than a week, the contract executing officer will initiate action for payment of wages directly from BHEL side and recover the same from the payments due to the contractor along with penalty as decided by the respective product head. In case, the contractor default/fail to pay wages to the contract labour repeatedly (more than once) the contract executing officer shall take action for payment of wages directly by BHEL and contract may be short closed despite blacklisting/banning the said contractor from participating in the future bidding/tendering in BHEL.

vii. Experience Certificate: On completion of contract, the contractor will be issued an experience certificate on the total performance of the contractor such as technical competency, implementation of statutory provisions in time, such as payment of wages to the worker, payment of PF contribution, Payment of ESI contribution, Payment of bonus, issue of PPE, uniform cloth, safety shoe etc. based on which the contractors future bid if any in BHEL will be evaluated.

EVALUATION OF PRICE BID:

i. A single rate must be quoted for each category mentioned in the price bid Proforma as the job would be awarded to one or more successful tenderer.

ii. Evaluation of the L-1 offer shall be computed on overall lowest cost to BHEL basis. (Grand Total Price for all the items indicated above minus tax credit, if, any).

iii. In the event of two or more tenderers becoming L1, the said tenderers would be called for negotiation and will be instructed to submit fresh price bid offers. Further, in the event of two or more tenderers becoming L1, the selection of the tenderer for the purpose of awarding contract will be on the basis of LOTTERY to be held in presence of representatives of L1 tenderers.

iv. Contractor shall take total care to educate himself to know the prevailing wages payable to contract labour in BHEL RC puram and quote rates taking into account all aspects of contract.

v. In the opinion of the tender committee, that the rate quoted by the L1 contractor is not viable, the tender committee shall reject the tender of such L1 contractor and go for next lowest bidder. In case the rate of next lowest bidding also not viable the tender committee shall cancel the tender and advise for fresh tender.

i. **IMPLEMENTATION OF PRICE VARIATION CLAUSE**: Any increase in consolidated wages of BHEL RC Puram or increase in Variable Dearness Allowance by appropriate government to the eligible workmen of contractors, will be reimbursed by BHEL RC Puram to the contractor to that extent of increase on production of proof of payment to the workmen by the Contractor duly verified by the Contract Executing Officer, HR/IR and Finance. In case of decrease in the Variable Dearness Allowance by the Appropriate Government, the same will be deducted from the running bills of the Contractor to that extent.

ii. (Note: Increase is admissible on the variable components such as wages, dearness allowance, PF, ESI, and leave wage etc., which will be notified by the HR/IR from time to time).

6-C PROFORMA FOR PRICE BID
(Enclosed Separately)

7.0 DECLARATION BY TENDERER

I, ----------, aged ---------- Yrs., S/o ----------, residing at ----------

Hereby declare as follows:

(i) That my nationality is _____.

(ii) That I am a major and eligible to enter into contract / my firm / my company is competent to enter into an agreement.

(iii) I shall employ only such personnel who have not been found unfit for employment in Organizations such as Central / state / Public undertaking by the Police Authorities.

(iv) I shall not employ persons against whom Criminal cases are pending or under investigation.

(v) I shall also not employ persons found guilty of offences involving moral turpitude for executing work in BHEL contracts.

(vi) That there are no Criminal cases pending or under investigation against me or my firm or company.

(vii) I have not been found guilty of offences involving moral turpitude nor any of the company directors / partners of my firm have been found guilty of offences involving moral turpitude.

(viii) Neither I nor my firm nor my company has been declared insolvent in the past.

(ix) I have taken due care and efforts to furnish only information which are true in the tender document.

(x) I shall employ labours who are more than 18 years of age and having sound physical and mental health.

(xi) I shall keep Photograph / identity proof / residential proof of the labourers to be employed against this tender and arrange for police verification.

(xii) All dues to Statutory Authorities have been remitted in time and no notice of non-payment has been received from such authorities.

[Signature with Name & seal of the Tenderer]

Date **:**

TECHNICAL SPECIFICATIONS

Electrical works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-station. RC Puram

1 GENERAL:

1.1 SCOPE:

1.1.1 The scope of this specification is intended to cover the supply of material, installation, testing and commissioning of **Electrical works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-station. RC Puram**

1.1.2 The scope shall cover complete supply, installation of all the equipment and accessories covered under this contract.

1.2 Work pertaining to Execution of work for bay extension, metering, 33KV HT line, Grid connectivity, cabling, etc. should be in accordance with the applicable standards, safety codes, etc.

1.3 Installation shall be carried out strictly in accordance with the approved drawings, modifications, if any, required to suit site conditions, shall be carried out only with the prior approval of the Engineer. All such changes shall be incorporated in "As built" drawings to be furnished by the contractor.

1.4 It shall be the responsibility of the contractor to store, move / transport from stores / storage yard etc. relevant items and accessories to the place of installation and wherever necessary assemble all parts of the equipment. In accordance with the specific installation instructions as desired by Engineer, the contractor shall transport, unload, and install all the equipment and accessories included in the contract.

1.5 All tools, welding equipment, crane, scaffolding, rigging material, ladders, winch, rollers consumables, hardware etc. required for installation shall be provided by the contractor.

1.6 It shall be the responsibility of the contractor to engage specialist to supervise installation work for all the equipment and cabling shall be arranged by the contractor at no extra cost to BHEL.

1.7 The contractor shall ensure that the equipment under erection as well as the work area and the site are kept clean to the satisfaction of the Engineer., In case , the Engineer is not satisfied about the cleanliness he will have the right to carry out the cleaning operation and expenditure incurred by him in this regard will be to contractor's account. Packing cases and packing materials shall be cleared from sites.

1.8 In order to avoid hazards to personnel moving around the equipment such as switchgear etc which is kept charged after installation before commissioning such equipment shall be cordoned off by suitable to prevent accidental injury.

1.9 Where assemblies are supplied in more than one section, the contractor shall make all necessary mechanical electrical connections between sections including the connections between bus / wires. The contractor shall also do necessary adjustments alignment necessary for proper operation.

1.10 Care shall be taken in handling instruments, relays and other delicate devices where instruments and relays are supplied separately they shall be mounted only after the associated switchgear / control panels are erected and aligned.

1.11 STANDARDS:

GENERAL STANDARDS AND CODES

Electricity Rules, 1956
Indian Electricity Act 1910
Indian Electricity (Supply) Act 1948
Electricity Act, 2003.
Indian Factories Act
IEC-540 Test methods for insulation and sheaths of electric cables and cords.
IEC 60 High Voltage Test Techniques.
IS-1255 (1991) Code of practice for installation and maintenance of power cables, upto and including 33 kV rating
IEC-287 (P1 to P31995)Calculation of the continuous current rating of cables (100% load factor).
IS-5216 Guide for safety procedures and practices in electrical works.
IS-5, 1994 Colors for Ready Mixed Paints and Enamels
IS-617, 1991 Aluminium and Aluminium Alloy Ingots and Castings for General Engineering Purposes
IS-2071 (P1 to P3) Methods of High Voltage Testing.
IS-3043 (Reaffirmed 1991) Code of Practice for Earthing
IS 10810 Methods of testing cables.
IEC 66 Environmental Test
IEC-117 Graphical Symbols

Materials shall conform in all respects to the relevant Indian Standard Specifications with Latest amendments there to

Title	IS. No.
1. Code of practice for installation and maintenance of transformers	IS-10028
2. Cement	IS269
3. Erection of over head lines	IE Rules 1956
4. Earthing	REC Standards
5. Steel	IS6003/1970
6. Fasteners	IS6639/1972
7. Galvanizing	IS2629, IS4759
8. Aggregate	IS383
9. Concrete Mix	IS1343
10. RCC	IS456
11 Cable Jointing	IS1255
12 LT PVC Sheathed aluminum cable	IS694

Materials conforming to other internationally accepted standards, which ensure equal or higher quality than the standards mentioned above would also be acceptable. In case the bidders who wish to offer materials conforming to other standards, salient points of difference between standards adopted and specific standards shall be clearly brought out in the schedule. 4 Copies of such standards with authentic English translations shall be

furnished along with the offer.

1.12 MATERIAL/ WORKMANSHIP

1.12.1 General Technical Requirement

1.12.1.1 Where the specification does not contain references to workmanship, equipment, materials and components of the covered equipment, it is essential that the same must be new, of highest grade, of the best quality of their kind, proper strength conforming to best engineering practice and suitable for the purpose for which they are intended.

1.12.1.2: When required by the specification or when required by the Employer the Bidder shall submit, for approval, all the information concerning the materials or components to be used in manufacture. Machinery, equipment, materials and components supplied, installed or used without such approval shall run the risk of subsequent rejection, it being understood that the cost as well as the time delay associated with the rejection shall be borne by the contractor.

1.12.1.3 The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses.

In general, screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from the employer's engineer.

1.12.1.4 All materials and equipment shall be installed in strict accordance with the manufacturer's recommendation(s) and relevant IS codes of practices. Only first-class work in accordance with the best modern practices will be accepted. Installation shall be considered as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting and placing into position, grouting, leveling, aligning, welding, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer's tolerances, instructions and the Specification.

1.13 Information and data.

a) The Information furnished is the best available, however the Employer does not guarantee the correctness of interpretations, deductions or conclusions which are given supplementary information in the Bid Documents or in any reports, maps drawings, diagrams or in other reference information available to the bidder from the Employer or otherwise.

   The information has been produced as found, communicated to, ascertained or otherwise learned by the Employer.

b) It will be the Bidder's responsibility to satisfy himself from the "Reference Information" supplied and or inspection of the site that sufficient quantities of construction materials required for the works shall exist in the designated borrow areas or quarry sites.

   BHEL does not accept any responsibility either in handling over the quarries or procuring the materials or any other facilities. The tenderer will not be entitled for any extra rate or claim for the misjudgment on his part for the quantity of materials available in the quarries.

c) The contractor shall make his own enquiries regarding the availability of other materials and make his own arrangements for procuring them.

d) Climatic conditions.

The Climatic conditions prevailing in the area are as per the details given below.

i) Location	:	In the state of Telangana
ii) Max.ambient air temp.(deg.C)	:	50
iii) Min ambient air temp (deg C)	:	7.5
iv) Average daily ambient temp.(deg.C)	:	35
v) Relative humidity %	:	100
vi) Average annual rainfall (mm)	:	925
vii) Max altitude above mean sea level (meters)	:	1000
viii) Max wind pressure (Kg/Sq.mm)	:	200
ix) Isoceramic level (days / year)	:	50
x) Seismic level (Horizontal accelerations)	:	0.10 q.

Note: Moderately hot and humid tropical climate is conducive to rust and fungus growth. The climatic conditions are also prone to wide variations in ambient conditions. Smoke is also present in atmosphere. Heavy lightning also occurs during June to October.

1.14 Approaches: The approaches to the site of work, if necessary will have to be formed by the contractor at his own cost and will be an access both for personnel and equipment.

1.15 Water and Power: The contractor has to make his own arrangements for required water and Power. Any extra claim on this will not be entertained.

1.16 Supervisor, Skilled and Unskilled labour: The Contractor shall provide experienced technically qualified supervising engineers for supervision. The contractor shall engage only competent skilled workers.

1.17 Site Stores: The contractor shall establish temporary stores at his own cost at the Substation site for storing cement and equipment. The stores should be dismantled and site cleared after the work is completed.

1.18 Construction Materials:

1.18.1Cement:

a) The Contractor has to make his own arrangements for the procurement of cement of required specifications required for the works and shall make his own arrangements for adequate storage of cement.

b) The contractor shall procure cement in standard packing eg. 50 kg bag or drums.

c) The Contractor shall forth with promptly remove from the works area any cement that the Engineer may disallow for use.

d) The contractor shall further, at all times satisfy the engineer on demand by production of records and books or by submission of returns and other proofs as directed. The cement being used is tested and approved by Engineer for the purpose and the contractor shall at all times keep his records up to date to enable the engineer to apply such checks as he may desire.

e) Cement which has been unduly long in storage with the contractor or alternatively has deteriorated due to inadequate storage and thus become unfit for use in the works will be rejected by the employer and no claim will be entertained. The contractor shall forthwith remove from the work area. Any cement the Engineer may disallow for use on work and

replace it by cement complying with the relevant Indian Standards.

1.18.2 Steel:
M.S.Channel, MS.Angle MS Flat and MS rod required for fabrication of Cross – arms, top cleats clamps etc. have to be procured by the contractor. Fabrication of materials is to be arranged including one coat of red oxide and two coats of Aluminum paint.

2.0 Fabrication & cable works

2.1 Fabrication of structures: Straightening, cutting, assembly, bolting and welding shall be as per IS 800

2.2 The bolts and nuts shall be hot dip galvanized as per IS-1367

2.3 Spring washers shall be of type B and shall conform to IS-3063. The spring washers shall be made from high quality spring steel conforming to IS-4072. The spring washers shall be electro galvanised with a coating thickness of 25 microns.

2.4 Galvanizing: All members of structures "U" bolts etc shall be hot dip galvanized. Galvanization shall be done by hot dip process and metal modules and there shall be no clogging of bolts holes due to the stay of zinc in the holes.

2.5 Marking: Each part of steel structure shall be clearly stamped with 20mm steel stamping die with the identification number mark or symbol to facilitate erection.

2.6 The structures shall be erected by piece-metal method on the foundations after allowing the required curing time for the foundations. After erection of the structures, the bolts shall be checked to ascertain that all nuts are fully tight. The contractor shall ensure that none of the bolts are left out. The structure shall be truly vertically after erection and no straining will be permitted to bring them to vertical position. The tolerance for verticality is one in 360 structure height.

2.7 Cabling: The cables planned for underground arrangement shall be laid in trenches.

The length of each cable issued shall be judiciously cut minimizing the wastage. Cable laying shall also include termination of cables i.e. at both ends of cable at equipment control and protection panels etc. as well as equipment to marshalling boxes and marshalling boxes to switch gear panels. Cable lugs, cable terminating accessories like jointing ferrules, cable clamps, cable grips, cable compound flux, tapes etc. as necessary shall be procured by the contractor.

Cable lugs shall be compressed over the conductor ends with crimping tool. Insulating sleeves shall be provided and covered over the bare ends of the connections so as to prevent accidental contact with the adjacent terminals. The insulating sleeve shall be fire resistant and long enough to over pass the conductor insulation and shall be of correct size to the conductor used. The cables entering the control room from Indoor shall be sealed.

Standard cable grips and seals shall be utilized for cable pulling after laying the cable. Cable markers shall be put at both ends of the cables. The cable number and other data shall be punched and the cable markers are to be securely attached to the cables. Sharp bending and kinking of cables shall be avoided. In each cable run, some extra length shall be kept at a suitable point.

3. Erection of Under Ground Cables:

3.1 CABLING AND OTHER EQUIPMENT:

3.1.1 Design, engineering, testing at works, type/acceptance/routine testing, packing, loading, transportation, transit insurance, unloading at site, supply and delivery, storage insurance, installation and pre-commissioning, testing at site (including commissioning) of 33Kv cable double run, Cable jointing / termination kits and other accessories in respective 132kV /33kv sub-stations to termination in 33 kV.

The cable and its accessories shall be complete with all fittings and components necessary for the satisfactory performance and ease of maintenance under the various operating conditions specified.

The commissioning of underground cable /overhead line shall be taken up in a coordinated manner so as to ensure minimum shut down time.

The contractor shall also be responsible for payment of any statutory taxes and duties arising out of this to the appropriate authority and employer shall not assume any liability for the same.

3.1.2 The scope also covers the complete laying (including civil works), jointing and termination, testing and commissioning at site of the equipment, cable and accessories. This shall mainly consist of:

a) Excavation of trenches and laying of cable.
b) Trenchless laying of Cable wherever required
c) Cable route markers of approved design shall be provided all along the route as per statutory requirements and Employer's instructions. Also the location of underground cable with reference to permanent benchmarks shall be clearly indicated on the marker.
d) In addition, cable joint markers shall be provided at locations where straight through joints have been provided.
e) Bonding of screen/armour at both ends to the earth system.
f) Design, fabrication, and erection of steel structures [including its civil foundation] for supporting cable end terminations, foundation and structure with all necessary accessories.
g) Backfilling of trenches & restoration as per requirements.

h) Bay extension, laying of overhead line and required open access metering arrangement
i) Testing and commissioning of equipments and systems under the scope of this bid

3.1.3 Documentation/SLD& Layout/ Equipment identification / O&M Manuals:

Contractor shall carry out the design and finalize the routing of underground distribution network, Bay extension, laying of overhead line and required open access metering arrangement. The contractor shall furnish the detailed drawings and diagrams. Contractor shall supply four sets of hard copy and a soft copy of these documents.

c) IDENTIFICATION PAINTING (by enamel based water proof paint)

After completion of the job each equipment shall be painted with identification painting apart from providing data in the usual name plate such as
i) Code Number

ii) Incoming Source
iii) Destination of the outgoing circuit
iv) Location

3.1.4 Statutory Clearances:
The installation of Equipment & Cables shall be as per established code of practice and fulfill the requirements of statutes.

The bidder shall obtain all necessary approvals from local authorities on behalf of BHEL.

3.2 Any other items not specifically mentioned in the specification but which are required for installation, testing, commissioning and satisfactory operation of the network as per Indian standards/IE Rules/IE Act and local authority regulations are deemed to be included in the scope of the specification and no deviation in this regard shall be accepted.

3.3 Before proceeding with the work the Contractor shall fully familiarize himself with the site and route conditions etc. Though the Employer (BHEL) shall endeavor to provide all the information, it shall not be binding for the Employer/ to provide the same.
The bidders are advised to visit the sites and acquaint themselves with the topography, infrastructure etc. The bidder shall be fully responsible for providing all equipment, materials, system and services specified or otherwise which are required to complete the erection and successful commissioning of underground cable works and other equipment as specified in the bid schedule in all respects. All materials required for the Civil and construction/installation work shall be supplied by the Contractor including sand and brick for cable laying.
The Contractor, based on conceptual tender drawings, shall do then complete design and detailed engineering.

3.4 The Contractor shall also be responsible for the overall coordination with internal/external agencies, project management, training of Employer's manpower, loading, unloading, handling, moving to final destination for successful erection, testing and commissioning of the **Electrical works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-station. RC Puram**

3.5 PHYSICAL AND OTHER PARAMETERS

3.5.1 Location of the site

3.5.2 Meteorological data
The equipment to be installed shall be suitable for continuous satisfactory operation in tropical area in and around Hyderabad with high humidity and following prevailing climatic conditions.

A Average Grade Atmosphere Dry
B Ambient Air Temperature: Highest 50° C, Average 40° C
C Relative humidity 100% Maximum & 10% Minimum
D Rainfall 600 mm (Concentrated in 4 months)
E Basic wind speed as IS: 875 44m/sec.
F Seismic Zone 4
G Atmosphere Tropical in close proximity with high humidity and foggy and dusty condition

3.5.3 System Parameter
The brief particulars of the 33 system parameters are given here under:

(i) Nominal system voltage: 33 kV

(ii) Highest system voltage: 36 Kv(rms)

(iii) Impulse withstand voltage: 170 kV peak 1.2/50 micro seconds wave of positive/negative polarity

(iv) System Frequency: 50 Hz

(v) No. of phase per circuit: Three

(vi) System Earthing: Solidly grounded

(vii) One minute power frequency: 75Kv (rms) withstand voltage

(viii) Rated short time current: 25KA

(ix)Duration of fault current: 3 second for RMU/Breaker and one second for cable.

The brief particulars of the 11 system parameters are given here under:

(i) Nominal system voltage: 11 kV

(ii) Highest system voltage: 12 Kv(rms)

(iii) Impulse withstand voltage: 75 kV peak 1.2/50 micro seconds wave of positive/negative polarity

(iv) System Frequency: 50 Hz

(v) No. of phase per circuit: Three

(vi) System Earthing: Solidly grounded

(vii) One minute power frequency: 75Kv(rms) withstand voltage

(viii) Rated short time current: 25KA

(ix)Duration of fault current: 3 second for RMU/Breaker and one second for cable.

INSTALLATION DATA:

Brief particulars of installation data are as under:

Location:

Type of laying: Direct burial in ground
Max. Soil temperature: 35 degree C at cable depth
Characteristics of soil: Hard rock and Hard gravel but generally leveled. Presence of micro-organisms in the soil shall be taken into account.
Thermal resistivity of soil: 100/120 deg. C cm/w[for information only, however exact value to be assessed by bidder]
Type of the road surface: To be physically examined by bidder based on route layout.

3.5.4 Soil Data

The bidder shall be responsible for carrying out the required tests and should fully satisfy him about the nature of soil including the earth resistivity expected to be encountered prior to the

submission of bid. Any variation of soil data during detailed engineering or construction stage shall not constitute a valid reason in affecting the terms and conditions of the bid or any extra price.

3.6 SCHEDULE OF QUANTITIES

The detailed bills of quantity of major items/works are indicated in the Bid Price Schedules (BPS).
Wherever the quantities of items/works are not indicated, the bidder is required to estimate the quantity required for entire execution and completion of works and incorporate their price in respective Bid Price Schedules. Any material/works not specifically mentioned in the description in BPS, as may be required shall be deemed to be included in the bid itself and shall be provided at no extra cost to BHEL.

3.7 TOOLS AND TACKLES

The bidder shall make the deployment of all special tools and tackles required for erection, testing, commissioning and maintenance of equipment.

3.8 SPECIFIC REQUIREMENT

The bidder shall be responsible for safety of human and equipment during the working. It will be the responsibility of the Contractor to co-ordinate and obtain, required clearance before commissioning. Any additional items, modification due to observation of such statutory authorities shall be provided by the Contractor at no extra cost to BHEL..

3.9 SHUT DOWN PLANNING:

Contractor shall carry out careful and detail pre- planning for the shut down schedules to minimize the number and duration of shut down in consultation with TSSPDCL& TSTRANSCO.
• Shut down conditions shall be clear specifying designation of person responsible for giving LC (line clear)
• Authorization of personnel from the contractor's side.
• Contractor shall fix the times for shut down preferably early morning and not later than 5 PM in the evening.
• All safety precautions for public and dept personnel, restoration of supply should be readily explained while returning LC.

3.10 EARTHING

All metal parts including cable amour not intended for carrying current or not alive shall be connected to duplicate earthing system. Earth continuity conductors shall be provided down to the ground level for earth connection to earth pit. It shall have sufficient cross sectional area to afford a low resistant path for the full fault current envisaged.
The size of the earth continuity conductor shall also be large enough to reduce the potential rise of the metal frame of the equipment in the event of fault to minimum but in any case not more

than 10V. The size of the earth terminals and conductors shall be adequate to restrict the temperature rise without causing any damage to the earth connection in the case of fault. No riveted joints in the earth conducting path shall be permissible and only bolted joints of adequate size shall be provided with GI nuts, bolts and plain and spring washers. The surfaces to be jointed shall be perfectly flat without any unevenness to ensure that there is no contact resistance.
An earth bus bar of copper strip of adequate size shall be provided inside all RMUs. The earth bus bar shall be terminated into two earthing terminals of adequate size with GI nuts, bolts and washers for connecting to earth continuity conductor mentioned above to which all earthing connections must be made.
The earth pit shall be made by digging pit of size 600* 600*2000mm and planting a 2 meter 80 mm dia CI earth pipe therein. The Earth pit shall be back filled with a mixture of Bentonite and black cotton soil to to improve the earth conductivity. The earth electrode shall be connected SS earth riser from the earth pipe shall consist of GI flat of 25*6 mm. The GI flat shall then be connected to the earth continuity conductor mentioned above and also the armour of the cables.
The CI pipe mentioned above would project 50 mm above the ground level as it should be visible and can be used for pouring water during the dry seasons.
All earthing shall strictly follow the provisions of Indian Electricity Rules 1956.

3.11 DANGER PLATES

Danger plates shall be provided on all equipment as per the statutory

3.12 GENERAL REQUIREMENT

3.12.1 The bidders shall submit the technical requirements, data and information as per the technical data sheets provided in the bid documents.
3.12.2 The bidders shall furnish engineering data, technical information, design documents, drawings etc fully.
3.12.3 It is recognized that the Bidder may have standardized on the use of certain components, materials, processes or procedures different from those specified herein. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the basic designs, standard and performance requirements and are acceptable to BHEL. Unless brought out clearly, the Bidder shall be deemed to conform to this specification scrupulously.
3.12.4 Materials and components not specifically stated in the specification but which are necessary for commissioning and satisfactory operation of the work unless specifically excluded shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost.
All similar standard components/parts of similar standard equipment provided, shall be inter-changeable with one another.

3.13 STANDARDS

3.13.1 The works covered by the specification shall be designed, engineered, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.
3.13.2 The Bidder shall also note that list of standards presented in this specification is not complete. Whenever necessary the list of standards shall be considered in conjunction with specific IS/IEC.
3.13.3 When the specific requirements stipulated in the specifications exceed or differ than those

required by the applicable standards, the stipulation of the specification shall take precedence.
3.13.4 Other internationally accepted standards, which ensure equivalent or better performance than that specified in the standards referred, shall also be accepted. Copies of such standards shall be submitted by the bidder along with the bid.
3.13.5 The bidder shall clearly indicate in his bid the specific standards in accordance with which the works will be carried out.

3.14 DRAWINGS

All titles, noting, markings and writings on the drawing shall be in English.
All the dimensions should be in metric units.

3.15 TESTING, INSPECTION & INSPECTION CERTIFICATE

3.15.1 His duly authorized representative and/or outside inspection agency acting on behalf of the BHEL shall have at General Technical Requirement all reasonable times free access to the Contractor and the Subcontractor's premises or Works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the Works during execution or erection.
Inspection may be made at any stage of execution of work, or at site at the option of the Employer and if found unsatisfactory due to bad workmanship or quality, BHEL reserves the right to stop the such work and appropriate action may be initiated as per rules in vogue.
3.15.2 In all cases where the Contract provides for tests whether at the premises or at the works of the Contractor or the Sub-contractor, the Contractor except where otherwise specified shall provide free of charge such items as labour, materials, electricity,
fuel, water, stores, apparatus and instruments as may be reasonably demanded by the or his authorized representative to carry out effectively such tests of the equipment in accordance with the Contract and shall give facilities to the or to his authorized representative to accomplish testing.

3.16 TESTS AT SITE

3.16.1 Pre-commissioning Tests
On completion of erection of the equipment and before charging, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the contractor for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at Site. The list of pre-commissioning tests to be performed shall be included in the Contractor's quality assurance programme.
3.16.2 Commissioning Tests
3.16.2.1 All required instrumentation and control equipment will be used during such tests and the contractor will use all such measuring equipment and devices duly calibrated as far as practicable. However, the Contractor, for the requirement of these tests, shall take immeasurable parameters into account in a reasonable manner. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The contractor will apply proper corrections in calculation, to take into account conditions, which do not correspond to the specified conditions.
3.16.2.2 Any special equipment, tools and tackles required for the successful completion of the Commissioning tests shall be provided by the contractor, free of cost.
3.16.2.3 The specific tests to be conducted on equipment have been brought out in the respective

chapters of the technical specification. However where the pre-commissioning tests have not been specified specifically they shall be as per relevant IS code of practice.
3.16.3 The Contractor shall be responsible for obtaining all the statutory clearances for commissioning and operation of the equipment.
The Contractor shall be responsible for any loss or damage during transportation, handling and storage.

3.17 All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all cables, valves and piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner.

3.18 FINISHING OF METAL SURFACES

3.18.1 All metal surfaces shall be subjected to treatment for anti-corrosion protection. All ferrous surfaces for external use unless otherwise stated elsewhere in the specification or specifically agreed, shall be hot-dip galvanized or subjected to weatherproof painting after fabrication. High tensile steel nuts & bolts and spring washers shall be electro galvanized to service condition 4. All steel conductors including those used for earthing/grounding (above ground level) shall be with anticorrosive Bituminous paint.

3.19 HOT DIP GALVANISHING

3.19.1 The minimum weight of the zinc coating shall be 610 gm/sq. m and minimum thickness of coating shall be 85 microns for all items thicker than 6mm. For items lower than 6mm thickness requirement of coating thickness shall be as per relevant ASTM.

3.20 PAINTING

3.20.1 Oil, grease, dirt shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by sand/shot blasting and thereafter by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.
3.20.2 The exterior color of the paint shall be as per shade no: 697 of IS-5 and inside shall be glossy white for all equipment, marshalling boxes, junction boxes, control cabinets, panels etc. unless specifically mentioned under respective sections of the equipments. Each coat of primer and finishing paint shall be of slightly different shade to enable inspection of the painting. A small quantity of finishing paint shall be supplied for minor touching up required at site after installation of the equipments.

3.21 HANDLING, STORING AND INSTALLATION

3.21.1 In accordance with the specific installation instructions as shown on manufacturer's drawings or as directed by the or his representative, the Contractor r shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented. Commercial use of switchyard equipment means completion of all site tests specified and energisation at rated voltage.
3.21.2 In case of any doubt/misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the BHEL. The Contractor shall be held responsible for any damage to the equipment consequent to not

following manufacturer's drawings/instructions correctly.
3.21.3 The Contractor shall be fully responsible for the equipment/material until the same is handed over to the BHEL in an operating condition after commissioning. Bidder shall be responsible for the maintenance of the equipment/material while in storage as well as after erection until taken over to the BHEL, as well as protection of the same against theft, element of nature, corrosion, damages etc.
3.21.4 Where material/equipment is unloaded by before the Contractor arrives at site or even when he is at site, by right can hand over the same to Contractor and there upon it will be the responsibility of Contractor to store the material in an orderly and proper manner.
3.21.5 The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipment, which require indoor storage or installation.
3.21.6 The words 'erection' and 'installation' used in the specification are synonymous.
3.21.7 Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes and Indian Electricity Rules, 1956 and Electricity Act.

3.21.8 The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances, the Contractor shall immediately proceed to correct the discrepancy at his risks and cost.

3.22 TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly General Technical Requirement and maintenance of the equipment. However, these tools and tackles shall be separately, packed and brought on to Site.

3.23 NAME PLATE/ LABELS:

All apparatus shall be clearly labeled. Details of name plate/ labels of major equipment shall be submitted to for approval.

3.24 EARTHING

All non live metal parts of every equipment shall be double earthed in accordance with I E Rules, 1956. They shall include the following:

i. Double Extensible On Load Switch with breaker
ii. The steel structural parts, where provided;
iii. Cable armour/metallic screen.

4. LAYING AND INSTALLATION

CABLE LAYING (33 kV)

4.1 Cable as per scope indicated in this specification, shall be laid underground in flat formation as per relevant IS and approved drawing. However, as per requirement of the field, the cables shall also have to be laid:

- Digging of trenches would have to be done in all types of surfaces, which may include soft soil, hard soil, rocky soil or even along the side of the road with a width 0.45mtrs X and 1.20 mtrs for single trench and 0.50mtrs X and 1.20 mtrs depth for double trench

from road level .

- Filling with sand for 75 mm

As per requirement of the field, the 33 kV 3 X 400 sq.mm XLPE UG cable shall also have to be laid:

1. In Hume Pipe or GI pipe.
2. In air at terminations in GI pipe of length 2.5Mtrs.
3. At varying depths due to obstructions.
4. The cost of Hume pipe/GI pipe and accessories such as clamp etc.should be included in the bid price.

- Covering the laid cable with a sand layer of 200mm on the laid cable
- Providing of protective cover of shabad stones (0.3x0.5m) with 2 inch thickness over the sand

4.2 The contractor shall prepare the final route drawing based on the design and planning criteria provided in this document and get the same approved from Employer before starting the cable laying work.

4.3 TRENCHING

The cable trench work involves earth excavation for cable trench, back filling and removal of excess earth from site. The work site shall be left as clean as possible. The trench shall be excavated using manual and mechanical methods including air compressor driven pneumatic drill as per field conditions.

The sides of the excavated trenches shall, wherever required, be well shored up with timber and sheeting.

4.4 Cable Laying and Installation

- Suitable wooden/ sheet steel barriers should be erected between the cable trench and pedestrian/ motorway to prevent accidents.
- The barrier could be made out of sheet steel or wood planks. These could be portable types of size 1.5 m long by 1.2 m (height).
- These should be painted with red and white coloured cross stripes.
- Warning and caution boards should be conspicuously displayed.
- The bottom of the excavated trench should be levelled flat and free from any object, which would damage the cables. Any gradient encountered shall be removed.

4.5 CABLE HANDLING

The inspection of cable on receipt, handling of cables, paying out, flaking, cushioning with sand or sieved compacted native soil, back-filling, reinstatement of road surfaces, providing and fixing joint markers, route markers , precautions of joint pits, sump holes and all necessary precautions that are required shall be carefully planned and in general conform to IS 1255-1983 or its equivalent.

4.6 DAMAGE TO PROPERTY

The contractor shall take all precautions while excavation of trench, trial pits etc., to protect the public and private properties and to avoid accidental damage. Any damage so caused shall be immediately repaired by contractor at his own cost and brought to the notice of the concerned persons and to the Employer.

- Contractor shall arrange third party liability insurance for the above purpose.
- The contractor shall bear all responsibilities and liabilities and shall bear all costs of the damages so caused by him or by his workman or agents.

4.7 CABLE ROUTE MARKERS/CABLE JOINT MARKERS

Permanent means of indicating the position of joints and cable route shall be fabricated, supplied and erected.
Route Marker shall be provided as per the field requirement. The markers should incorporate the relevant information. The name of the owner, voltage shall be marked on the route marker.
The markers shall be of stone or tile construction. The design shall be such that it cannot be pulled out.

4.8 DEPTH OF LAYING & SPACING BETWEEN CABLES:

Minimum depth of laying from ground surface to top of cable shall be as
following:
33kV Cable :1.20 meter
Wherever the proper depth is not achievable due to presence of other services or for other reasons, the cable shall be laid deeper or in hume pipe or GI pipe as required depending upon the site condition.
The pipes shall be supplied by the Contractor at no extra cost.

4.9 LAYING OUT THE CABLE

The excavated cable trench shall be drained of all water and the bed surface shall be smooth, uniform and fairly hard before laying out the cable. The cable shall be rolled in the trench on cable rollers, spaced out at uniform intervals. The paying out process must be smooth and steady without subjecting the cable to abnormal tension. The cable on being paid out shall be smoothly and evenly transferred to the ground after providing the sand cushion. The cables shall never be dropped. All snake bends shall be straightened. Suitable size cable stocking pulling eye shall be used for pulling the cable. While pulling the cable by winches or machines, the tension loading shall be by tension indicator and shall not exceed the permissible value for the cable. The cable laying shall be performed continuously at a speed not exceeding 600 to 1000 meter per hour.
The cable end seals shall be checked after laying and, if found damaged, shall immediately be resealed. Sufficient number of heat shrinkable cable end sealing caps shall be stocked at site stores for testing and jointing work. The integrity of the outer sheath shall be checked after the cable is laid in position.

4.10 SAND BEDDING AND BRICK

The cable shall be completely surrounded by well-compacted sand to such a thickness and of such size that the cable is protected against damage. The thickness of the cable sand should normally be a minimum of 250 mm depth. Cable sand with a grain size less than 8 mm shall be preferred to offer good protection to cable.
A brick (of brick class designation 75) layer of thickness 70 mm brick shall be provided between the cables for cable separation for every 10 meters.

4.11 FLAKING

The cables shall be flaked and left with slight extra lengths at jointing bays for expansion and flexibility.

4.12 Sand Bedding shall be provided as detailed in section 4.11 and no special thermal back filling is required.

4.13 BACK FILLING

Normally back filling shall consist of the material earlier excavated. However, bigger stones or pieces of rock should be removed.

4.14 PREVENTION OF DAMAGE DUE TO SHARP EDGES

After the cables have been laid in the trench and until the cables are covered with protective covering, no sharp metal tool shall be used in the trench or placed in such a position that may fall into the trench.

Straight and curved rollers used shall have no sharp projecting parts liable to damage the cable.

While pulling through pipes and ducts, the cable shall be protected to avoid damage due to sharp edges.

The cables shall never be bent, beyond the specified bending radius.

4.15 REINSTATEMENT

After the cables and pipes have been laid and before the trench is backfilled, all joints and cable positions should be carefully plotted in drawing and preserved and provided to the Engineer of BHEL.

The protective covers shall then be provided, the excavated soil riddled, sieved and replaced. It is advisable to leave a crown of earth not less than 50 mm and not more than 100 mm in the centre and tapering towards the sides of the trench.

After the subsidence has ceased the trench may be permanently reinstated and the surface restored to the best possible condition.

4.16 JOINTING BAYS

The bidder shall identify the location of the joint bays after carrying out detailed survey of the cable route and excavation of the trial pits. The delivery lengths of the cables shall match the location.

The joint bay should have a flat and level surface. At the bottom in a corner, a sump pit shall be made, if necessary, for bailing out water.

The contractor shall follow standard practice in making joint bay, jointing and back filling after making joint and testing for the voltage class required.

All works shall be carried out in presence and supervision of the Engineer of BHEL

4.17 TOOLS AND PLANTS

The successful bidder shall have all necessary tools, plant and equipment to carry out the **Electrical works for power evacuation from BHEL 1.5 MWp Solar Power Plant to TSTRANSCO Sub-station. RC Puram**

The bidders are instructed to give all the details of equipment at their disposal, to carry out the work successfully and speedily.

4.18 BENDING RADIUS:

The minimum bending radius of XLPE insulated cables is as follows:

Cable Bending radius

Three Core 15 x D

"D" means the overall diameter of the completed cable.

4.18 JOINTING AND TERMINATION OF CABLES

4.19 TESTS AFTER INSTALLATION

All tests as prescribed in Clause-6 of IEC-840 shall be performed after installation of cable. Following minimum tests shall be carried out:

a) Insulation Resistance of each cable drum length after paying but before jointing.

b) Serving insulation resistance after laying each cable length shall withstand a voltage of 5 kV DC between each reinforcement and external conducting surface for one minute. In addition, the serving insulation resistance shall be measured and checked with the values obtained in the routine factory test.

c) On completion of the cable laying and jointing work, the complete installation shall be tested with a D.C. voltage (high Voltage Test) as per IS 1255.

d) Conductor resistance of each cable of each complete circuit shall be measured and compared with the values obtained during routine factory tests.

e) Test for 5 minutes with system voltage applied between the conductor and the armour/ screen earthed.

f) Test for 24 hours with normal operating voltage of the system.

B. FOUNDATION / RCC CONSTRUCTION

General

1. Work covered under this Clause of the Specification comprises the design and construction of foundations and other RCC constructions for switchyard structures, equipment supports, trenches, control cubicles, bus supports, and systems, or for any other equipment or service and any other foundation required to complete the work. This clause is as well applicable to the other ECC constructions.

2. Concrete shall conform to the requirements mentioned in IS: 456 and all the tests shall be conducted as per relevant Indian Standard Codes as mentioned in Standard field quality plan appended with the specification. A minimum grade of M20 concrete (1:1.5:3 mix) shall be used for all structural/load bearing members as per latest IS 456.

3. If the site is sloppy, the foundation height will be adjusted to maintain the exact level of the top of structures to compensate such slopes.

4. The switchyard foundation's plinths and building plinths shall be minimum 300 mm and 500 mm above finished ground level respectively.

5. Minimum 75 mm thick lean concrete (1:4:8) shall be provided below all underground structures, foundations, trenches, etc., to provide a base for construction.

6. Concrete made with Portland slag cement shall be carefully cured and special importance shall be given during the placing of concrete and removal of shuttering.

7. The design and detailing of foundations shall be done based on the approved soil data and sub-soil conditions as well as for all possible critical loads and the combinations thereof.

The Spread footings foundation or pile foundation as may be required based on soil/sub-

soil conditions and superimposed loads shall be provided.

8. If pile foundations are adopted, the same shall be case-in-situ driven/bored or precast or underreamed type as per relevant parts of IS Code 2911.
Only RCC piles shall be provided. Suitability of the adopted pile foundations shall be justified by way of full design calculations. Detailed design calculations shall be submitted by the bidder showing complete.

Details of piles/pile groups proposed to be used. Necessary initial load test shall also be carried out by the bidder at their cost to establish the piles design capacity. Only after the design capacity of piles has been established, the Contractor shall take up the job of piling. Routine tests from the piles shall also be conducted. All the work (design & testing) shall be planned in such a way that these shall not cause any delay in project completion.

D**esign**

1. All foundation shall be of reinforced cement concrete. The design and construction of RCC structures shall be carried out as per IS: 456 and minimum grade of concrete shall be M-20. Higher grade of concrete than specified above may be used at the discretion of Contractor without any additional financial implication to the Owner.

2. Limit state method of design shall be adopted unless specified otherwise in the specification.

3. For detailing of reinforcement IS: 2502 and SP: 34 shall be followed. Cold twisted deformed bars (Fe=415 N/mm2) conforming to IS: 1786 shall be used as reinforcement. However, in specific areas, mild steel (Grade-I) conforming to IS: 432 can also be used. Two layers of reinforcement (on inner and outer face) shall be provided for wall and slab sections having thickness of 150 mm and above. Clear cover to reinforcement towards the earth face shall be minimum 40 mm.

4. The procedure used for the design of the foundations shall be the most critical loading combination of the steel structure and or equipment and or superstructure and other conditions, which produces the maximum stresses in the foundation or the foundation component and as per the relevant IS Codes of foundation design. Detailed design calculations shall be submitted by the bidder showing complete details of piles/pile groups proposed to be used.

5. Design shall consider any sub-soil water pressure that may be encountered following relevant standard strictly.

6. Necessary protection to the foundation work, if required shall be provided to take care of any special requirements for aggressive alkaline soil, black cotton soil or any other type of soil which is detrimental/harmful to the concrete foundations.

7. RCC columns shall be provided with rigid connection at the base.

8. All sub-structures shall be checked for sliding and overturning stability during both construction and operating conditions for various combinations of loads. Factors of safety for these cases shall be taken as mentioned in relevant IS Codes or as stipulated elsewhere in the Specifications. For checking against overturning, weight of soil vertically above footing shall be taken and inverted frustum of pyramid of earth on the

foundation should not be considered.

9. Earth pressure for all underground structures shall be calculated using coefficient of earth pressure at rest, co-efficient of active or passive earth pressure (whichever is applicable). However, for the design of substructures of any underground enclosures, earth pressure at rest shall be considered.

10. In addition to earth pressure and ground water pressure etc., a surcharge load of 2T/Sq.m shall also be considered for the design of all underground structures including channels, sumps, tanks, trenches, sub-structure of any underground hollow enclosure, etc., for the vehicular traffic in the vicinity of the structure.

11. Following conditions shall be considered for the design of water tank in pumps house, channels, sumps, trenches and other underground structures:
a) Full water pressure from inside and no earth pressure and ground water pressure and surcharge pressure from outside (application only to structures, which are liable to be filled up with water or any other liquid).
b) Full earth pressure, surcharge pressure and ground water pressure from outside and no water pressure from inside.
c) Design shall also be checked against buoyancy due to the ground water during construction and maintenance stages. Minimum factor of safety of 1.5 against buoyancy shall be ensured ignoring the superimposed loadings.

12. The foundations shall be proportioned so that the estimated total and differential movements of the foundations are not greater than the movements that the structure or equipment is designed to accommodate.

13. The foundations of circuit breaker shall be of block type foundation. Minimum reinforcement shall be governed by IS: 2974 and IS: 456.

14. The tower and equipment foundations shall be checked for a factor of safety of 2.2 for normal condition and 1.65 for short circuit condition against sliding, overturning and pullout. The same factors shall be used as partial safety factor overloads in limit state design also.

Technical specification of 33 kV/HT jointing kits

1.1 A General: The cable jointing personnel and his crew shall have good experience in the type of joints and terminations that are used.

The jointing work shall commence as soon as two or three lengths of cables have been laid.

The cable jointing accessories shall include the end terminating kits, straight through joints, and also any special tools and tackles required for making these joints.

The contractor shall minimise the use of straight joints.
All care should be taken to protect the factory-plumbed caps/ seals on the cable ends, and the cable end shall be resealed whenever the end is exposed for tests.

Jointing of cables in carriage ways, drive ways under costly paving, under concrete or asphalt surfaces and in proximity to telephone cables and water mains should be avoided wherever

possible.

Sufficient over lap of cables shall be allowed for making the joints.

The joint bay should be of sufficient dimensions to allow the jointers to work with as much freedom of movement and comfort as possible.

Sufficient space should be kept below the cable to be jointed. The joints of different phases shall be staggered.

All jointing shall be done by joint manufacturer's jointers or under their supervision.

1.1 TENTS / COVERS

An enclosure or suitable protection cover shall be used in all circumstances wherever jointing work is carried out in the open irrespective of the weather conditions. The joint shall be made in dust free and clean atmosphere.

1.2 PRECAUTIONS BEFORE MAKING A JOINT/ END TERMINATION

The cable end seals should not be opened until all arrangement have been made for jointing and all necessary precautions have been taken to prevent circumstances arising out of rainy/ inclement weather conditions, which might become uncontrollable.
If the cable end seals or cable ends are found to have suffered damage the cables should not be jointed, without tests and rectification.

1.3 MEASUREMENT OF INSULATION RESISTANCE

Before and after jointing, the insulation resistance of both sections of cables shall be checked.

1.4 IDENTIFICATION

The identification of each phase shall be clearly and properly noted. The cables shall be jointed as per the design approved by the TSSPDCL based on the proposal submitted by the Contractor. Each cable shall have identification for phase and circuit at joint bays.

5.0 Safety measures

The Contractor shall maintain safety tools and materials as per the work to be carried out.
TSSPDCL is not liable for any accident or untoward incident during the execution of work.

5.1 Warnings Signs

Different types of warning signs such as "Men working", "Line under permit to work", "Danger", etc and other indications for earthing, live parts, shock hazard possibility etc are to be displayed at strategic points by the contractor.
The contractor shall utilize the safety material as detailed during the execution of work.

5.2 Rubber Gloves

These are specially processed gloves, high dielectric strength, hardened as required and with flexibility for normal bend of fingers and thumbs for operating equipment handles.

5.3 Work Gloves
These are gloves made of silicon grain leather, flexible and with large protective cuff. These gloves are used while working on equipment for pre-commissioning tests or for repairs.

5.4 Polyethylene helmets
Safety hats for industrial and construction use, with tough outer shell, brims to allow water to drain and with adjustable side ventilation, in standard sizes.

5.5. Insulated boots
These are boots made of special leather with elastomeric canvas support, flexible with anti-slip sole.

5.6 Safety Unit
Safety clothing, include safety suit with no metal parts, resistant to wear and tear, flexible comfortable with Velcro straps.

5.7 Hooded Rain Coat
PVC rain garment with matching nylon trousers for the use of the workmen during rains.

5.8 Reinforced Safety Belt
These are waist belts for use in the overhead line work, with polyamide or leather elements, cast steel buckles suspension rings, straps, fibre ropes etc. Anti-fall safety-snaps will also be part of the safety belt.

5.9Portable lamps'
In the safety tools of workmen, head lamps, pocket torch, hand lamps etc are also included.

5.10 Life saving Kits
These shall contain voltage detectors, cable cutter with insulated handles, insulated platform on ladder and rescue sticks.

5.11 Fire Extinguisher -
Normally CO_2 cylinder 4.5'*g, 6.5 kg, 9 kg, 22 kg are used in sub-stations and generating stations. 22 kq^{s} cylinders are generally trolley mounted type.

The work area shall be separated from all possible sources of supply of power, by ensuring relevant circuit breakers, isolating switches etc.

The equipment like breakers and isolators shall be locked in the open condition.

i) Warning boards shall be exhibited even during the simple temporary maintenance operation,
ii) The area of work shall be properly demarcated with identifying ribbons or ropes.
iii) Each conductor or apparatus shall be checked to ensure absence of voltage.
iv) Proper short circuit and earthing shall be made before commencing any work on the line or equipment.

All safety rules given above and other associated guide lines are for enhancing safety when a person is in contact with or in close proximity to an electrical network. Using proper ladders, safety belts, helmets, insulating gloves etc form part of the safety rules, as

observation of the same are essential for preventing accidents other than the electrical shock hazard.

5.12 Safety Checks

The safety checks include the following

i) Whether the worker is properly trained for the work and aware of safety rules?
ii) Whether appropriate tools, and gadget available for the work?
iii) Whether the' person is properly insulated by using insulated platform, gloves, mats etc.?
iv) Whether the active or live conductors are away at a safe distance?
v) Whether safety equipment like helmets, safety belts, fire fighting equipment, earth rods etc. available?
vi) Whether all accidental reconnection of supply or induced voltage possibilities are guarded against?
vii) Whether life saving kits and first aid equipment available?

6.0 Technical & General

S. No.	Description
1	All the points mentioned in TSSPDCL letter No. CGM(Comml&RAC)/SE(IPC)/F. BHEL/D.No. 3860/14 dated: 20.02.2015 shall be strictly executed except points i& vi (copy attached)
2	All the points mentioned in TSTRANSCO letter No. CE/MZ/Hyd/SDE(O&M)/AE-O&M/F. BHEL/D.No. 148/15 dated: 20.04.2015 shall be strictly executed except point 3, 4,5,21,25(copy attached)
3	The 33KV line works upto interconnection point, extension of 33KV Bay at 132/33 KV RC Puram Sub-station, associated switchgear and metering equipment.
4	Directional over current & earth fault protection shall be provided for better selectivity and to avoid mal-operations.
5	Required Energy Meters (ABT Meters-Main, Check & standaby 0.2S class accuracy) are to be provided at interconnection point(TRANSCO Sub-station) should be obtained from TSSPDCL.
6	Testing of CT's (0.2S class accuracy) and PT's (0.2 class accuracy) (secondary burden is of 5VA & 10VA respectively) should be done in the presence of TSSPDCL & TSTRANSCO officials at NABL accredited laboratories only, and whose accreditation remains valid at the time of testing (as per NABL website) .
7	Communication system i.e., SCADA / DAS to transfer the real time data to the SLDC, TSTRANSCO to be provided.
8	For startup power and auxiliary consumption, a new service connection under HT Cat-II with CMD of 70KVA shall be released before synchronization. BHEL will pay required deposit / development charges to TSSPDCL. Contractor has to co-ordinate with concern for release of new connection.
9	Dismantling of existing 11KV Structure in TSTRANSCO R.C.Puram and extend the 33KV Bus by erecting suitable structures and Booms.
10	33 KV VCB preferably of CGL, Siemens & BHEL make shall be provided
11	Jumper connections are to be made with Zebra Conductor and Zebra designed clamps
12	Yard lighting for new bay is to be provided
13	Fire fightning equipments to be provided as per standard specification of TSTRANSCO
14	6" thickness of 12mm metal spreading for new bay is to be done.
15	Necessary Cable termination of the Breaker, CTs with control panel is to be carried out by laying multi lead control cables from control room to new bay.
16	Earth pits with new earth mat grid to be formed and Watering arrangement for new earth pits shall be provided

17	The proposed structures shall be as per latest standards of TSTRANSCO and on par with existing structures at 132KV TSTRANSCO Sub-station, RC Puram
18	The execution of work and quality of material shall be as per standards / specifications followed by TSTRANSCO / TSSPDCL.
19	Civil works such as laying of foundation structures and equipment, levelling of land, laying of metal spreading etc must be as per TSTRANSCO standards.
20	All the equipment and structures are be earthed as per TSTRANSCO standards.
21	Painting of new structure & M.S poles shall be done.
22	Contractor has to obtain approval from TSTRANSCO/TSSPDCL for interface metering schemes / drawings.
23	Liasioning charges including inspection by TSSPDCL, TSTRANSCO & subsequent approval by statutory inspection authorities from CEIG.
24	The Contractor is required to study site establishment, scope of work and certify the completeness of scope in order to execute the work.
25	The Contractor is 100% responsible for (i) procurement of material, (ii) installation, commissioning & testing. BHEL will not provide any material/service during execution of work.
26	BHEL will not provide lodging, boarding and conveyance during execution of work. Contractor has to make their own arrangements.

SOUTHERN POWER DISTRIBUTION COMPANY OF TS LIMITED

From
The Chief General Manager (Comml & RAC),
TSSPDCL, Corporate Office,
6-1-50, Ground Floor, Mint Compound,
Hyderabad – 500 063.

To
The General Manager/M&S,
Admn. Bldg, 2nd Floor,
BHEL, RC Puram,
Hyderabad – 502 032.

Letter No. CGM (Comml & RAC)/SE(IPC)/F. BHEL /D. No.3860 /14, dated:20 – 02-15

Sir,

Sub:- TSSPDCL – RE Projects – Proposed setting up of 1.5 MW Solar Power Project by M/s Bharat Heavy Electricals Limited for captive use at RC Puram, Rangareddy district, Telangana State - Confirmation of technical feasibility for grid connectivity at 33KV voltage level – Regarding.

Ref:- 1. Your application dated: 18-07-2014.
2. Memo.No.CGM(Comml&RA)/SE(IPC)/F.BHEL/D.No.709,dt 25.07.14.
3. Lr. No. SE/OP/RRC(North)/ADE/Comml/F-/D.No.731/14, Dt:01.09.2014.
4. Your letter BHEL/M&S/PD/1.5MW Solar Power Plant/Reply, date:29.09.14

* * *

With reference to the above, TSSPDCL hereby inform you that based on the Technical feasibility report received from the SE/Op/RRC(North), and your letter vide reference 4th cited, the Solar Power Project being proposed by M/s Bharat Heavy Electricals Limited with 1.5MW capacity at RC Puram, Rangareddy district, Telangana State under Captive use is technically feasible for grid connectivity.

The above proposed Solar Power Plant can be connected at 33 KV voltage level through a 33 kV line from the proposed Solar Power Plant as per the interconnection point given below.

Interconnection point: 132/33/11KV RC Puram Sub Station at 33 KV Voltage level through 33KV Dedicated feeder with a capacity of 1.5MW.

Further it is to inform that,

i. This technical feasibility approval is issued by TSSPDCL subject to condition that You have to furnish Bank guarantee to the undersigned(format is available in **www.tssouthernpower.com** home page click view all under Hotlinks and click on "Bank Guarantee Format - Solar Under REC" for download) for the validity period of Two years and two months with one month additional claim period from any nationalized bank for Rs. 2,00,000/- per MW of proposed capacity within 45 days from the date of receipt of this letter or before processing of estimate, whichever is earlier, ensuing the commissioning of the said project within two years period.

ii. The Solar Power developer shall execute the line works up to interconnection point, extension of 33KV Bay at 132/33/11KV RC Puram Sub Station, associated switchgear and metering equipment.

iii. Directional over Current & earth fault protection scheme may be provided for better selectivity and to avoid mal-operations at Substation end &

iv. The required Energy Meters (Main, Check & Standby 0.2s class accuracy) are to be provided at Inter connection point (TRANSCO/Discom SS), Plant Gross Energy Generation, Auxiliary Consumption and Captive consumption (wherever applicable) should be obtained from TSSPDCL on cost basis.

v. Testing of CTs (0.2s class accuracy) & PTs (0.2s class accuracy) (Secondary burden is of 5VA & 10VA respectively) should be done in the presence of TSSPDCL & TSTRANSCO officials at NABL certified laboratories only, and whose accreditation remains valid at the time of meter testing (as per the NABL website).

vi. As per the Regulations and Standards the following equipment should be installed at generator premises.

   a. Installation of equipment capable of supplying dynamically varying reactive power support to maintain power factor within the limits of 0.95 lag to 0.95 lead, facility to control active power injection etc., as per part (II)(B)(B2) of Central Electricity Authority (Technical Standards for connectivity to the Grid) Amendment Regulations-13.

   b. Installation of equipment to limit the harmonic current injections, DC current injection and flicker below the specified limits of standards (IEEE 519, IEC 61000).

   c. Installation of metering equipment for recording of harmonic content injections in the Load Survey data and under instantaneous parameters, etc., as per the approved Technical Specifications of ABT Meters approved by TSTRANSCO

vii. The generator should provide communication system i.e., SCADA/DAS to transfer the Real Time Data to the SLDC, TSTRANSCO.

viii. For startup power and auxiliary consumption billing, a service connection under HT Cat-II to be taken with a CMD of 70KVA before synchronization.

Receipt of this letter may please be acknowledged.

Yours faithfully,

15/2/15

Chief General Manager (Comml & RA)

Copy to

The Chief Engineer/Commercial/TSTRANSCO/Vidyuth Soudha /Hyderabad.
The Superintending Engineer/Commercial/Corporate Office/TSSPDCL/Hyderabad.
The Superintending Engineer/Operation/TSSPDCL/Ranga Reddy North.
The Superintending Engineer/Operation/TSSPDCL/Medak.

ENERGY SAVED IS ENERGY PRODUCED

TRANSMISSION CORPORATION OF TELANGANA LIMITED

From
The Chief Engineer,
Metro Zone, TSTRANSCO,
Erragadda GTS Colony,
Hyderabad – 500 045.

To
The Chief General Manager (Comml&RAC),
TSSPDCL, Corporate office,
6-1-50, Ground floor, Mint Compound
Hyderabad-500063.

Lr.No.CE/MZ/Hyd/ADE (O&M)/AE-O&M/F.No:BHEL/D.No.148/15, Date: 20-04-2015.

Sir,

Sub: Metro Zone-Hyd–Proposed setting up of 1.5 MW Solar Power Project by M/s Bharat Heavy Electricals Limited for captive use at 132KV SS RC Puram, Ranga Reddy District – Feasibility – Accorded.

Ref: 1) Letter No.CGM (Comml & RAC)/SE(IPC)/F.BHEL/D.No3860/14, Dt:20.02.2015.
2) Letter No.BHEL/M&S/PD/Solar/TSTransco/2015 Dated: 07.03.2015.
3) Endt.No.CE/MZ/HYD/ADE(O&M)/AE(O&M)/F.112/D.No 2887/14, Dt:09.03.15.
4) Lr.No:SE/O&M/R.R/HYD/ADE(T) /F:Feasibility/D.No:09/15, Dt: 04.04.2015.
5) Lr.No.SE/OP/RRC(North)/Tech/F-/D.No.35/15, DT.13.04.15

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With reference to the letter of the Chief General Manager (Comml & RAC) vide ref 1st cited where in technical feasibility was issued by TSSPDCL for grid connectivity at 33KV Level for Solar Power Project being proposed by M/s Bharat Heavy Electricals Limited with 1.5MW capacity at RC Puram, Ranga Reddy District. Further based on the feasibility report submitted by the Superintending Engineer/O&M/ Rangareddy vide ref 4th cited & based on the letter 5th cited, permission for connecting the proposed 1.5MWp solar power plant at 33KV Voltage level to 132/33-11kV RC Puram Sub-Station through dedicated feeder is hereby accorded subject to the following conditions that:

1. M/s TSSPDCL has to extend the 33KV Bus by erecting suitable Structures and Booms as shown in the diagram.

2. To take up the subject work, the required materials/related works shall be done in coordination with the Superintending Engineer/ O&M/Ranga Reddy /Hyd in addition to the above:
   a. 3Nos. 33KV, 800Amps Double break isolators.
   b. 1No. 33 KV VCB preferably CGL, Siemens, BHEL etc.
   c. 3No. 33KV CTs (400-200-100/1-1-1A) for Protection as per TSTRANSCO specification.
   d. 6 No.CTs and PTs for Metering as per T.O.O(ED/Plg.RAC & Reforms) Ms.No.10, Dt. 28-02-2014 & T.O.O (CE/Plg.Comml& Coord) Ms.No.05, Dated 23-03-2015 in respect of class of accuracy , Burden, No. of cores, Ratios Etc.
   e. 3No.ABT meters (Main, Check & Standby Meters) confirming to the technical specifications notified by TSTRANSCO with provision to record 3-Ph Voltages and Line currents.

3. The Developer must install equipment capable of supplying dynamically varying reactive power support so as to maintain power factor within limits of 0.95 lagging and 0.95 leading.

4. The Developer must install equipment to limit the harmonic current injections, DC current injection and flicker below the specified limits of standards (IEEE 519, IEC 61000)

5. The Developer must install metering equipment for recording of harmonic current injections in the load survey data and under instantaneous parameters etc as per the approved Technical Specifications of ABT Meters.

6. Jumper connections are to be made with Zebra Conductor and Zebra Designed clamps.

7. 1No. Twin Control Panel is to be provided.

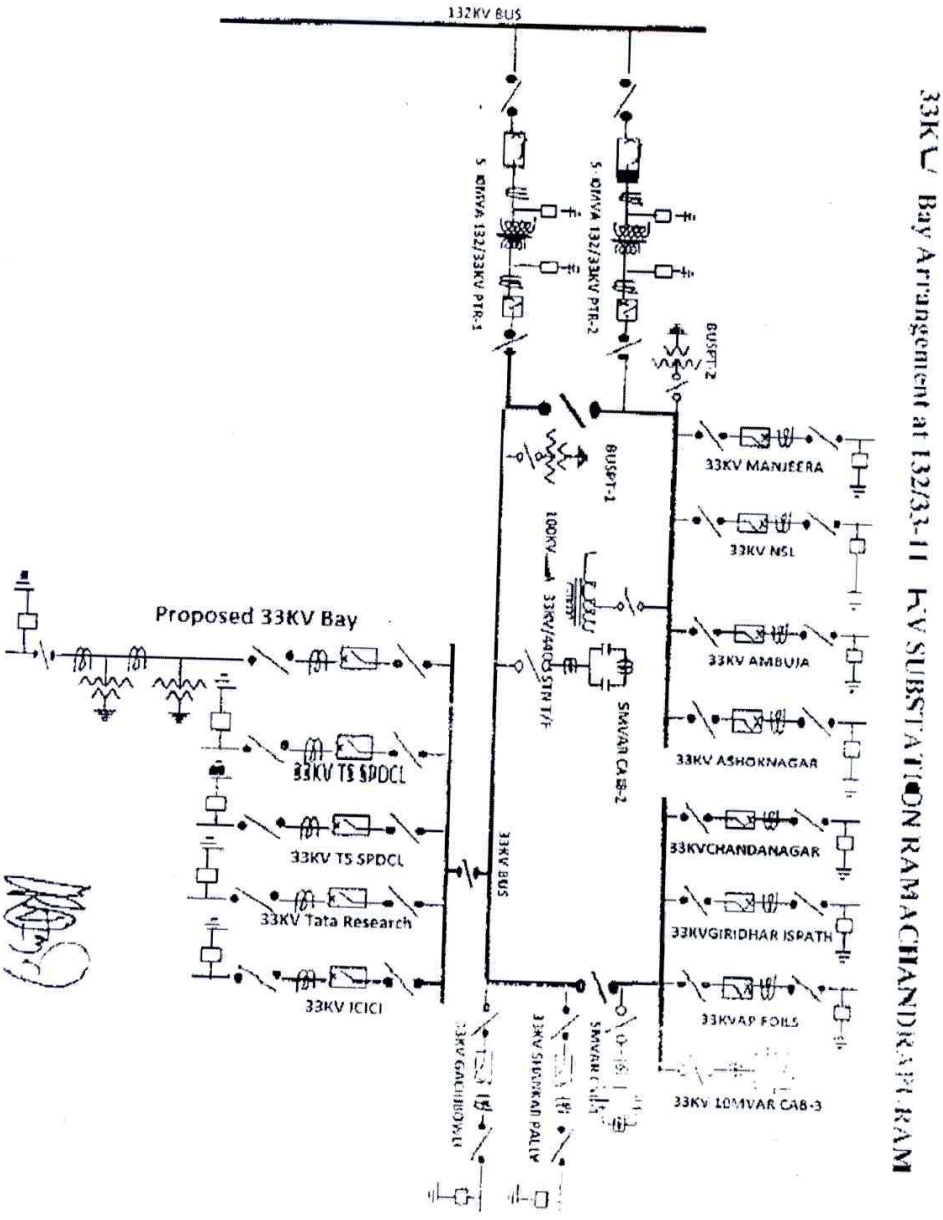
Contd..2

8. 3No. Lightening Arrestors are to be provided at the incoming point of the feeder.
9. Yard Lighting for the new bay is to be provided
10. Fire Fighting Equipments are to be provided as per Standard Specification of TSTRANSCO.
11. 6" thickness of 12mm metal spreading for the new bay is to be done.
12. Necessary Cable trenches from control room to bay is to be constructed.
13. Necessary cable termination of the breaker, CTs with control panel is to be carried out by laying multi leads control cables from control room to new bay for correct operation.
14. New Earth mat grid is to be formed as per the existing system and same is to be properly connected to existing earth mat grid. 3Nos Earth pits are to be provided at important locations and watering arrangements for all new earth pits are to be provided.
15. All the proposed structures must be as per the latest standards of TSTRANSCO and on par with existing structures at 132KV SS RC Puram.
16. The execution of work shall be as per standards/ specifications followed by TSTRANSCO and compatible with the existing equipment including 33 KV twin feeder C&R panels in the substation.
17. Civil works such as laying of foundation of structures and equipment, leveling of land, laying of Metal Spreading etc must be as per TSTRANSCO standards.
18. The quality of material/equipment used for works and workmanship involved in the construction of 33KV bay extensions being taken by TSSPDCL shall be available for scrutiny and inspection of TSTRANSCO.
19. All the equipments and structures are to be earthed as per TSTRANSCO standards.
20. Communication system i.e SCADA/DAS to transfer the real time data to the SLDC, TSTRANSCO is to be provided.
21. Supervision charges @ 10% on the estimate cost of new bays (Service Tax extra) shall be deposited to TSTRANSCO. Estimate towards total cost of the above works is to be submitted by TSSPDCL for scrutiny and arriving of 10% Supervision Charges.
22. As per T.O.O(ED/Plg.RAC & Reforms) Ms.No.10, Dated 28-02-2014 & T.O.O (CE/Plg. Comml & Coord) Ms.No.05, Dated 23-03-2015 the interface metering schemes/drawings must be approved by TSSPDCL.
23. The 33 KV bay shall be charged after conducting statutory inspection.
24. A completion report shall be furnished to TSTRANSCO including all the technical details of work done, equipment guarantees, manuals, drawings etc.
25. The new 33 KV bay will become the property of TSTRANSCO after commissioning.
26. Formal transfer note communication is to be made indicating the details of equipments, its cost, labour cost etc. i.e., total cost of the asset for making necessary accounting adjustments in the books of TSTRANSCO.

Encl:- Diagram.

CHIEF ENGINEER,
METRO ZONE/HYDERABAD.

Copy to:-
The Chief General Manager/Operation/Ranga Reddy Zone/Mint compound/Hyderabad.
The Superintending Engineer/O&M/Ranga Reddy/Hyderabad.
The Superintending Engineer /Operation/TSSPDCL/Ranga Reddy North.
The Divisional Engineer/O&M/Moulali.



33KV Bay Arrangement at 132/33-11 KV SUBSTATION RAMACHANDRAPURAM