



## ***Standard Bidding Document***

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## ***Technical Specifications***

- Name of Work** : Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu
- Unit** : Electric Unit-Jammu, JKPCCLtd. Rail Head Complex, Jammu
- Time of Completion** : 3 Months from Date Of Award

Sig. Of Bidder



# J&K PROJECTS CONSTRUCTION CORPORATION LTD.

(A J&K State Govt. Undertaking)

## NOTICE INVITING TENDER

### **E-NIT No: EJ/NIT/09/ASSEMBLY/ 2017-18**

On behalf of Managing Director, Jammu & Kashmir Projects Construction Corporation Ltd., the Deputy General Manager, Unit Electric, JKPCCLtd., Jammu invites e-tenders from OEM'S(Original Equipment Manufacturers) Authorized representative of company for the following work:

S. No	Name of Work	Estimated Cost (Rs. in lacs)	Cost of document	Earnest Money (Rs. in Lacs)	Time of completion	Class of Contractor
1.	Supply, Installation, Testing and Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu	30.00	2000.00	0.60	120 Days from Date of award	"A "

Qualification criteria, scope of work, tender documents, BOQ and all other terms & conditions can be seen and downloaded from [www.jktenders.gov.in](http://www.jktenders.gov.in).

#### Critical Dates:

1.	Period of downloading of NIT	15.03.2018 from 1600 Hrs. to 16.04.2018 upto 1600 Hrs.
2.	Pre-Bid Meeting	20.03.2018 at 1200 Hrs. in Office of General Manager, JKPCCLtd., Rail Head Complex, Jammu
3.	Bid submission dates	20.03.2018 from 1300 Hrs. to 16.04.2018 upto 1600 Hrs.
4.	Last date for receiving Hard Copies	17.04.2018 upto 1500 Hrs. in Office of General Manager, JKPCCLtd., Rail Head Complex, Jammu
5.	Date of opening of Technical Bid	19.04.2018 at 1230 Hrs. in Office of General Manager, JKPCCLtd., Rail Head Complex, Jammu

Any other information regarding e-tendering process can be had from the office of Deputy General Manager, Unit-Electric, JKPCCLtd. Rail Head Complex, Jammu or e-tendering Cell, Jammu.

**Deputy General Manager,  
Unit Electric, JKPCCLtd.  
Jammu.**

No: DGM/E/J/

Dated:

#### Copy to the: -

1. Managing Director JKPCCLtd, Srinagar for information.
2. General Manager (J), JKPCCLtd Jammu for information.
3. Deputy Director Information Jammu for information. It is requested that the notice may please be published in two leading English daily newspapers of State preferably Greater Kashmir & Daily Excelsior for its wide publicity.
4. E-Tendering Cell for uploading the Tender on [www.jktenders.gov.in](http://www.jktenders.gov.in) and [www.jkpccltd.com](http://www.jkpccltd.com)

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**OFFICE OF THE DEPUTY GENERAL MANAGER UNIT-ELECTRIC, JKPCCLtd- JAMMU.**  
**NOTICE INVITING TENDER**

**E-NIT No: EJ/NIT/09/ASSEMBLY/ 2017-18**

**INVITATION:**

On behalf of Managing Director, Jammu & Kashmir Projects Construction Corporation Ltd., the Deputy General Manager, Unit Electric, JKPCCLtd., Jammu invites e-tenders from OEM's for Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu

**NAME OF WORK:**

**Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu**

***Instruction to Bidders (ITB)***

**GENERAL INSTRUCTIONS:**

1. The bidding documents can be downloaded from the website <http://jktenders.gov.in> from **15-03-2018 (1000 Hrs) to 16-04-2018(1600Hrs)**. Bid documents contain qualifying criteria for bidders, specifications, bill of quantities, terms & conditions and other details.
2. A pre-bid meeting will be held on **20-03-2018 at 1200 Hrs** in the office of General Manager, JKPCCLtd., Jammu to clarify the issues pertaining to the tender. No further queries shall be entertained after this meeting.
3. The bids shall be deposited in electronic format on the website <http://jktenders.gov.in> from 1000 Hrs from **20-03-2018 (1300 Hrs) to 16-04-2018 (1600Hrs)**.
4. The original instruments in respect of cost of bid documents, EMD must be delivered to the **General Manager, JKPCCLtd., Rail Head Complex, Jammu** on or before **17-04-2018 up to 1500 Hrs by Registered Post / Courier / by hand**.  
(If the office happens to be closed on the date of receipt of the bids as specified, the bids will be received on the next working day at the same time and venue).
5. Technical bids of bidders shall be opened online in the office of **General Manager, JKPCCLtd., Jammu** on **19-04-2018 at 1230 Hrs** or on any other date to be specified separately.
6. Financial bids shall be opened online in the office of General Manager, JKPCCLtd., Jammu.
7. The date and time of opening of Financial-Bids shall be notified on Web Site [www.jktenders.gov.in](http://www.jktenders.gov.in) conveyed, to the bidders automatically through an e-mail message on their e-mail address.
8. The **Financial-bids of Responsive bidders** shall be opened online in the Office of the General Manager JKPCCLtd. (J) Jammu.
9. Bids must be accompanied by bid security in the shape of **CDR/FDR** payable at Jammu pledged in favour of A.O JKPCCLTD. Jammu and shall be valid for 1 year and **cost of tender documents in shape of Demand Draft (Non-refundable) in the name of Dy. General Manager Unit Electric, JKPCCLtd., Jammu** payable at Jammu.
10. The bid for the work shall remain open for acceptance for a period of **90 days** from the date of opening of financial bid. If any bidder/ tenderer withdraws his bid/ tender before the said period or makes any modifications in the terms and conditions of the bid, the said earnest money shall stand forfeited.
11. A bidder shall not be permitted to bid for works in the jurisdiction of officer responsible for award and execution of contract in which his or his spouse's near relative ( defined as first blood relations, and their spouses) is posted as unit Accountant or as an officer in any capacity between the grades of General Manager and Manager (both inclusive).

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12. No engineer of Gazetted rank or other Gazetted officer employed in Engineering or Administrative duties in an Engineering department of the State Government is allowed to work as a supplier for a period of two years after his retirement from Government service, without Government permission. This contract is liable to be cancelled if either the supplier or any of his employees is found any time to be such a person who had not obtained the permission of the government as aforesaid before submission of the tender or engagement in the contractor's service.
13. Other details can be seen in the bidding documents.
14. Any other information regarding e-tendering process can be had from the Office of the **Deputy General Manager, JKPCCLtd., Unit Electric, Jammu** on mobile No. **9419188801**.
15. To qualify for award of the Contract, each bidder should meet the Technical/ Financial Criteria.
16. The original instruments in respect of cost of bid Documents & EMD must be submitted to the Tender Accepting Authority by Registered Post/Courier/ by hand as per time schedule specified otherwise bid shall be treated non responsive out rightly.
17. The details of hard copies of original instruments in respect of cost of bid Documents & EMD specified in the tender documents should be the same as submitted online otherwise tender will summarily be rejected.
18. The bidder shall provide only the original instruments of cost of tender document, EMD, Form of Bid and affidavits in the hardcopy.
19. All the documents along-with scanned copies of cost of tender document, EMD and affidavit shall be uploaded on the website.
20. Bidders are advised to visit the site before quoting for the tender.
21. All documents relating to the bid shall be in the English Language.
22. **If the bidder does not quote rate for any item** of the rate list/quantity schedule, cost of such item/ items shall be deemed to be part of the overall/total contract value. No rate shall be allowed for such item / items in the allotment of contract.

**General Work-Experience:**

The Applicant should have the Experience of Supply Installation, testing and commissioning of One or more similar type of works in preceding five (5) years. The reference date for considering the period of preceding three years for experience is 31-03-2017.

**Turnover:**

The Applicant should have achieved an annual financial turnover of 50% of the advertised amount during any 3 years of proceeding 5 years. Further,

**Selection Criteria:**

The bidder should have successfully completed 1(One) work of 80% of total Value of the Estimated Cost.

Or

The bidder should have successfully completed 2(Two) work of 60% of total Value of the Estimated Cost.

Or

The bidder should have successfully completed 3(Three) work of 50% of total Value of the Estimated Cost.

**Note:**

- a. Other income shall not be considered for arriving at Annual Turnover.
- b. As a proof of turnover, audited Profit & Loss account along with Statutory Auditor's report for last three years is required to be submitted. In case where audited profit and loss account for the immediately preceding year is not available, then a statement of profit and loss account duly certified by the statutory auditors with his comments shall be enclosed with the application along with the copy of appointment letter of the statutory auditor.

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- c. Each bidder must produce:
  - The current income-tax challan, PAN No. valid Electrical Contractor License and EPF Registration No.
  - A declaration that the information furnished with the bid documents is correct in all respects; and
  - Such other certificates as defined in the ITB. Failure to produce the certificates shall make the bid non-responsive.
- d. Each bidder must demonstrate:  
Availability of technical personnel for Erection/ work
- e. Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have :
  - Made misleading or false representations in the forms, statements, declarations and attachments submitted in proof of the qualification requirements; and/or
  - Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

### **23. Instruction regarding e-tendering process**

- a) The interested bidder can download the bid from the website <http://jktenders.gov.in>  
Bidders are advised to download bid submission manual for the help of bid submission process from the Downloads option as well as from Bidders Manual Kit on website <http://jktenders.gov.in>
- b) To participate in bidding process, bidders have to get digital signature certificate card as per Information Technology Act- 2000, to participate in online bidding. This certificate will be required for digitally signing the bid. Bidders can get above mentioned digital signature certificate card from any approved vendors. The bidders who already possess valid digital signature certificates card, need not to procure new digital signature certificate card.
- c) **The bidders have to submit their bids online in electronic format with digital signature. The bids proposed without digital signature will not be accepted.**
- d) Bids will be opened online as per time schedule.
- e) Before submission of online bids, bidders must ensure that scanned copy of all the necessary documents have been attached with bid.
- f) The department will not be responsible for delay in online submission due to any reasons.
- g) All required information for bid must be filled and submitted online. The bidder should recheck his online document before submission on line otherwise damaged/ corrupt document shall not be considered in any case.
- h) The original instruments in respect of cost of bid documents & EMD must be submitted to Tender Inviting Authority as per time schedule specified otherwise bid shall be treated non responsive out rightly.
- i) The details of hard copies of original instruments in respect of cost of bid Documents & EMD specified in the tender documents should be the same as submitted online otherwise tender will summarily be rejected.
- j) Bidders are advised to use My Documents area in their user on e-tendering portal to store important documents which are used in all tenders like GST Certificate, Sales Tax clearance Certificate etc. and attach these certificates as Non Statutory Documents while submitting their bids.
- k) Bidders are advised not to make any change in BOQ (Bill of Quantities) contents/ specifications or its name. In no case they should attempt to create similar BOQ manually. The BOQ downloaded should

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be used for filling the net item rate inclusive of all taxes and it should be saved with the same with the same name as it contains.

- l) Bidders are advised to scan their documents at 100 DPI (Dots per inch) resolutions with Black and white, JPEG scan properly. Convert scanned images to PDF.
- m) The guidelines for bidders to submit bid online can be downloaded from website <http://jktenders.gov.in>(**Download option**).
- n) All the required information for bid must be filled and submitted online. The bidder should recheck his online document before submission online otherwise damaged/corrupt file/corrupt document shall not be considered in any case.

**24. Scope of Work:**

The scope of work shall include but not limited to Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu

As per drawing provided by the consultant and BOQ enclosed with the document) and leading to successful performance as per Technical Specifications and providing all inclusive service during warranty period including cost of all construction equipment, men, materials etc to complete in all respects, commissioning and subsequent operation and Maintenance for the specified period.

The scope includes the cost of all activities including but not limited to providing, fixing, testing and commissioning of internal electrification at site etc including storage. After successful completion, testing and commissioning, the Electric system is to be handed over to the Owner **with completion certificate for required electric supply connection to the building from State Power Development Department Inspection wing Jammu (TTIC).**

**Note:**

Bids not covering the entire scope of Works shall be treated as incomplete and hence liable to be rejected.

## Essential Document for opening Technical Bid

### **A. Cost of tender document & EMD.**

Bids must be accompanied by bid security in the shape of **CDR/FDR** payable at Jammu pledged in favour of Accounts officer , **JKPCC Ltd., Jammu** and shall be valid for 1 year and **cost of tender documents in shape of Demand Draft (Non-refundable) in the name of Dy. General Manager Unit Electric, JKPCC Ltd., Jammu** payable at Jammu

### **B. Affidavit & Certificates.**

1. **Copies** of original documents defining constitution/ legal status, place of registration and principal place of Business.
2. **Copies** of original Valid TIN. & PAN.
3. **Copy** of original valid Electrical Contractor License.
4. **Copy** of valid EPF Registration No.
5. The bidders shall provide **Affidavit** along with the bid document with the following undertakings:
  - a. That JKPCC Ltd. is authorized to seek references from Bidders bankers.
  - b. That the bidder would be able to invest a minimum of 25% of Contract Value.
  - c. That the bidder is not black listed/debarred by any Govt. or Semi-Govt. Departments from participation in tendering.
  - d. That bid will remain valid for a period of ninety (90) days from the date of opening of Technical bids.
  - e. Affirming that the information submitted by the bidder with the bid / supporting documents is true & correct to the best of his knowledge and belief.
  6. The Applicant should have achieved an annual financial turnover of 50% of the advertised amount during any 3 years of proceeding 5 years, duly attested by a Chartered Accountant. The Applicant should have the Experience of executing one or more similar type of work of Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard in preceding five (5) years. Experience Certificate issued by an engineer not below the rank of **Executive Engineer/s (Electrical)** from J&K State/CPWD/ Railways and other State/ Central Govt. Undertaking certify that:
    - The bidder have successfully completed 1(One) work of 80% of total Value of the Estimated Cost. – or-
    - The bidder have successfully completed 2(Two) work of 60% of total Value of the Estimated Cost. –or-
    - The bidder have successfully completed 3(Three) work of 50% of total Value of the Estimated Cost.

**Note:-** *Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representation in the forms, statements and attachments submitted in proof of the qualification requirement and/or record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc and/or participated in the previous bidding for the same work and has quoted unreasonably high bid prices and could not furnish rational justification to the employer.*

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## General Conditions of Contract

### 1 TIME FOR COMPLETION

The Time For Completion of the Work, including time required for creation of construction facilities etc, shall be in tandem with civil works.

### 2 CONSTRUCTION PROGRAMME:

The Bidder shall include in his Bid, the detailed construction programme for executing the work, describing broad Components, Methodology for Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu

### 3 SITE VISIT

The bidder at his own cost/expenses is advised to visit and examine the Site of Works and its surroundings and obtain for himself on his own responsibility, all information that may be necessary for preparing the bid and entering into a Contract .

Bidders shall familiarize themselves especially with the rules and regulations, local Laws applicable to carry out such Work in J&K. The Owner shall not entertain any request for clarifications from the Bidders, regarding such statutory provisions.

### 4 BID DOCUMENTS

4.1 The Bid Documents shall comprise Instruction to Bidders (ITB), General Conditions of Contract and Special Conditions of Contract (GCC, SCC), Technical Specifications, BoQ and Appendix Forms.

4.2 Amendment to Bid Documents

(a) At any time prior to the deadline for submission of bids, the Owner may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the Bid Documents by issuance of an Addendum .

(b) The Addendum will be sent in writing or by fax/e-mail to all prospective bidders who have been issued the Bid Documents and will be binding upon them. Prospective bidders shall promptly acknowledge receipt thereof to the Owner.

(c) In order to afford prospective bidders reasonable time sufficient to take an Addendum into account in preparing their bids, the Owner may, at its discretion, extend the deadline for the submission of bids .

4.3 Preparation of Bids

(a) The bid shall be in English language only Failure to comply with this shall disqualify a bid .

(b) The Bid must contain the name and places of business of the person or persons making the bid and must be signed by the duly authorized representative with his usual signature and sealed by the Bidder the name(s) and designation(s) of persons signing should also be typed or printed below the signature.

(c) Bid by Companies/Firms/Parties must be furnished with full names of Companies/Firms and be signed by their legally authorised representative(s)

(d) Satisfactory evidence of authority of the person(s) signing on behalf of the Bidder shall be furnished with the bid.

(e) The Bidder's name stated on the proposal shall be the exact legal name of the firm/Company/Parties.

(f) Erasures or other changes in the Bid Document including the proposal documents shall be over the initials of the persons signing the bid.

**Bids not conforming to the above requirements of signing are liable to be rejected.**

4.4 Specific Issues

(a) A prospective bidder is expected to examine all instructions, terms & conditions, forms and Owner's Specifications/Requirements in the Bid Document and fully inform himself as to all the conditions and matters which may in any way affect the Works, his bid or the cost thereof Further, failure to furnish all information required by the Bid Document or submission of incomplete offers, conditional bids and proposals containing deviations from the Bid Document shall be rejected as non-responsive .

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- (b) It will be imperative for each Bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the Works covered under Scope of Works and these Documents .

It would be understood and deemed that such factors have been properly considered by the bidder while submitting the bids Owner accepts no liability for the lack of such clear information or its effect on the cost of the Works to the Bidder .

- 4.5 Bidders shall assess their requirement of infrastructure and construction facilities to suit their methodology for successful implementation of the work .

Thus, while working out their bid price, the bidders are required to take into account entire scope of the work defined in Bid Documents.

#### 5. **PRICE BASES, CURRENCIES**

Bidders shall quote their Prices in Indian Rupees in the Performa as given for Schedule of Prices/Bill of Quantity Bidders shall quote for the entire package on a single source responsibility basis. Bidders shall give "Bill of Quantities" and rates covering entire scope of the Works. The prices are fixed No price variation/adjustment shall be allowed in the currency of contract.

The Bidder shall quote his prices logically in bid form. The Bidder is advised to avoid offering of rebate/discount/loading. However, in case of exceptional circumstances, the rebate/discount/loading offered by the Bidder should be only in the Performa of Bill of Quantity. The bidder should offer the rebate on a percentage basis applied uniformly to all the Prices in the Performa given in BoQ.

**The quoted rates should be inclusive of all duties, levies, taxes, costs like transportation, handling, insurance etc.**

#### 6. **SUBMISSION OF BIDS AND BID GUARANTEE**

Bid shall be submitted in sealed Envelope. In the Envelope only Techno-commercial Bid shall be submitted along with cost of tender & Earnest money. After Techno-commercial evaluation, price bid of only those Bidders shall be decrypted who meet the qualification criteria and whose Techno-commercial proposals are found responsive.

Bidders are requested to submit their Bid in the Office of General Manager Jammu JKPC Ltd JKPC Building, Rail Head Complex, Panama Chowk, Jammu, on or before the date indicated in the NIT in a single sealed Envelope superscribed "Bid for Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu

#### 6.1 **Sealing and Marking of Bids**

- a) **Bid must be** super scribed as " Technical Bids for(Original + Copy I) and shall contain the following material:

- Bid Security and Techno-commercial Bid" (Original + Copy-I).
- All Application Forms and Technical Particulars (Technical Data & Catalogues) duly completed including Proof of meeting the qualifying criteria as stipulated in the NIT. All information as per Application Forms and Technical Information/Particulars/Methodology and schedule excluding Bill of Quantities and other data required to be submitted by Bidders in accordance with the Instructions to Bidders and the Addenda, including all supporting documentation, which the Bidder wishes to, submit as part of his Techno-commercial Bid .

- Copies of all documents specified under Bill of Quantities without indicating any prices therein.

Declaration confirming that the Techno-Commercial Bids are without any deviations and are strictly in conformity to the Bid Documents issued by the Owner .The declaration is to be submitted as per form for **TENDER PROFORMA OF BID .**

- All bidding forms relating to prices or having other financial implications shall be left blank, which must also contain no other information, data and details relating to prices. All pages and corrections, if any, in the document submitted shall be signed by the Bidder.

#### 6.2 **The priced Bill of Quantities/ Schedule of Prices to be submitted online only.**

- 6.3 All instructions in this respect contained in ITB (Instructions to Bidders) and Addenda, if any, shall be followed.

- 6.4 The Bids shall be submitted at any time on working days and working hours and up to the deadline stipulated in NIT at the Owner's office in, Jammu, India. Bids will be opened in the presence of those representatives of the Bidders who choose to remain present.

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- 6.5 The inner and outer envelopes shall;
- a) Bear the name and address of the Bidder;
  - b) Be addressed to the Owner at the address provided in the document;
  - c) Provide a warning not to open before the time and date for bid opening
- 6.6 If all the envelopes are not sealed and marked as above, the Owner will assume no responsibility for the misplacement or premature opening of the bid.
- 6.7 **Deadline for Submission of Bids**
- 6.7.1 Bids shall be received by the Owner at the address specified not later than the last date and time for submission of bids.
- 6.7.2 The Owner may, in exceptional circumstances and at its discretion, extend the deadline for submission of bids by issuing an Addendum, in which case all rights and obligations of the Owner and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.
- 6.8 **Late Bids**
- 6.8.1 Any bid received by the Owner after the deadline for submission of bids prescribed in ITB will be returned unopened to the bidder.
- 6.9 **Modification, Substitution and Withdrawal of Bids**
- 6.9.1 The bidder may modify, substitute, or withdraw his original bid after its submission but in any case before the official deadline for submission, if a corresponding written notice of the modification, substitution or withdrawal is received by the Owner prior to the deadline for submission of bids .
- 6.9.2 The bidder's modification, substitution, or withdrawal shall be prepared, sealed, marked, and delivered in with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL", as appropriate.
- 6.9.3 No bid shall be modified, substituted or withdrawn by the bidder after deadline for submission of bids.
- 6.9.4 Withdrawal of the Bid during the interval between the deadline for submission of Bids and expiration of the period of bid validity shall result in the forfeiture of the bid security .
- 6.10 **Bid Guarantee/ Security/EMD**
- i) The bid shall be accompanied by a bid security for an amount indicated.  
The bid security shall be in the form of FDR/CDR and shall be issued by an Indian Nationalized / Scheduled Bank or a Foreign Bank notified as a Scheduled Bank under the provisions of the 'Reserve Bank of India Act' through any of its Branches in India .  
Bank Guarantee for Bid Security in original shall be submitted along with the bid. However, the issuing Bank shall submit an unstamped duplicate copy of Bank Guarantees directly by Registered post to the Owner with a forwarding letter
  - ii) The Bid Security of the successful Bidder to whom a Contract is awarded will be returned after the said Bidder provides the Contract Performance Guarantee as per stipulations elsewhere in the Bid Documents The successful Bidder shall be required to extend the validity of the Bid Security till the Contract Performance Guarantee is accepted by the Owner .
  - iii) The Bid Security may be forfeited:
    - a) If the bidder withdraws or modifies its bid.
    - b) If the bidder is found to have indulged in corrupt or fraudulent or collusive or coercive practice(s).
    - c) In the case of a successful bidder, if he fails within the specified time limit to;
      - i) Sign the Agreement, or
      - ii) Furnish the required performance security
      - iii) Bid Security of all the unsuccessful Bidders will be returned as promptly as possible after Notification of Award in terms of this ITB but not later than 30 days after the expiry of the bid validity.
      - iv) Any bid not accompanied by the bid security in accordance with above provisions will be rejected by the Owner as 'non-responsive'
      - v) Interest or any other charges, whatsoever, will not be payable by the Owner on the above Bid Security amount.

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**7. GST REGISTRATION NUMBER:**

The successful Bidder shall furnish to the Owner his GST number obtained from commercial taxes department under GST Act. No payment shall be made to the Contractor unless he submits his GST Number

**8. VALIDITY OF BID**

The bid should be kept valid for acceptance for a period of 90 days from the date of opening of Bids. In exceptional circumstances the Owner may solicit the bidder's consent to an extension of the period of the validity. The request and the response thereto shall be made in writing (including telefax). The Bid Security shall also be extended by the same period as the extension in the validity of the bid. A bidder accepting the request will not be permitted to modify its bid.

**9. OPENING AND EVALUATION OF BIDS****i) Bid Opening**

The Owner will open the bids, including WITHDRAWALS, SUBSTITUTIONS and MODIFICATIONS made hereof, in the presence of bidders' designated representatives who choose to attend, at the time, date, and location stipulated in the hereof. The bidders' representatives who are present shall sign a register evidencing their attendance. No Bid shall be rejected at the Bid opening except for the late Bids pursuant.

**ii) Envelopes will be opened in the following order;**

- a. Withdrawal notices
  - b. Substitution
  - c. Original bid along with modifications, if any
  - d. Original bids for which an acceptable notice of withdrawal has been submitted shall not be opened.
- All important information and any such other details as the Owner may consider appropriate, will be announced by the Owner at the Bid opening. This shall include but may not be limited to the Bidders' names, the Bid Prices including deviations, any discounts, withdrawals, substitutions and bid modifications, and the presence (or absence) of Bid Security .

Bids not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances.

**iii) Bid Evaluation****General**

The Bids will be evaluated by the Owner to ascertain the lowest evaluated technically and commercially responsive bid for the complete scope of the proposal, as covered under these Bid Documents. The evaluation of techno-commercial bids shall be carried out on the techno-commercial submission of the bidder for the entire Scope of Work meeting Owner's Specifications/Requirements and Qualification Criteria as detailed in these Bid Documents.

**Preliminary Examination:**

The Owner will examine the bids to determine whether the documents have been properly signed, whether required sureties have been furnished, whether computational errors for price bids have been made and whether the bids are generally in order.

Prior to detailed evaluation, the Owner will determine the substantial responsiveness of each bid to the Bid Documents. A substantially responsive bid is one, which conforms to all the terms and conditions of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works or inconsistent with the Bidding Documents; (b) which limits in any substantial way, the Owner's rights or the Bidder's obligations under the Contract; or (c) Technical proposal is such, as if the bidder has not understood the work implementation (d) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids . The Owner's determination of bid's responsiveness is to be based on the contents of the bid itself without recourse to extraneous evidence.

A bid determined as not substantially responsive will be rejected by the Owner and may not subsequently be made responsive by the bidder by correction of the non-conformity.

The Owner may waive any minor non-conformity or irregularity in a bid which does not constitute a material deviation provided such waiver does not prejudice or effect the relative ranking of bidder .

**Correction of Errors**

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In the Bill of Quantities the rates shall be written both in words and in figures. Bidder shall also show the total on each page and the Grand Total of the whole Contract. Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.

If on check, found differences between the rates given by the contractor in words and figures or in the amount worked out by him in the Bill of Quantities and General Summary, the same shall be adjusted in accordance with the following rules:

- a) In the event of a discrepancy between description in words and figures quoted by a tenderer, the description in words shall prevail.
- b) In the event of an error occurring in the amount column of Bill of Quantities as a result of wrong multiplication of unit price and quantity, the unit price shall be regarded as firm and multiplication shall be amended on the basis of the price.
- c) All errors in totaling in the amount column and in carrying forward totals shall be corrected.
- d) The General Summary and the tendered sum shall be amended accordingly. The tendered sum so altered shall, for the purpose of tender, be substituted for the sum originally tendered and considered for acceptance instead of the original sum quoted by the Bidder.

**10. COMPARISON OF BIDS**

**Prices quoted by the Bidder for Complete Scope of Work including defect liability period shall be Considered for Comparison of Bids .**

**Taxes and duties**

The Bid Prices shall be inclusive of all taxes and duties .The effect of all applicable taxes, duties, other levies and charges etc should be ascertained by the bidder and included in his Bid Price.

**11. AWARDS**

The Owner will award the Works to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest Evaluated Bid Price .

**12. NOTIFICATION OF AWARD (LETTER OF ACCEPTANCE)**

Prior to expiration of the period of bid validity, the Owner will notify the successful bidder by tele fax confirmed by registered letter or courier that its bid has been accepted. This letter (hereinafter and in the Conditions of the Contract called the "Letter of Acceptance") shall specify the sum which the Owner will pay the Contractor in consideration of the execution and completion of the Works and the remedying of any defects therein by the Contractor as prescribed by the Contract.

The notification of award will constitute the formation of a contract until the contract has been formally signed pursuant to Clause 19 hereunder

**13. PERMANENT ACCOUNT NUMBER (PAN):**

Within 28 days from the date of issue of the Letter of Acceptance, the successful Bidder shall furnish to the Owner his Permanent Account Number issued by the Income Tax Authorities in India .No payment shall be made to the Contractor unless he submits his Permanent Account Number.

**14. PERFORMANCE SECURITY:**

Within a period of 21 days from the date of issue of Letter of Acceptance, the successful bidder shall furnish to the Owner, Bank Guarantee for amounts equal to 10 per cent (%) of the Contract Price in the form Bid Security annexed in the List of Forms.

Failure of the successful bidder to comply with the requirement of Clause 15 shall constitute a breach of contract, cause for annulment of the award, forfeiture of the Bid Security, and any such other remedy the Owner may take under the provisions of the Contract.

**15. CORRUPT OR FRAUDULENT PRACTICES**

It is expected from the Bidders that they will observe the high standard of ethics during the procurement and execution of such Contracts. In pursuance of this policy:

(a) For the purpose of this provision, the terms set-forth below shall mean as under:

- (i) "**corrupt practice**" means the offering, giving, receiving or soliciting, directly or indirectly of anything of value to influence the action of a public official in the procurement process or in Contract execution;

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- (ii) **"Fraudulent practice"** means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a Contract
  - (iii) **"Collusive practices"** means a scheme or arrangement between two or more bidders with or without the knowledge of the Borrower, designed to establish bid prices at artificial, non-competitive levels;
  - (iv) **"Coercive practice"** means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract;
- (b) A bid may be rejected by the Owner if it is determined at any stage that respective bidder has engaged in corrupt or fraudulent or collusive or coercive practices in competing for the Contract in question; The Owner may declare a firm/Party ineligible, either indefinitely or for a stated period of time, to be awarded a Contract if it at any time determines that the firm /Party has engaged in corrupt or fraudulent or collusive or coercive practices in competing for, or in executing a Contract. Representative of vendors, suppliers, contractors, consultants, service providers or any other agency (ies) doing any type of business with JKPCC Ltd is expected and shall be responsible to ensure that there is no fraudulent act being committed in their areas of responsibility/ control. As soon as he/ she comes to know of any fraud or suspected fraud or any other fraudulent activity must report such incident(s) Such reporting shall be made to the designated Nodal Officer(s), nominated in Project/ Corporate Centre The reporting of the fraud normally should be in writing In case the reporter is not willing to furnish a written statement of fraud but is in a position to give sequential and specific transaction of fraud/ suspected fraud, then the officer receiving the information/ Nodal Officer shall record such details in writing as narrated by the reporter.

## **16 Contract:**

- 16.1 Following documents shall be attached/annexed to the Agreement and thus form part of the Contract;
- a) General Conditions of Contract.
  - b) Bill of Quantities.
  - c) Special Conditions of Contract.
  - d) Technical Specifications
  - e) Letter of Award.
  - f) Critical conditions of the contract.
  - g) Any other document forming part of the Contract.
- 16.2 In case of any discrepancy between the documents mentioned in Clause 16.1 above the order of documents shall be as follows:
- i. Letter of Award
  - ii. Special Conditions of Contract.
  - iii. General Conditions of Contract.
  - iv. Technical Specifications
  - v. Bill of Quantities.
  - vi. Critical conditions of the contract.
  - vii. Any other document forming part of the Contract.

## **17. PRICES:**

- 17.1 The prices to be quoted by the intending tenderer shall include the supply, installation, testing and commissioning of works at the site, of all component, ancillary material and other items whatsoever required for carrying out the job to fulfill the intent and purposes as laid down in the Technical specifications.
- 17.2 The tenderer's price shall be deemed to include all components. The contractor shall also include, in his price, all taxes duties or other levies (viz. Excise duty, customs duty, works contract tax, sales tax, entry tax, octroi etc..) which are legally livable on supply of equipments& material and its Installation. Failure to include all livable taxes and duties will not entitle the contractor to any extra claims from the Engineer-Incharge. The contractor's rate shall remain firm and fixed during the currency of the contract.

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- 17.3 The prices and unit rates quoted by the bidder in the bid shall be firm and deemed to be adequate to cover the entire responsibility involved in the execution and completion of work. No Price Variation/adjustment is payable during the currency of Contract. The price shall not be subject to exchange rate variations. No increase due to change in daily wages of labour be paid, due to any reasons whatsoever.
- 17.4 The rates quoted by the Contractor shall be net so as to include all the requirements described in the contract agreement and no claim whatsoever due to fluctuations in the price of materials and labour will be entertained.
- 17.5 The contractor shall provide all equipments, instruments, labour and such other assistance required by the Engineer-in-charge for measurement of the works, materials etc.

## **18. Temporary Works**

Before any temporary works is commenced the contractor shall submit at least 7 days in advance to the Engineer-in-charge for approval of complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the JKPCC/Engineer-in-charge in accordance with the conditions of contract at his own cost. The contractor shall be solely responsible for the stability and safety of all temporary works and unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution. For the Civil works like cutting of walls for conduit works or any other job requirement with necessary repairs as per requirements at site including making well the same, the expenditure shall be borne by the agency/contractor. Contractor shall quote rates accordingly. Nothing extra shall be paid on this account.

## **19. Water, Power and Other Facilities:**

- a) Raw water supply is available at site which the contractor can use for any constructional needs. However for drinking water Contractor shall have to make their own arrangement at their own cost.
- b) Metered JKPDD power supply shall be made available to the contractor who shall have to pay the JKPCC/Engineer-in-charge for energy consumed on per month basis. Generator back up if required shall have to be arranged by the contractor at their own cost.

## **20. Accommodation:**

- a) The contractor shall provide and maintain all necessary offices, workshops, stores, shelters, sanitary facilities, canteens and other temporary structures for themselves in connection with the work at the site at their own cost after getting the approval from the JKPCC.
- b) All temporary buildings and facilities as mentioned above shall be removed on completion of the work or at any other earlier date as directed by the JKPCC.
- c) Watch & ward shall be responsibility of the contractor till the completion of job.

## **21. Facilities for contractor's employees**

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water facilities. The contractor shall also make the arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

## **22. Liquidation of damages**

0.25% of contract value for every week of the delay after the schedule date of completion of work to the contractor will be charged. Total recovery amount shall be maximum upto 5%.

## **23. Disposal of Refuse**

The contractor shall cart away all debris, refuse etc arising from the work from the site and deposit the same as directed by the Engineer-in-charge at his own cost. It is the responsibility of the contractor to obtain from the local authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

## **24. Tools, Storage of Materials, Protective Works and Site Office Requirements**

The contractor shall provide, fix up and maintain in an approved position proper office accommodation for the contractor's representative and staff which offices shall be open at all reasonable hours to receive instruction notices or communications and for storage of tools, etc and clear away the same on completion of the works and make good all work disturbed.

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All drawings maintained on the site are to be carefully mounted on boards of appropriate size and covered with a coat of approved varnish. They are to be protected from ravages of termites, ants, and other insects and made available to the JKPC for inspection or such other purposes they may require. The contractor shall provide at his own cost all artificial light required to complete the work within the specified time.

The contractor shall provide a suitable temporary hut for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights etc required.

The contractor shall arrange for temporary latrines for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these conveniences.

Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction, and all receptacles, cistern, water tanks etc used for the storage of water must be suitably protected against breeding of mosquitoes. The contractor shall indemnify the JKPC against any breach of rules in respect of anti-malarial measures.

The contractor shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed or upon any boarding gantry, building structures other than those approved by the JKPC.

Protective Measures: The contractor from time to time of being placed possession of the site must make suitable arrangements for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays.

Contractor shall indemnify the JKPC against any possible damage to the building, roads, or members of the public in course of execution of the work.

The contractor shall provide necessary temporary enclosures, gates, entrances etc for the protection of the work and materials and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of Materials: The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of materials etc and other work that may be executed on the site including the tools and materials of nominated sub-contractors and remove same on completion.

So also, steel materials are to be stored above the ground level to prevent the same from getting rusted.

**25. Tools:**

All measuring tapes shall be of steel. Suitable scaffolding and ladders that may be required for safe working and taking measurement shall be supplied by the contractor.

Supervisors on the works shall always carry with them a one metre or two meter steel tape, a measuring tape of 30 meters, a spirit level and shall check the work to see that the work is being done according to the drawing and specifications. Supervisors shall also carry one test lamp with leads and one neon tester and necessary working instruments. The Site Engineer will use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract. The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc for their work.

**26. Idle Labour:**

Whatever the reasons may be no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

**27. Variation in quantities:**

The quantities for ancillary works given in the schedule and / or in drawings are for the guidance of the tenderer. The contractor shall be paid on the basis of actual quantities of works carried out. However the contractor shall check these quantities before quoting and will bring to the notice of Consultants / Engineer-In charge for any major variation. The contract shall be on works contract basis and the Client reserves the right to add / delete any items of work during the currency of contract.

When there is likelihood of major variation in the quantity of any item after the finalization of design/drawings, the Contractor shall submit the details of such variation with proper Justification for approval of Engineer-in-charge. Payment of such deviated quantities shall only be made after approval of Engineer-in-charge.

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**28. Excise Duty, Taxes, Levies etc**

The contractor shall pay and be responsible for payment of all taxes, including GST & other taxes as applicable, duties, levies, royalties, fees, cess or charges in respect of the works including but not limited to GST, works contract tax, customs duty, excise duty and octroi, payable in respect of materials, equipment plant and other things required for the contractor. All of the aforesaid taxes, duties, levies, fees and charges shall be to the contractor's account and the JKPC shall not be required to pay any additional or extra amount on this account. If there occurs any Variation of taxes, duties, fees, levies etc or introduction of new Tax or duty or levy or cess imposed under any Statute or Law, after 15 days prior to last date of submission of Bids, during the currency of contract which causes additional or reduced cost to the contractor, the same shall be intimated by the contractor to the owner and shall be paid/recovered to/from the contractor.

**29. Approved Make:**

The Material/Equipment/Machinery to be supplied and installed for Electric system Works shall be of Approved make as specified in Technical Specifications. The List of Approved makes and manufacturers is Annexed to Technical Specifications.

**30. Working Drawings, Maintenance Manuals etc.:**

On the award of the work, the contractor shall immediately proceed with the preparation of detailed shop drawings prepared on the computer through the Auto CAD system based on the architectural drawings and site measurement, detailing the components that are to be installed and the ancillary works that are to be carried out. Three sets of all such schematic drawings shall be submitted to the Engineer-In-charge, for their approval as provided in General Conditions of Contract to ensure that the works will be carried out in accordance with the specifications and drawings, including such changes as may have been mutually agreed upon. All the drawings shall be received by the Engineer incharge for their approval, within two weeks of the award of work. The approval of the drawings by the Engineer-In-charge shall in no way relieve the contractor from his obligations to provide a complete and satisfactory System and installation as per intent and purpose as laid down in the specifications. Any omissions and/or errors shall be made good or rectified whether or not the drawings are approved.

Prior to the completion of the work, the contractor shall furnish (4) four sets of a comprehensive manual, describing all components, furnishing a list of instructions for the operations and maintenance of the system.

When the Engineer-In-charge makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated along with check prints for approval.

Within four weeks of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in the quantity statement. The contractor shall also fix in the control room neatly typed and framed, instruction in details, for the starting and running of the system. Any special tools required for the operation or the maintenance of the system shall be supplied free.

**31. Supply, Installation, Testing and Commissioning:**

The contractor shall carry out the complete supply, installation, testing and commissioning. All work shall commence on previously prepared locations for the main and sub systems. All the materials shall be moved from their place of storage into the system by the contractor. The contractor shall make his own arrangement to off load materials received at respective Air/Rail/Road transport terminal points, dispatch to site and to store all material received at site. The Engineer-Incharge shall provide clear storage and installation space only. All installation tools and tackles as and when required to suit the installation programme shall be provided by the contractor. All consumables required for installations such scaffolding etc. shall be provided by the contractor. Protective and finish painting shall be carried out by the contractor. The contractor shall indicate the electricity requirements during installation. The contractor shall remove all the waste material or rubbish from and about the work site and leave the job thoroughly cleaned up and ready for use.

**32. Testing:**

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- 32.1 All types of routines and type tests as required shall be carried out at the works of the contractor or the manufacturers of the components. The routine tests will be carried out in presence of third party inspection viz. CEIL or CPRI in presence of Engineer in charge or his representatives. The inspection Certificate/Release note of the third party inspection agency should be finalized by Dy. General Manager (Electrical) Jammu. The inspection charges should be borne by the Manufacture.
- 32.2 On the completion of the installation, the contractors shall arrange to carry out various initial tests as detailed in below, in the presence of and to the complete satisfaction of the Engineer-In-charge or their representatives. Any defects or shortcomings found during the tests shall be speedily rectified or made good by the contractor at his own expenses.
- 32.3 The initial tests shall include but not be limited to the following:
- 32.4 To operate and check the proper functioning of all electrically operated components.
- 32.5 On the satisfactory completion of all 'Initial' tests the work shall be considered to be 'virtually complete' for the purpose of taking over by the Engineer-Incharge.
- 33. Rejection of Defective System:**  
If on test any portion of the system or components are found to be defective or not fulfilling the intent or the meaning of the specifications, the same shall be replaced or repaired to the entire satisfaction of the Engineer In-charge.  
In case the contractor fails to remove the defects, within a period considered reasonable, the Engineer In-charge reserves the right to take necessary remedial measures through other agencies and all expenses thus incurred would be recovered from the contractor.  
The Engineer In-charge reserves the right to operate all the equipment and complete system whether or not the Equipment is taken over after the initial test and commissioning. Any defects found during the initial or running tests shall be removed at a suitable time as decided upon by the Engineer In-charge.
- 34. Maintenance of the system and training of personnel:**  
The contractor shall arrange to provide at no extra cost operation and comprehensive maintenance of the entire electrical system of the building, regularly for a period of 36 Months (Thirty-six ) from the date of commissioning i.e defect liability period.
- 35. Completeness of the Works:**  
The contractor shall provide all the required materials, equipment, ancillary items etc. whether or not each and every item is mentioned in the specifications. Any shortcomings noticed at any stage shall be made good at no extra cost.
- 36. Warranty and Guarantee:**  
The contractor shall guarantee that all the material, machinery and components supplied, installed, fabricated, by him shall be free from defects due to faulty design material and/or workmanship, that the system shall perform satisfactorily and the efficiency and functioning system of the system and all the components shall not be less than the parameters laid down in the specifications and the performance shall be within the specified design limits. In case of any shortcoming the contractor shall replace the necessary components/items at no extra cost or alternately the Engineer In-charge shall be entitled to deduct a proportionate amount from payments due to the contractor.  
The period of the guarantee shall be minimum of 36 Months/manufacturer's warranty (whichever is more) from the date of commissioning during which period any or all components found to be defective shall be replaced or repaired free of charge and any shortcomings found in the system functioning as specified shall be removed at no extra cost. The contractor shall provide the necessary personnel and tools for fulfilling the above guarantee.  
If for any reason the commissioning of the system cannot be carried out due to reasons attributable solely to the Engineer In-charge, then the system shall carry a guarantee for a period of 36 Months from the date of 'virtual completion' - a date which shall be certified by Engineer In-charge.  
If the defects are not removed within a reasonable time the Engineer In-charge may arrange to do so at the contractor's risk and cost, without prejudice to any other rights.
- 37. Safe custody and storage:**  
Safe custody of all equipments/items supplied by the contractor shall be his own responsibility till the final taking over by the Engineer In-charge. He should, therefore, employ sufficient staff for watch and

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ward at his own expenses. The Engineer In-charge may, however, allow the contractor to use the Equipment room/rooms etc. for temporary storage of his equipment if such spaces are ready and available.

**38. Spares:**

The Contractor guarantees to the Owner the supply of spares during defect liability period.

**39. Operation and Maintenance (O&M):**

The Contractor shall provide all inclusive Operation and Maintenance (O&M) of installed electric system during the defect liability period inclusive of all material, labour and any other costs, as specified in the Contract, after commissioning of Plant/system at no extra cost to the Owner.

**40. Site Visit:**

The bidders are strongly advised to visit and examine the existing infrastructure and obtain, on their own responsibility, all information that may be necessary for preparing the Bid and entering into a Contract. The costs of visiting the sites shall be at bidders own expenses. JKPCC Ltd will assist for site visit in working days (Monday – Friday) between 9.30 AM to 4.00 PM.

**41. Labour laws and safety regulations:**

The Contractor will be required to make good for any damage caused during the awarded work. Any injury / casualty to any skilled / unskilled worker during the work execution will be the entire responsibility of the Supplier / Vendor and your labour should be duly insured. Contractor will be responsible for the compliance of the provisions of the various central & State enacted labour laws whichever is applicable to workmen deployed by the contractor party in relation with the subject services. Following rules / regulations may be concerned in particular.

- Employees Provident Fund and Miscellaneous Provisions Act, 1952.
- Employees State Insurance Act, 1948.
- Payment of Wages Act, 1936.
- Minimum Wages Act, 1948.
- Equal Remuneration Act, 1965.
- Contractor Labour (Regulation and Abolition Act), 1970.
- Payment of Bonus Act, 1965.
- The Employee's Compensation Act, 1923.

## Special Condition of the Contract

**1. Penalty for delay in completion:-**

0.25% of contract value for every week of the delay after the schedule date of completion of work to the contractor will be charged. Total recovery amount shall be maximum upto 5%.

**2. Time extension:-**

Suitable time extension shall be granted in case of increase in scope of work and in the event of delay beyond control of contractor to be determined by the department. The tender receiving authority reserves the right to accept or reject any tender or all tenders without assigning any reason thereof.

**3. Restoration of work: -**

On completion of contract the contractor shall be responsible to remove all un-used material and restore the site in its original position at his own cost.

**4. Defect Liability period:-**

The DLP shall be calculated from date of certified completion of work and period shall be 36 months from the certified date of completion by JKPCCLtd.

**5. Safety**

The contractor shall be responsible for safety of all men, material and machinery at site of work. He shall submit the insurance certificates in this regard within One month of date of allotment.

**6. Discoveries**

Anything of historical or other interest or of significant value unexpectedly discovered on the site shall be the property of the Govt.

**7. Tests**

The contractor shall be solely responsible for carrying out the mandatory tests required for the quality control at his own cost and shall submit a test report regarding the physical/ chemical properties as well as structural strength of material.

**8. Termination**

The employer may terminate the contract if the contractor causes a fundamental breach of the contract. Fundamental breach of contract will include:-

- i. Continuous stoppage of Work for a period of 15 days without authorization of Engineer in-charge.
- ii. Contractor is declared bankrupt.
- iii. Any evidence of involvement of contractor in corrupt practices.
- iv. Contractor delays the completion of work beyond stipulated time of completion.
- v. If In case contractor fails to start /complete the work, within the stipulated time period, his CDR/Earnest Money shall be forfeited after termination of the contract. Besides, defaulting contractor shall be debarred from taking works in JKPCCLtd., at least for two years and shall be recommended for blacklisting as well.

Pursuant to the process of termination of defaulted contract, the employer reserves the right to invite fresh tender for the balance work at the risk and cost of defaulter contractor

The date of start of the work shall be reckoned within 07 Days from the date of issuance of LOI/Contract allotment as the case may be.

**9. MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENT ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK:-**

- a) Compliance with Labour Regulation Laws of J&K State.

**10. Specification/Quality Control:-** All items of works shall conform to specifications as per BOQ

**11. Insurance:-** Insurance cover to Labour / Machinery / Work / Plant material / Equipment by the contractor shall be mandatory.

**12. Laws Governing the Contract:-**The contract shall be governed by Laws of the land.

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**13. Court's Jurisdiction:**-In case of any disputes/differences between contractor and Department the jurisdiction shall be J&K State

**14. All other terms and conditions are as same as are in vogue in JKPCCLtd.**

**15. Other conditions:**

- i. The contractor/ agency failing to execute the work in part or in full. Action will be taken against him according to the following conditions:-
  - a. A registered notice or notices sent through special messenger by the Engineer I/c to the contractor for non-start of work will amount to breach of contract.
  - b. The corporation may execute the work left by the contractor at his risk and cost. Any additional amount involved for execution of work will be recovered from other claims/resources of the contractor available with the corporation.
  - c. In case contractor evades the receipt of notice or deliberately gives wrong address for the communication where it is not possible to deliver registered letter, the notice will be pasted on the entry gate of his premises in presence of a witness. This will be treated as notice being served upon the contractor.
- ii. Tenderer shall not be entitled for any claim what so ever on account of expenses incurred by him on submission of the tender.
- iii. All terms and conditions of NIT/ Agreement to be drawn by the contractor/ agencies shall be binding upon the contractor/ agencies as soon as the allotment of contract is awarded in favour of contractor/ agency. The terms and conditions contained in other similar nature of contracts of this corporation shall also be applicable.
- iv. Misconduct/ Misbehavior observed during the tender opening process, during the execution of work with any officer / official shall be dealt under rules. He shall be disqualified in the tendering process / his contract shall be liable for termination.
- v. The accepting authority reserves the right to accept or reject any or all the tender before or after their opening after assigning reason thereof. The allotting authority in view of exceptional circumstances reserves the right of granting the contract to any of the tenderer it deems proper in the interest of the work.
- vi. The successful tenderer will abide by all labour laws and will be personally responsible for any casualty/ eventuality/ accident during the period of contract. For such eventualities he will have to insure his all workmen and machinery deployed on the work.
- vii. The watch & ward of the material during execution shall be sole responsibility of the successful tenderer.

**16. Performance security (unbalanced bids)**

If the bid of the successful bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract the employer may require the bidder to produce detailed price analysis for any or all items of the bill of quantities to demonstrate the internal consistency of these prices with the construction methods.

In case the bid of the lowest bidder is found unbalance the successful bidder shall have to produce additional performance security in the shape of CDR /FDR /BG within 21 days of opening of price bid as per the following break-up:

S.No	%-age of unbalanced bid with advertised cost	Additional performance security to be deposited
1	Upto & including 15% below	NIL
2	Greater than 15% below upto 30% below	3%
3	Greater than 30% below	5%

**17. Deviation items:**

No deviation items shall be executed by the contractor unless until it is approved in writing by the engineer-in-charge (i.e., Dy. General Manager).

**18. Security Deposit**

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- a) The earnest money of the successful tenderer shall be retained and released after the successful completion of work.
- b) Up-to 10% security deposit deductions shall be made from all interim bills including final bill.
- c) The security deposit at the credit of the contractor shall be refunded to the contractor after the date of expiry of defect liability period of 36 months from the date of taking over of the work and removal of defects after conducting necessary repair to the entire satisfaction of the Engineer-in-charge.
- d) The security deposit shall not bear any interest.
- e) The security deposit shall be liable to forfeit as per the discretion of the Engineer-in-charge if the contractor fails to carry out work or perform/ observe any of the conditions of the contract.

#### **19. Time of completion**

The time being essence of any contract, the work is to be completed in tandem with Civil works.

#### **20. Replacement of defective work and material**

The contractor shall also be personally liable for civil and criminal prosecution under law if the specifications of the materials used are found in contravention to the specification prescribed during execution of the work even after completion and finalization of the contract i.e., at any stage during the prescribed life of the structure.

The tenderers shall in their own interest examine the conditions of the contract and specifications of the work. They shall also inspect the site and satisfy themselves (on their own) as to the climate and other conditions prevailing at the site. The nature and extent of the work, all existing and required roads and other mean of communication and access to site, availability of housing and other facilities, availability of different material, labour and probable sites, for labour camps, stores and godowns etc. They shall themselves obtain all necessary information as to the risks, contingencies and other circumstances which may effect of influence their tender, No extra charges consequent to any misunderstanding or otherwise no on this account shall be allowed.

#### **21. Fundamental breach of contract will include:-**

- a. Continuous stoppage of Work for a period of 15 days without authorization of Engineer in-charge.
- b. Contractor is declared bankrupt.
- c. Any evidence of involvement of contractor in corrupt practices.
- d. Contractor delays the completion of work beyond stipulated time of completion.
- e. Pursuant to the process of termination of defaulted contract, the employer reserves the right to invite fresh tender for the balance work at the risk and cost of defaulting contractor.
- f. If in case contractor failed to start /complete the work, within the stipulated time period, his CDR/Earnest Money shall be forfeited after termination of the contract. Besides, defaulting contractor shall be debarred from taking works in JKPCC Ltd. at least for two years.
- g. **Major Labour Laws applicable to establishment engaged in building and other construction Work:-**
  - i. Workmen compensation act 1923.
  - ii. Payment of Gratuity Act 1972.
  - iii. Employees P.F. and Miscellaneous Provision Act 1952.
  - iv. Maternity Benefits Act 1951.
  - v. Contract Labour (Regulation & Abolition) Act 1970.
  - vi. Minimum Wages Act 1948.
  - vii. Payment of Wages Act 1936.
  - viii. Equal remuneration Act 1979.
  - ix. Payment of bonus Act 1965.
  - x. Industrial disputes Act 1947.
  - xi. Industrial employment standing orders Act 1946.
  - xii. Trade Union Act 1926.
  - xiii. Child Labour (Prohibition & Regulation) Act 1986.

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- xiv. Inter State Migrant workmen's (Regulation of employment & Conditions of service) Act 1979.
- xv. The Building and other Construction workers (Regulation of employment and Condition of service) Act 1996 and the Census Act of 1996.
- xvi. Factories Act 1948. & Compliance with Labour Regulation Laws of J&K State.

## 22. PAYMENTS SCHEDULE.

All the payments during execution of work shall be based on the actual measurement.

### Note:

- a) The cost of works already executed shall be deducted from the bill.
- b) Any item of work not included BoQ but found necessary shall be paid as per OEM rate list or LMR whichever applicable and the decision of Engineer I/C regarding rates shall be binding upon the Bidder.

## 23. DRAWINGS AND PHOTOGRAPHS OF THE WORKS

The contractor shall do photograph /video photograph of the site firstly before the start of the work, secondly mid-way in the execution of different stages of work and lastly after the completion of the work. No separate payment will be made to the contractor for this and shall submit a Hard copy and soft copy of the same to the Engineer-in-charge for record and reference.

The contractor shall not disclose details of drawings furnished to him and works on which he is engaged without the prior approval of the Engineer-in-Charge in writing. No photograph of the works or any part thereof or plant employed therein, except those permitted shall be taken or permitted by the contractor to be taken by any of his employees or any employees of his sub-contractors without the prior approval of the Engineer-in-Charge in writing. No Photographs /Video photography shall be published or otherwise circulated without the approval of the Engineer-in-Charge in writing.

## 24. The key equipment required at site:

S.No	Name of the Equipment	Quantity Reqd.
1	Electrical Cutters	4 No.
2	Hammer drills	2 No.
3	Crimping Tools	1 No.
4	Multimeter/hook on meter	1 No.
5	Megger	1 No.
6	Earth resistance measuring Tool	1 No.
7	Hand Tools	1 complete set

## 25. The Number of Technical personnel Required at site:

Technical personnel with required Qualifications and Experience will be as follows:

Technical Personnel	Number	Experience in Internal Electrification of building
Elect. Work Supervisor	2	5

**Sig. Of Bidder**

# **TECHNICAL SPECIFICATION OF 350 MVA, 630 A, 11 KV, VCB SWITCHGEAR PANELS - INDOOR TYPE.**

## **1. SCOPE:**

- 1.1 This specification covers design, engineering, manufacture, testing, inspection before dispatch, packing, forwarding, transportation, insurance during transit, delivery of 350 MVA, 630A, 11 kV VCB Switchgear Panels – Indoor Type
- 1.2 All the VCBs must be manufactured by ISO 9000 certified Organization and shall have been Type Tested at CPRI or any NABL Accredited Laboratory prior to 5 years from the date of e-NIT. The bidder shall demonstrate compliance with this requirement by supplying with the bid, copies of the Type Test Certificates together with the Performance Certificates from Purchasers/Users.

## **2. INTRODUCTION:**

- 2.1 This Specification covers design, engineering, manufacture, testing, inspection before dispatch, packing, forwarding, transportation, insurance during transit and delivery of 3 phase 630 A, 11kV VCB Switchgear Panels (Indoor Type) with horizontal draw out interrupter in conformity to IS: 13118 [1991] / IEC 62271-100 with latest amendment thereof.
- 2.2 The Switchgear Panel should be complete in all respects with insulators, interrupting chamber, operating mechanisms, control cabinet, interlocks, auxiliary switches indicating devices, supporting structures and allied accessories briefly listed in the schedule of requirements. Accessories which are mandatory for the smooth functioning of the equipment and specifically not mentioned shall be deemed to be included in the scope of supply
- 2.3 All the equipment shall be suitable for satisfactory operation in tropical / arctic climates and dry dust laden atmosphere prevailing in the location where it shall be used against the Contract. The equipment shall be able to with stand a wide range of temperature variation in the required location.
- 2.4 All plant/apparatus/equipment supplied shall comply in all respect with the requirement of J&K Electricity Act 2010 and relevant Electricity Rules with latest amendment thereof during the execution of contract where-ever applicable.
- 2.5 Equipment conforming to other International Standards shall also be considered if performance and constructional feature are superior to the listed standard.

## **3. BASIC TECHNICAL REQUIREMENT:**

The VCBs are required to meet the following basic technical requirements  
(Refer Standard: IEC 62271-100 & IEC 62271-200 associated Standards listed in this Specification)

<b>S. No.</b>	<b>Particulars</b>	<b>Requirement</b>
1.	Service Type	Indoor
2.	Number of Poles	3
3.	Nominal System Voltage	11kV
4.	Highest System Voltage	12kV
5.	Rated Normal current:	

(i)	For Bus Bar at 50 oC	
(ii)	For Interrupter of Circuit Breaker	2000 A
(iii)	For Outgoing Feeders, For Incomer & Bus section	2000 A
6.	Rated Short Circuit Breaking Current (rms)	25kA
7.	Rated Short Circuit Making Current (peak)	62.5kA
8.	Rated Short Time Current withstand capability for 3 seconds	25kA (Panel) & 25kA (Interrupter)
9.	Rated Insulation Level:	
(i)	One minute Power Frequency withstand Voltage to earth (wet and dry) (rms)	28kV
(ii)	Impulse withstand Voltage to earth with 1.2/50 $\mu$ sec. wave of +ve and -ve Polarity (peak)	75kV
10.	First Pole to clear factor	1.5
11.	Rated Operating Sequence	O-0.3sec-CO-3min-CO
12.	Maximum break time	3 cycles
13.	Rated out of phase breaking current	25% of the Symmetrical Short Circuit breaking
14.	Maximum Pole Scatter	10 millisecond
15.	Rated Auxiliary Supply For Spring	230 V AC
16.	Rated supply Voltage for Tripping/Closing coils	30Volts DC
17.	Minimum Creepage distance (mm)	As per IS
18.	Minimum protected creepage distance (mm)	As per IS

Auxiliary Supplies available at the various sub-station are as follows :

i.	A.C. Supply	240Volts with +/- 10% Variation
ii.	D.C. Supply	(a) 30V DC with +10% to -15% variation. However, Tripping Coil should operate at 75% and Closing Coil at 85% of rated Voltage.
iii.	Frequency	50Hz with +/- 5% variation

#### 4. STANDARDS:

- 4.1 The circuit Breaker shall confirm to the latest revision with amendment available of relevant standards, rules, and code. Some of which are listed herein for ready reference.



S.No.	IS	IEC	Item
1.	IS-13118 (1991)	IEC-56	Specification of High Voltage AC Circuit Breaker
2.	IS-12729	IEC-694	Common Clauses for High Voltages Switchgear and control gear Standards
3.	IS-2705 (1992)		Current Transformer
4.	IS-3156 (1992)		Voltage Transformer
5.	IS-3231 (1987)		Relays
6.	IS-1248		Ammeter & Voltmeter
7.	IS-375		Arrangement of Breaker Busbars main connection and auxiliary wiring
8.	CBIP Publication No. 325/IS:15959:2011 Companioning Specification (read with latest Amendment)	IEC-60687	Static Energy Meter
9.	IS-3072		Installation and maintenance of Switchgear
10.	IS - 9135		Guide for testing of circuit breakers with respect to out of phase switching
11.		IEC : 60	High voltage testing technique
12.		IEC-17A	Sealing of interrupters/breakers
13.	IS-3427	Study Group Dec. 1981	Metal enclosed Switchgear and Control gear
14.	IS-1554	IEC-227	PVC insulated cables upto and including 1000 Volts
15.	IS : 5		Colors for ready mixed paints and enamels
16.		IEC : 529	Degree of protection
17.	IS : 996	IEC-34	Single phase Small AC and universal electrical motors
18.	IS : 2629, 2633	ISO : 1460	Hot dip galvanizing

4.2 Equipment conforming to other International Standards will also be considered if they ensure performance and constructional feature equivalent or are superior to the standard listed above. Bidder shall clearly indicate the standard as adopted.

5. **SERVICE CONDITIONS (CLIMATIC CONDITIONS):**

The 11kV VCB Switchgear Panels to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions. Electronics

components of 11kV VCB Switchgear Panels shall be capable of maintaining required accuracy under tropical/Atlantic and dusty climate and solar radiation typically existing in Jammu & Kashmir State.

1.	Maximum ambient air temperature	55 °C
2.	Maximum ambient air temperature in shade	45 °C
3.	Maximum temperature attainable by the equipment exposed to sun	60 °C
4.	Minimum ambient temperature	(-) 25 °C
5.	Yearly average ambient air temperature	32 °C
6.	Daily average ambient air temperature	42 °C
7.	Relative Humidity	10% to 95%
8.	Average number of tropical monsoon (conditions) per annum.	(non-condensing) 4 months
9.	Maximum altitude above mean sea level	Upto 1500 Meters
10.	Average annual rain fall	10-118 cm
11.	Average No. of rainy days per annual	106 days
12.	Maximum wind pressure	Wind Zone -3
13.	Seismic level (Horizontal accn.)	Seismic Zone -4
14.	Average No. of Thunder/dust storms per year	54 days
15.	Area of Installation	Tropical/Arctic & dusty climate
16.	Permitted noise level	45 db
17.	Induced Electromagnetic disturbance	1.6kV
18.	Pollution class/ Creepage distance	III / 25 mm/kV
19.	Isoceraunic level (days/year)	50
20.	Condensation	Occasional

All the parts & surface, which are subject to corrosion shall either be made of such material or shall be provided with such protective covering and finish, which ensures total protection from any injurious effect of humidity.

The breakers and accessories to be supplied against this specification shall be suitable for satisfactory continuous operation under the tropical conditions.

## 6. CONSTRUCTION:

- 6.1 The switchgear shall be of CRCA steel construction with sheet not less than 3mm thickness for load bearing section and not less than 2 mm thickness for non-load bearing and shall totally be dust and vermin proof. However, if vendor has standardized the thickness of enclosure other than above mentioned and it meets the performance requirements and the design has been established through type test, the same shall be accepted. The panels shall be rigid without using any external bracings. The switchboard

panels should comply with relevant IS/IEC and revision thereof and shall be designed for easy operation maintenance. The switchboard shall have the facility of extension on both sides. Bus bar, metering circuit breaker chamber, cables and cable box chamber should have proper access for maintenance, proper interlocks should be provided. All instruments shall be non-draw out type and safe guard in every respect from damages and provided with mechanical indicator of connection and disconnection position. The switchgear shall be completed with all necessary wiring fuses, auxiliary contacts terminal boards etc.

- 6.2 The arcing contacts and bus bar should be rated for 500MVA for 3 seconds. Bus bars shall be capable of connecting one switchgear panel to other through proper insulated arrangement, which does not decrease the insulation strength of the bus bar at the point of connection between two panels. The panels shall be modular in design.
- 6.3 The breakers should be able to be drawn out in horizontal position at ground level [with vertical/horizontal isolation] when breaker is drawn out in horizontal position. None of the live components inside the 11kV Switchgear Panel should be accessible. The safety shutters shall be robust and shall automatically cover the live components when the breaker is drawn out. The switchgear shall have complete interlocking arrangements at the fully inserted, fully drawn out and test positions. Withdrawal of the breaker should not be possible in ON position, it should not be possible to close the circuit breaker in service position unless the entire auxiliary and control circuit are connected.
- 6.4 Breaker should have three distinct positions inside the cubical; i.e. Service, Test and Isolated.
- 6.5 Built-in/separate trolley mounted earthing switches for incomer and outgoing shall be provided.
- 6.6 Adopter panels and dummy panels required to meet the various Busbar arrangement, cable/bus duct termination shall be provided.
- 6.7 All the high voltage compartments must have pressure discharge flap for the exit of gas due to internal arc to insure operator safety. All the HV compartment design shall ensure conformity to IEC-60298 and must be type tested for Internal Arc Test.

## **7. BUS BARS AND CONNECTORS:**

- 7.1 Busbars and all other electrical connection between various components shall be made of electrolytic copper of rectangular cross sections. The bus bars section shall be of ample capacity to carry the current of 2000 Amp continuously without excessive heating and for adequately meeting the thermal and dynamic stresses in the case of short circuit in the system up to full MVA rating specified in Clause 6.2 above.
- 7.2 All Busbars connections shall be firmly and rigidly mounted on suitable insulators to withstand short circuit stresses and vibrations besides shall tolerate conductor expansion and contraction without straining of insulators.
- 7.3 Adequate clearance between 11kV point and earth and between phases shall be provided to ensure safety as per provision in Indian Electricity Rule 2003 and its amendment thereof and also in accordance with the relevant Indian standard specification and the same shall be capable of withstanding the specified high voltage tests as per IS-13118/ IEC 62271-100 and amendment thereof.
- 7.4 Busbar cross-sections shall be uniform throughout the dimensions. Sharp edges and bends either in the Busbars or Busbar connections shall be avoided as far as possible. Wherever such bends or edges are un-avoidable, suitable compound or any other

insulation shall be supplied to prevent local ionization and consequent flashover. Busbars shall be insulated with Insulation Sleeves with R/Y/B stickers except joints and tap-offs where it shall be insulated with PVC shrouds.

## **8. CIRCUIT BREAKER:**

- 8.1 The Vacuum Circuit Breaker (VCB) shall be draw out type and shall comply with IS-13118 (1991)/ IEC 62271-100 with latest amendment thereof. Construction of breaker shall be such that the points, which require frequent maintenance, shall be easily accessible.
- 8.2 Circuit Breakers shall have spring closing mechanism for 3 pole simultaneous operation with motor/manually spring charging options. The speed of closing operation shall be independent of the speed of hand operating lever. The indication device shall show the OPEN and CLOSE position of breaker and CHARGED/DISCHARGED conditions of the closing spring visible from the front of cubical. The circuit breakers shall have facilities for manual operation during emergency.
- 8.3 The breakers shall be capable of making and breaking the short time current in accordance with the requirement of IS:13118(1991)/ IEC:62271-100 and latest amendment thereof and shall have three phase rupturing capacity of 500MVA for 3 second at 11kV. The continuous current rating of breaker shall not be less than 630Amps. for all items. The total break/make time shall not be more than 4 cycles for break and 6 cycles for make time for all breakers.
- 8.4 The Vacuum Circuit Breakers shall ensure high speed extinction and adequate control of pressure during breaking of current and also designed to limit excessive over voltages.
- 8.5 Comprehensive interlocking system to prevent any dangerous or inadvertent operation shall be provided. Isolation of circuit breaker from Busbar or insertion into Busbar shall only be possible when the breaker is in the open position.
- 8.6 Vacuum Circuit Breaker shall have completely sealed interrupting units for interruption of arc inside the vacuum. The Vacuum Bottle (Interrupter) sealed for life shall be provided with contact wear indicator.
- 8.7 Vacuum Interrupter should have an expected life of 10000 operations at rated current and should be capable for operating more than 100 times at rated short circuit current. An operation counter shall also be provided.
- 8.8 The Incomer Circuit Breakers shall normally be operated under isolated conditions however in case of acute crises, the interrupters should operate under parallelization as well.
- 8.9 Vacuum Interrupter technical data particularly provided by the manufacturer should also be provided with e-Bid.

## **9. PROTECTION RELAYS:**

- 9.1 All relays shall conform to the requirements of IS: 3231/IEC-60255 or other applicable standards. Relays shall be suitable for flush or semi-flush mounting on the front with connections from the rear. The relay for entire project shall be of same type. The protective relay shall be numerical type.
- 9.2 The protective relays mounted on the panels shall be of the draw out type. The relays must be capable of resetting without necessity of opening the case. The relays shall be provided with flag indicators. Each functional element of a relay shall be provided with its own flag indicator to enable the type of fault condition to be identified.

- 9.3 Each of the Incomer/Bus-Coupler/Outgoing Switchgear units shall be provided with 3 elements of non-directional, Over Current Relays and 1 element non-directional, Earth Fault Relay with self/hand reset contacts. The O/C element shall have setting of 2 to 110% and E/F element shall have setting of 1 to 40%. High set instantaneous element shall have setting of 2 to 20 times for Over Current and Earth Fault Relays. However, final decision regarding selection of setting of relays shall be decided during detail engineering for proper co-ordination of protection system. The Over Current and Earth Fault Relays shall have IDMT characteristics and Relays shall have Communication protocol of IEC: 61850.
- 9.4 During detail engineering provision for shunt trip or series trip relays shall be decided by the Purchaser for which supplier should not have any objection. Further series trip relays auxiliary unit contacts in the tripping circuit should be designed to handle current up to 150 Amps. and likewise trip coil voltage which appears across open contact of the series-tripping unit, be limited to 150 volts.
- 9.5 With CTs used as per Clause 10 and taking into account the trip coil impedance of breaker with the plunger DOWN and with plunger UP position, the VA burden of relays offered should be duly coordinated, so that the protection operates without errors at fault current corresponding to the fault MVA of 500 for all the tap position of the relays and the values of the impedance of the choke and resistance which may be required should also be determined and incorporated
- 9.6 The protective relays shall withstand 20 times the maximum current for 3 second on any tap setting. The over shoot time on removal of current setting shall not be greater than 0.05 seconds.
- 9.7 **Technical requirement of Protection Relays is given as under:**

S. Feature and		Technical Requirement
No.	<b>Function</b>	
1.	<b>Purpose and Application</b>	(i) It is intended to automate the Switchgears specified in the scope of supply and use communicable numeric relays for Protection, Control, Metering and Status monitoring. This specification is based on the understanding that an integrated automation system along with protections shall be provided and same shall have provisions for integration with common control center in future so that all the feeders shall be controlled from the center in addition to local control.  (ii) Numerical relays should be IEC: 61850 compliant. Relay should have 4 CT input, 3 input for O/C and residual E/F protection. One CT input may be used for unbalanced current protection. Relay should have two stage over voltage and under voltage protection
2.	<b>Main Protection Feature for non-directional O/C &amp; E/F Relay</b>	(i) Electrical over load protection with selectable IEC curves with two stage, first stage to be used as Definite Time/IDMT and second stage to be used as high set for short circuit protection.  (ii) Earth fault protection in two stages with IEC characteristics. First stage to be used as IDMT/Definite Time and second stage to be used as instantaneous elements. Earth fault element should be suitable for both CBCT and residual type CT connection.  (iii) The Relay should be immune to DC switching while carrying current i.e. no spurious trip should be generated if relay DC is made On

		and Off (iv) The Relay should conform to the IEC: 255-4 or BS: 142 for Inverse time characteristics. (v) The Relay should have features to monitor for broken conductor and CB opening time
3.	<b>Processor feature</b>	(i) Relay shall be completely Numerical with protective elements having software algorithm based on sampling of analog inputs. (ii) Sampling Rate of Analog Signal: The sampling rate should be 1000 Hz for 50 Hz signal or better for each analog channel. (iii) Hardware based measurements shall not be acceptable
4.	<b>Operational Philosophy</b>	(i) The operation of Relay shall be possible from both locally from the switchgear and remote and Local Work Station. The local position shall be displayed in remote / local workstation and remote operation shall be blocked if the switch is in Local. (ii) Clear control priorities shall prevent initiation of operation of a single switch at the same time from more than one of the various control levels and there shall be interlocks among various control levels. The priority shall always be with the lowest enabled control level. Relay accuracy shall not be affected by system frequency fluctuation
5.	<b>Auxiliary Supply</b>	30V DC with Voltage variation of (-) 15% to (+) 10%. Necessary software shall be in-built for proper shutdown and restart in case of power failure. Auxiliary supply burden will be around 20 Watt
6.	<b>Rated CT secondary</b>	5/1 Amp (site selectable)
7.	<b>Rated frequency</b>	50 Hz +/- 5%
8.	<b>Ambient condition</b>	(i) Operating ambient temperature up to 55 °C (ii) Operating Humidity up to 100 % (iii) Relay shall meet the requirement for withstanding electromagnetic interference according to relevant parts of IEC: 61850. Failure of single component within the equipment shall neither cause unwanted operation nor lead to a complete system breakdown
9.	<b>Module and Mounting</b>	(i) Relay should be flush mounted type (ii) If module is draw out type then it should have CT shorting facility of make before break type. (iii) Mounting in switchgears located in non AC rooms. (iv) Galvanic isolation between field connection and relay hardware should be there
10.	<b>Watchdog and self Monitoring</b>	The Relay should have facility to monitor the healthiness of its circuits and components by own monitoring system. In case of any problems, the alarm should be generated by one of the output contacts. Necessary support documentation explaining the self-diagnostic feature shall be furnished. Watch dog contact shall be provided

11.	<b>Setting</b>	Approximate settings possible should be as follows:
12.	<b>Relay software</b>	<p>(i) Nominal Feeder current 2% to 110 %</p> <p>(ii) CT Ratio setting 10-1000(approx.)</p> <p>(iii) Earth Fault current 5 to 40% with time delay IEC Curves, 2<sup>nd</sup> stage for instantaneous trip (less than 50 ms)</p> <p>(iv) Over current trip : 50% to 200% of 1/5 Amp with time delays as per IEC Curves.</p> <p>(v) High set with delay 200% to 2000%</p> <p>(vi) IEC Curves for all O/C and E/F have user selectable</p> <p>(i) The relay should have native IEC: 61850 Communication Protocol.</p>
13.	<b>and Man Machine Interface</b>	<p>(ii) Should have password protected key padlock.</p> <p>(iii) Necessary software for relay setting, retrieving trip log and downloading waveform should be supplied by the Manufacturer.</p> <p>(iv) Manufacturer has to supply communication hardware for relay setting, this device should be compatible to USB/Ethernet port.</p> <p>(v) It shall be possible to transfer the data stored to computer. The data format shall be compatible for dynamic protection relay testing on relay test kit. Data viewer software is to be provided</p>
13.	<b>Lugs and terminators</b>	All CT and PT terminals shall be provided as fixed (screwed) type terminals on the relay to avoid any hazard due to loose connection leading to CT opening or any other loose connection. Necessary amount of lugs should be supplied along with each relay for CT connection and control wiring
14.	<b>Manuals,</b>	(i) The relays should be supplied with manuals with all technical and operating instructions.
15.	<b>Drawings and literature</b>	<p>(ii) All the internal drawings indicating the logics and block diagram details explaining principle of operation should be given at the time of supply.</p> <p>(iii) Mapping details shall be submitted in IEC format</p>
15.	<b>Extendibility</b>	The Manufacturer shall provide all necessary software tools along with source codes to perform addition of bays in future. These software tools shall be able to configure relay, add analog variable, alarm list, event list, and modify interlocking logics for additional panels / equipments which shall be added in future
16.	<b>in Future</b>	The supplier should mention following:-
16.	<b>Life Span</b>	<p>(i) Product maturity: The Manufacturer should mention the time period for which the product is in the market</p> <p>(ii) Expected production life</p> <p>(iii) Hardware/Firmware change notification process.</p> <p>(iv) Upgrades to be provided free of cost within the Guarantee period / 5 years whichever is later.</p>

(v) Lifespan of standard tools and processes for relay configuration,

	<b>Communication</b>	querying and integration (i) Two Nos. IEC: 61850 protocols compliant Ethernet RJ45 for
17.	<b>Port</b>	communication system through two managed Ethernet Switches operating in redundant mode. The communication shall be made in 1+1 mode between individual IED to Switch, such that failure of one set of LAN shall not affect the normal operation.  (ii) Functioning of Relay shall not hamper to fault occurring any interconnected relay.  (iii) One Front port Ethernet RJ45/USB2 for relay parameterization and configuration etc. with the help of PC. In case RS-232 port offered, suitable interfacing cable with one end having RS 232 port and other end USB 2 to be provided to connect with PC.  (iv) Relay should generate GOOSE message as per IEC : 61850 standard for interlocking and also ensure interoperability with third party relays
	<b>Name Plate and</b>	Each IED shall be clearly marked with manufacturer's Name,
18.	<b>Marking</b>	type, serial no. and electrical rating data. Name plates shall be made of anodized aluminium with white engraving on black surface
	<b>Performance</b>	Relays will be guaranteed for the period of five years from the date of
19.	<b>Guarantee</b>	last dispatch. Any problem in the said period should be attended free of charge inclusive of repair/replacement of relays/ component
	<b>Training</b>	Suitable training to be imparted to five employer's persons at
20.		main works of supplier for five days. The bidder shall include the charges of lodging, boarding and to and fro air fair in the bid price. The training shall mainly include following items: 1) Basics of Protection 2) Use of Relay testing equipment 3) Relay setting and parameterization 4) Relay configuration with respect to I/P, O/P and functional block for protection. 5) GOOSE configuration. 6) Configuration and Interfacing required for third party SCADA System Integration. 7) Diagnostic features



## 10. CURRENT TRANSFORMERS:

CT should conform to IS:2705 or IEC:185

10.1 The requirement of ratio, VA capacity, class or accuracy, limit factor etc. for resin cast CTs installed in different type of units are tabulated below:

Item	Core/CT	Ratio	VA Burden (minimum)	Knee Point Voltage	ALF	Class of Accuracy
Incoming Panel	Core-I Metering	140/5/5 A	5.0 (Subject to calculation of VA burden to be provided by bidder)	-	-	0.5
	Core-II Protection	140/5/5 A	15	-	10	5P
	Core-II Protection	140/5/5 A	15	-	10	5P
Outgoing Panel	Core-I Metering	140/5A	5.0 (Subject to calculation of VA burden to be provided by bidder)	-	-	0.5
	Core-II Protection	140/5A	15	-	10	5P

10.2 Short time rating of CTs shall be 25kA for 3 second. CTs shall be three core for incomer and double core for outgoing/ bus coupler with dual ratio. Saturation factor for metering core shall not exceed 2.5.

10.3 The designed accuracy should be available even at the lowest ratios and all CTs shall withstand fault current corresponding to 350 MVA for 3 sec.

10.4 The secondary terminal of the current transformers shall be such that effective and firm wire terminations are possible. Shorting links of adequate capacity shall be provided at the terminal blocks for shorting of the leads from secondary terminals of current transformers. The secondary terminal of the CTs shall be earthed at one point.

10.5 The secondary winding resistance of CTs shall be as low as possible but not greater than 0.2 ohms per 100 turns.

- 10.6 Insulation level:12/28/75kV and Class of Insulation :E
- 10.7 CTs shall confirm to IS: 2705 with latest amendment, and will be subjected to all routine and type test specified in the IS.

## **11. POTENTIAL TRANSFORMER :**

- 11.1 Potential Transformers shall be single phase units connected to the line side in the respective incomer. H.V side shall be connected in star formation and L.V. side in star formation. Three numbers of HRC fuses of suitable rating shall be provided for HV side.
- 11.2 PT may be provided in a separate compartment. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed.
- 11.3 P.T. shall be epoxy/resin cast. Contact tips of primary/secondary contacts shall be silver plated. Correct polarity shall be distinctly marked on primary and secondary terminal
- 11.4 Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The study, nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.
- 11.5 Details of PTs:
- (i) IS: 3156 or IEC 186
  - (ii) Insulation level : 12/28/75 kV
  - (iii) Class of Insulation : Class E
  - (iv) Rated voltage factor : 1.2 continuous & 1.5 for 30 Sec.
  - (v) Ratio :  $11\text{kV}/\sqrt{3}/110\text{V}/\sqrt{3}$
  - (vi) Burden : Core 100 VA
  - (vii) Class of accuracy: Core Class 0.5
  - (viii) Purpose : Core Metering
  - (ix) Connection : Star/Star
  - (x) Each secondary core will be protected by suitable MCB.

## **12. CABLE GLANDS AND CLAMPING ARRANGMENT FOR HOLDING SUITABLE CABLE BOXES**

- 12.1 Two nos. brass-wiping glands for each incomer and one no. Brass wiping gland for each outgoing panel of adequate dimension for XLPE cable of 3 cores up to 400 sq. mm size shall be supplied along with panels. For bus coupler no cable glands should be provided.
- 12.2 Suitable cable boxes as per requirement of cable shall be arranged by the purchaser at his end. The panel shall however provide a flat of size 50X6 mm<sup>2</sup> with suitable clamp made of 50X6 mm<sup>2</sup> flat along with Nuts Bolts and Washers for holding the cable boxes. The flat should be fitted at a suitable height with allotted arrangement for adjustment of height from 300mm to 500mm at site. The clamp and flat shall have suitable stud type arrangement for earthing cable and cable box.

12.3 All control cable/wire entries shall be by means of suitable cable glands, such glands shall be of brass and tinned.

**13. AUXILIARY/CONTROL WIRING:**

All the secondary wiring in the panel shall have high quality PVC (FRLS) insulation and the same shall have conductor size of not less than 2.5 mm<sup>2</sup> of copper for current and voltage circuits and 1.5 mm<sup>2</sup> for other circuits. Colours of the secondary/auxiliary wiring should conform to IS : 375/1963 and latest amendment thereof if any. All wiring shall be neatly run and group of wiring shall be securely fixed by clips so that wiring can be checked without necessity of removing the clamps. Wiring between fixed and moving portion of the panel shall be run in flexible tubes and the same shall be so mounted to avoid any damage to them due to mechanical movements. Ferrules with number shall be provided on both end of the wiring.

**14. MARKING OF PARTS:**

For facilitating the erection, the several parts of the plant and equipment shall be suitably marked.

**14.1 NAME PLATE AND DIAGRAM PLATES:**

All equipment shall have weather proof and non corrosive metal plates fixed in suitable position with full particulars engraved thereon with white letters against black background.

The firm shall affix a name plate on each Switchgear panel having following information:

- 1) Manufacturer's name and trade mark.
- 2) Unique No.
- 3) Type of Panel.
- 4) CT Ratio.
- 5) Rated Voltage.
- 6) Rated Insulation Level
- 7) Rated Frequency
- 8) Rated Normal Current
- 9) Rated Short Circuit Breaking Current.
- 10) Weight
- 11) Specification No.
- 12) Order No. and Date
- 13) Year of supply.
- 14) Property of "J&K PDD"

**15. PAINTING:**

All sheet steel work shall be treated as per the seven tank process before applying primary coating. For the final coat epoxy paint color shade of dove grey as per shade No.694 of IS: 5 shall be used. Alternatively powder coating may also be accepted. The panels after final painting shall present an aesthetically pleasing appearance, free of any dent or uneven surface.

## 16. DETAILED FITTING AND MOUNTING:

Detailed fittings and mountings of equipments in various switchgear panel shall be as follows:

### 16.1 INCOMING PANEL 630A WITH CT RATIO 140/5A:

Each unit shall have the fittings and equipments as follows:

- 1) 1 No. steel totally enclosed, fully interlocked, indoor industrial pattern, metal clad, horizontal draw out, vertical/horizontal isolation floor mounting switch unit complete with transportation truck having integral mechanism and all necessary supports each equipped as under:
  - (i) No. Fabricated sheet steel housing.
  - (ii) No. Complete set of mechanical interlocks.
  - (iii) 1 Set of isolating plugs and sockets [6 nos. rated for 630 Amp, with automatic safety shutters and pad locking arrangements. Facilities shall be provided for proper opening of the safety shutter for cleaning, inspection and testing.
  - (iv) 1 No. 630 Amp triple pole VCB fitted with isolating sockets, spring operated, manually as well motor charged, manually/electrically released spring closing mechanism with mechanical ON/OFF indicators suitable for a rupturing capacity of not less than 350 MVA at 11 kV for 3 seconds and fitted with one set of direct acting trip coils suitable for operation with AC series trip relays.
  - (v) 1No. Auxiliary switch with minimum four normally closed and four normally opened contacts.

The contact terminals shall be brought out and terminated at Terminal Board irrespective of whether terminals are used or not.
- 2) 3 Nos. 750-375/5-5-2.89A ratio three core resin cast current transformer of required Accuracy, for protection and metering as per Clause 10 of specification.
- 3) 1 No. Ammeter digital static ammeter suitably scaled and must suit CT ratio.
- 4) 3 Nos. 1 phase resin cast, draw out type bus bar connected potential transformers of Ratio 11000/110 volts class 0.5 accuracy having minimum 50VA output per phase to operate the A.C. static H.T. Tri-vector meter, voltmeter etc. and complete with HT fuse and LT MCB with monitoring contacts.
- 5) 1 No. Voltmeter flush pattern digital static suitably scaled to suit the PT ratio.
- 6) 1No. 3 way and off voltmeter selector switch for reading the voltage between any two phases on the voltmeter.
- 7) 1No. static digital Tri vector DLMS Compliant energy meter, Category –“A” , suitable for three phase 4 Wire un-balanced load and CT, PT, ratio mentioned above, 0.5S accuracy class with load, survey and TOD/Tariff and MRI facility. TVM shall be as per specification attached with this specification.
- 8) 1No. Non-directional numerical adjustable IDMT series trip O/C and E/F relay as per specifications.
- 9) 1No. high speed tripping relay.

- 10) Aux/ Contact multiplication relays as per requirement.
- 11) 1No. set of indicating lamps operating at 230V AC single phase one coloured RED and other GREEN to show the closed or open position of circuit breaker.
- 12) 1No. 80 watts continuously rated tubular/strip type Space Heaters with thermostat and ON-OFF switch working on 230 VAC single phase supply.
- 13) 1No. set of copper bus bars of not less than 800 Amp. Continuous rating.
- 14) 1No. multi way plug box for secondary wiring between the fix and moving glands.
- 15) 1No. set of independently operated automatic shutters for bus bar cable and voltage transformers orifices, which shall be clearly leveled and individually pad-locked.
- 16) 1No. Sheet instruments panel mounted on the front of the unit with hinged access doors and totally enclosed wiring terminals mounted there.
- 17) 1No. Complete set of self-contained inter connectors, foundation bolts, fine Wiring, wiring terminals board, sundries to complete the unit.

### **16.3 OUTGOING FEEDER PANEL WITH CT RATIO 140/5-5A**

Each unit shall have the fittings and equipments as follows:

- 1) 1No. steel totally enclosed, fully interlocked, indoor industrial pattern, metal clad, horizontal draw out, vertical/horizontal isolation floor mounting switch unit complete with transportation truck having integral mechanism and all necessary supports each equipped as under:
  - (i) 1 No. Fabricated sheet steel housing.
  - (ii) 1 No. Complete set of mechanical interlocks.
  - (iii) 1 Set of isolating plugs and sockets [6 nos. rated for 630 Amp, with automatic safety shutters and pad locking arrangements. Facilities shall be provided for proper opening of the safety shutter for cleaning, inspection and testing.
  - (iv) 1No. 630 Amp triple pole VCB fitted with isolating sockets, spring operated, manually as well motor charged, manually/electrically released spring closing mechanism with mechanical ON/OFF indicators suitable for a rupturing capacity of not less than 350 MVA at 11 kV for 3 seconds and fitted with one set of direct acting trip coils suitable for operation with AC series trip relays.
  - (v) 1No. Auxiliary switch with minimum four normally closed and four normally opened contacts. The contact terminals shall be brought out and terminated at Terminal Board irrespective of whether terminals are used or not.
- 2) 3 Nos. 140/5-5A ratio two core resin cast current transformer of required Accuracy, for protection and metering as per Clause 10 of specification.
- 3) 1 No. Ammeter digital static ammeter suitably scaled and must suit CT ratio.
- 4) 1No. static digital Tri vector DLMS Compliant energy meter, Category "A" suitable for three phase 4 Wire un-balanced load and CT, PT, ratio mentioned above, 0.5S accuracy class with load, survey and TOD/Tariff and MRI facility. TVM shall be as per specification attached with this specification.
- 5) 1No. Non directional numerical adjustable IDMT series trip O/C and E/F relay as per specifications.
- 6) 1No. high speed tripping relay.

- 7) Aux/ Contact multiplication relays as per requirement.
- 8) 1No. set of indicating lamps operating at 240V AC single phase one coloured RED and other GREEN to show the closed or open position of circuit breaker.
- 9) 1No. 80 watts continuously rated tubular/strip type Space Heaters with thermostat and ON-OFF switch working on 230 VAC single phase supply.
- 10) 1No. set of copper bus bars of not less than 800 Amp. Continuous rating.
- 11) 1No. multi way plug box for secondary wiring between the fix and moving glands.
- 12) 1No. set of independently operated automatic shutters for bus bar cable and voltage transformers orifices, which shall be clearly leveled and individually pad-locked.
- 13) 1No. Sheet instruments panel mounted on the front of the unit with hinged access doors and totally enclosed wiring terminals mounted there.
- 14) 1No. Complete set of self-contained inter connectors, foundation bolts, fine Wiring, wiring terminals board, sundries to complete the unit.

**17. CABLE GLANDS AND CLAMPING ARRANGMENT FOR HOLDING SUITABLE CABLE BOXES :**

- 17.1 Two Nos., brass-wiping glands for each Incomer and one No. brass wiping gland for each Outgoing panel of adequate dimension for XLPE cable of 3 Core up to 400 sq. mm size (to be customized by utility) shall be supplied along with panels. For Bus Coupler no cable glands should be provided.
- 17.2 Suitable cable boxes as per requirement of cable shall be arranged by the bidder. The panel shall however provide a flat of size 50x6 mm<sup>2</sup> with suitable clamp made of 50x6 mm<sup>2</sup> flat along with Nuts Bolts and Washers for holding the cable boxes. The flat should be fitted at a suitable height with allotted arrangement for adjustment of height from 300mm to 500mm at site. The clamp and flat shall have suitable stud type arrangement for earthing cable and cable box.
- 17.3 All control cable/wire entries shall be by means of suitable cable glands, such glands shall be of brass and tinned.

**18. AUXILIARY/CONTROL WIRING :**

- 18.1 All the secondary wiring in the panel shall have high quality PVC insulation and the same shall have conductor size of not less than 2.5 mm<sup>2</sup> of copper Colors of the secondary/auxiliary wiring should confirm to IS- 375: 1963 and latest amendment thereof if any. All wiring shall be neatly run and group of wiring shall be securely fixed by clips so that wiring can be checked without necessity of removing the clamps. Wiring between fixed and moving portion of the panel shall be run in flexible tubes and the same shall be so mounted to avoid any damage to them due to mechanical movements. Ferrules with number shall be provided on both end of the wiring.

**18.2 SPACE HEATER:**

80W, 230Volts, 50Hz Tubular Space Heaters suitable for connection to the single phase AC Supply complete with thermostat and ON-OFF switches located at convenient position shall be provided at the bottom of Switch Board to prevent condensation of moisture. The watt loss per unit surface of heater shall be low enough to keep surface temperature well below sensible heat. The wattage of heater shall be such as to keep 10oC above average ambient temperature in rainy season but temperature should not under any circumstances damages the insulation of the wiring of the panel.

### 18.3 **VACUUM INTERRUPTOR:**

- (a) M2 Class Vacuum Interrupter with extended mechanical endurance upto 10000, operating cycles as per IEC 62271-102.
- (b) Recommended makes: To be supplied of make BEL /Crompton Greaves / Alstom / SCHNEIDER with test certificates.

### 19. **QUALITY ASSURANCE PLAN:**

19.1 The bidder (manufacturer) shall have a comprehensive quality assurance program at all stages of manufacture for ensuring products giving reliable, trouble free performance. The bidders (manufacturers) quality assurance plan shall be submitted along with bid document, which would be reviewed in detail by the Purchaser in case of award and accepted with modifications, as felt necessary. A sampler manufacturing quality plan document is enclosed in this specification.

The bidder's quality assurance programme shall generally cover the following:

- i) Bidder organization structure for the management and implementation of the proposed quality assurance programme.
- ii) Quality System Manual.
- iii) Design Control System.
- iv) Documentation Control System.
- v) The procedure for purchase of materials, parts, components, source inspection, incoming raw-material inspection, verification of materials purchased etc.
- vi) System for process controls and fabrication and assembly controls.
- vii) Inspection and test procedure both for manufacture and field activities.
- viii) Control of calibration and testing of measuring /testing equipments.
- ix) System for Quality Audits.
- x) System for handling storage and delivery.

The Bidder shall accordingly furnish along with the bid

- i) A comprehensive quality assurance plan which is in practice (for both product & process).
- ii) A detailed list of bought out items with name of the manufacturer and details about incoming quality control.
- iii) Quality assurance plan of bidders' collaborators in case of foreign collaborators.

Purchaser reserves the right to carry out quality audit and quality surveillance of the systems and procedure of the bidders' quality management & control activities. The bidders shall provide all necessary assistance to enable the Employer to carry out such audit & surveillance.

### 19.2 **Manufacturing and Testing Facilities:**

19.3 The following Manufacturing and testing facilities shall be available.

- (i) The factory shall be completely dust proof.
- (ii) The testing rooms shall be temperature and humidity controlled as per relevant Standards.

(iii) The testing and calibrating equipment should be automatic and all test equipment shall have their valid calibration certificates

(iv) Power supplies used in testing equipment shall be distortion free with sinusoidal waveforms and maintaining constant voltage current and frequency as per the relevant Standards.

19.4 During the manufacturing of the meters following minimum checks shall be carried out.

a) Meter frame dimension tolerance shall be minimum.

b) The pressure coil shall be made totally encapsulated and care shall be taken to avoid ingress of dust and moisture inside the coil.

c) The assembly of parts shall be done with the help of jigs and fixtures so that human errors are eliminated.

d) The meters shall be batch tested on automatic, computerized test bench and the results shall be printed directly without any human errors.

e) The current coil shall be made with the help of jigs and fixtures.

f) The potential coil shall be made with automatic computerized machine.

19.5 **Mounting and Fixing Arrangement Drawings/Data Sheet**

Manufacturer shall ensure following technical points:

i) Meter shall be mounted on the Switchgear by providing suitable cutouts, and shall be connected to suitable CT/PT.

ii) RS 485 Bus shall be formed by connecting the RS 485 port of all the meters in the switchgear. The external interphase point for this shall be provided in the Bus PT panel.

20. **INSTRUMENTS AND METERS:**

Indicating digital instruments shall be flush mounted on panel front. The instruments shall be of at least 96 mm square size, shall conform to IS : 1248 and shall have an accuracy class of 1.5 or better. The covers and cases of instruments and meters shall provide a dust and vermin proof construction.

Instruments shall have white dials with black numerals and lettering. Black knife edged pointer with parallax free details will be preferred.

Instruments and meters shall be factory calibrated to directly read the primary circuit quantities. Means shall be provided for zero adjustment without dismantling the instruments.

21. **NAME PLATE AND DIAGRAM PLATES:**

All equipment shall have weather proof and non corrosive metal plates fixed in suitable position with full particulars engraved thereon with white letters against black background.

The firm shall affix a name plate on each Switchgear panel having following information:

a) Manufacturer's name and trade mark.

b) Unique No.

c) Type of Panel.

d) CT Ratio.

e) Rated Voltage.



- f) Rated Insulation Level
- g) Rated Frequency
- h) Rated Normal Current
- i) Rated Short Circuit Breaking Current.
- j) Weight
- k) Specification No.
- l) Order No. and Date
- m) Year of supply.

**22. COMPLETENESS OF EQUIPMENT:**

Any fittings, accessories or apparatus which may not have been specifically mentioned in this specification but which are usually necessary for the satisfactory operation of the equipment, shall be deemed to have been included in this specification.

**23. PACKINGS:**

All material shall be suitably packed for transport, direct to site and Manufacturer shall be responsible for all damages/losses due to improper packing. All boxes shall be marked with signs indicating the up and down sides of the boxes along with the unpacking instructions, if considered necessary by the Manufacturers.

**24. TESTS:**

The design of circuit breaker shall be proven through all the routine and in accordance with IS 13118: 1991/IEC 56 and any amendment thereof. Photocopy of all the test reports must be enclosed with the tender. Type test report earlier than 5 year from the date of tender opening shall not be acceptable.

**24.1 TYPE TESTS:**

Each circuit breaker shall comply with requirements of type tests prescribed in IEC publication No. 56.

- (i) Short time and peak withstand current test.
- (ii) Short circuit breaking capacity and making capacity.
- (iii) Capacitive current switching test: Cable charging current breaking test (Ur less than or equal to 52 kV).
- (iv) Dielectric test i.e., power frequency withstand and impulse withstand test
- (v) Temperature rise test.
- (vi) Mechanical Endurance Test at ambient temperature.
- (vii) Measurement of resistance of the main circuit.
- (viii) Internal arc test.

**24.2 COMMISSIONING CHECKS/TESTS:**

After installation of panels, power and Control wiring and connect Contractor shall perform commissioning checks. as listed below to proper operation of switchgear/panels and correctness of all respects.

In addition the Contractor shall carry out all other checks and tests recommended by the manufacturers.

**24.3 GENERAL:**

- (i) Check name plate details according to specification.
- (ii) Check for physical damage
- (iii) Check tightens of all bolts, clamps and connecting terminal
- (iv) Check earth connections.
- (v) Check cleanliness of insulators and bushings.
- (vi) Check heaters are provided.
- (vii) H.V. test on complete switchboard with CT & breaker/ contractor lubricated in position.
- (viii) Check all moving Parts are properly lubricated.
- (ix) Check for alignment of busbars with the insulators to ensure alignment and fitness of insulators.
- (x) Check for inter changeability of breakers.
- (xi) Check continuity and IR value of space heater.
- (xii) Check earth continuity of the complete switchgear board.

**24.4 CIRCUIT BREAKER:**

- (i) Check alignment of trucks for free movement.
- (ii) Check correct operation of shutters.
- (iii) Check slow closing operation (if provided).
- (iv) Check control wiring for correctness of connections, continuity and IR values.
- (v) Manual operation of breakers completely assembled.
- (vi) Power closing/opening operation, manually and electrically at extreme condition of control supply voltage.
- (vii) Closing and tripping time.
- (viii) Trip free and anti-pumping operation.
- (ix) IR values, resistance and minimum pick up voltage of coils.
- (x) Simultaneous closing of all the three phases.
- (xi) Check electrical and mechanical inter locks provided.
- (xii) Checks on spring charging motor, correct operation of limit switches and time of charging.
- (xiii) Check vacuum (as applicable).
- (xiv) All functional checks.

**24.5 Current Transformers:**

- (i) Megger between windings and winding terminals to body.
- (ii) Polarity tests.
- (iii) Ratio identification checking of all ratios on all cores by primary injection of current.

(iv) Magnetization characteristics & secondary winding resistance.

(v) Spare CT cores, if any to be shorted and earthed.

#### 24.6 **VOLTAGE TRANSFORMERS**

(i) Insulation resistance

(ii) Ratio test on all cores.

(iii) Polarity test

(iv) Line connections as per connection diagram.

#### 24.7 **CUBICLE WIRING:**

(i) Check all switch developments.

(ii) It should be ensured that the wiring is as per relevant drawings. All interconnections between panels shall similarly be checked.

(iii) All the wires shall be meggered to earth.

(iv) Functional checking of all control circuit e.g. closing, tripping, interlock, supervision and alarm circuit including proper functioning of component/ equipment .

(v) Check terminations and connections. To check wiring related to CT and PT circuits, carryout primary injection and then check for secondary value at relay and metering instrument terminals.

(vi) Wire ducting.

(vii) Gap sealing and cable bunching

#### 24.8 **RELAYS:**

(i) Check internal wiring.

(ii) Megger all terminal body.

(iii) Megger AC to DC terminals

(iv) Check operating characteristics by secondary injection.

(v) Check minimum pick up voltage of DC coils.

(vi) Check operation of electrical/ mechanical targets.

(vii) Check CT connections with particular reference to their polarities for differential type relays.

(viii) Relay settings.

#### 24.9 **METERS**

(i) Megger all insulated portion.

(ii) Check CT & VT connections with particular reference to their polarities for power type meter.

## 25. STATIC TRIVECTOR DLMS COMPLIANT ENERGY METERS, CLASS 0.5S; CATEGORY-A:

### 25.1 SCOPE :

This specification covers design, engineering, manufacture, inspection, testing at manufacturers works including type testing before dispatch, supply and delivery of three phase 4 Wire tri-vector export/import with "Time of the Day" register, load profile data record "MD" register suitable for both unbalanced and balanced load. Whether should be installed or in separate pack.

### 25.2 Applicable Standards:

S.No.	Standards	Description
1.	IS : 14697	Specification for AC Static Transformer operated Watt Hour & VAR-Hour meters, classes 0.2 S & 0.5 S
2.	IEC : 60687	AC Static Watt-Hour Meters for Active Energy (classes 0.2 S & 0.5 S)
3.	IS: 15959 (including amendment 2)	Data Exchange for Electricity Meter Reading, Tariff and Load Control – Companion Specification
4.	IEC : 62056-21 (Latest Version)	Data exchange for Meter Reading and Direct Local Data Exchange
5.	IEC : 61000-4-5 (2001-04)	For Electro Magnetic Compatibility – Testing and Measurement techniques, Surge immunity test
6.	IEC : 61358	Criteria for selection for tests LIKE Acceptance Inspection
7.	ANSI/IPC-A-610	Workmanship standard for Acceptability of Electronic Assemblies (A standard developed by Institute for Assemblies (A standard developed by Institute for

### 25.3 General Requirements

#### 25.3.1 Electrical Specifications:

S.No.	Particular	Specified Values
1.	Class of Accuracy	0.5 S
2.	Supply Voltage	Suitable for operation from 110 Volts/63.5 Volts Ph-Ph/Ph-N, PT Secondary
3.	Frequency	50 Hz $\pm$ 5%
4.	Power Factor	0.5 Lag – Unity-0.8 Lead

5.	Basic Current Ib	5A
6.	Maximum continuous Current	20 Ib
7.	Minimum starting current	As per IS 14697
8.	Impulse withstand Voltage (1.2/50m Sec):	

#### 25.4 Guarantee Period

The offered meters shall be guaranteed for normal operation for at least 5 years from the date of receipt at site without any repair whatsoever.

#### 25.5 Design and Constructional Features

##### 25.5.1 Location & Mounting

The Energy meters shall be supplied suitable for indoor installation. Enclosure shall have IP-51 protection. All the feeder meters to be suitable for mounting on Simplex type Vertical Panel with rear door, Energy Meter flush mounted and clearly visible, with disconnecting type TBS, fully wired.

##### 25.5.2 Design:

Meter shall be designed with application specific integrated circuit (ASIC) or Micro Controller; shall have no moving part; electronic components shall be assembled on printed circuit board using surface mounting technology; factory calibration using high accuracy (0.1 class) software based test bench.

All components used shall be approved by reputed testing authority at national level or other international recognized testing authority.

##### 25.5.3 Manufacturing Process, Assembly and Testing

Meters shall be manufactured using latest and 'State-of- the Art' Technology and Methods prevalent in Electronics Industry.

All inward flow of major components and sub assembly parts (CT, PT, RTCs/Crystal, LCDs, LEDs, power circuit electronic components etc.) shall have batch and source identification.

Multilayer 'PCB' assembly with 'PTH' (Plated through Hole) using surface mounted component shall have adequate track clearance for power circuits. SMT component shall be assembled using automatic 'pick-and-place' machines with in process 7 stages, Reflow Soldering oven, for stabilized setting of the components on 'PCB'.

For soldered PCBs, cleaning and washing of cards, after wave soldering process is to be carried out as a standard practice.

Assembly line of the manufacturing system shall have provision for testing of sub-assembled cards.

Manual placing of components and soldering, to be minimized to items, which cannot be handled by automatic machine.

Handling of 'PCB' with ICs / C-MOS components, to be restricted to bare minimum and

precautions to prevent 'ESD' failure to be provided.

Complete assembled and soldered PCB should undergo functional testing using computerized Automatic Test Equipment.

Fully assembled and finished meter shall undergo 'burn-in' test process for 24 Hours at 55 degree Celsius (Max. temperature to not exceed 60 degree Celsius) under base current (Ib) load condition.

Test points should be provided to check the performance of each block/stage of the meter circuitry.

Testing at intermediate and final stage to be carried out with testing instruments, duly calibrated with reference standard, with traceability of source and date.

#### 25.5.4 **Displays:**

Displays tested shall be suitable for temperature withstand of 60°C;

7+1 digits (with ± indication), parameter identifier, backlit Liquid Crystal Display (LCD) of minimum 10 mm height, wide viewing angle. Auto display cycling push button required with persistence time of 12 Seconds.

Sequence of display of various instantaneous electrical parameters shall be as desired by Employer at the time of order.

Normal display shall be Active energy value, on release of push button, at any of the display parameter during scrolling.

#### 25.5.5 **Calibration of Meter :**

Meters shall be factory calibrated using high accuracy test bench. Energy Meter shall have test output device, accessible from the front, and capable of being monitored with suitable testing equipment while in operation at site. Resolution of the device shall enable the starting current test in less than 10 minutes. Accuracy of test bench at works shall be as per the guidelines provided in IS: 14697.

#### 25.5.6 **Self-Diagnostic Features:**

The meter shall have self-diagnostic features to check its circuits for any malfunctioning. The bidder shall furnish the details of the self-diagnostic features.

#### 25.5.7 **CONSTRUCTION :**

##### a) Meter Case and Cover

i) To ensure high reliability, long trouble free life, safety against electric shock, spread of fire and effects of excessive temperature, the meter casing and cover shall be made of high quality industrial grade polycarbonate material having adequate strength, which is unbreakable, corrosion resistant & inert to chemicals, flame retardant, immune to ultra violet radiation and meet UV ageing test as per relevant ASTM standards.

ii) The bidder shall indicate hardness, melting temperature and tensile yield strength of the material and necessary test certificate of the same shall be furnished.

iii) The polycarbonate material used shall conform to IS: 11731 (FH-1 category) besides meeting the test requirement of heat deflection test as per ISO: 75 and glow wire test as per the relevant Standard.

iv) The meter shall be provided with adequate shielding to withstand external magnetic influence from all directions as per latest amendments of CBIP Technical Report No. 325 (read with latest amendment).

v) Meter cover shall be continuously ultra sonically welded with meter base from all sides. Suitable locking arrangement shall be provided between the base and cover of the meter.

#### **25.5.8 Sealing Arrangement:**

Two sealing screws shall be provided for proper fixing of the meter cover so that access to the working part shall not be possible without breaking the seal.

#### **25.5.9 Terminal Block and Cover :**

The terminal block shall have adequate insulating properties and mechanical strength. The terminal block shall be made from best quality non-hygroscopic, flame retardant polycarbonate material (capable of passing the flammability tests give in IS: 11731) with nickel-plated brass studs for connecting terminals.

The terminal block is to be enclosed in a metallic housing of steel plate of sufficient thickness to cover its back and sides and provide enough strength for the purpose of tightening of screws. Clamping screws should be provided inside the terminal cover and should have metallic sleeve moulded within the block to avoid damage during tightening of the screws.

The terminals in the terminal block shall be of long socket type suitable for connection of cables with aluminium conductors along with suitable lugs (lugs to be provided by the supplier) having cross sectional area, with adequate length. Double screw arrangement shall be provided to achieve adequate termination. All terminals and connecting screws and washers shall be of tinned / nickel plated brass material.

The terminal cover shall be transparent with minimum thickness 2.5 mm and the material shall be same as that of meter case. It shall be of extended type and accommodate, in addition to the terminal block, a suitable length of external cable along with its insulation.

#### **25.5.10 Name Plate and Marking:**

Every meter shall have a nameplate clearly visible and indelible and distinctly marked in accordance with IS: 13779 (latest version). The following information shall appear on a nameplate preferably placed within the meter.

- (1) Manufacturer's name & trade-mark and place of manufacture.
- (2) Serial number and year of manufacture.
- (3) Designation of type.
- (4) Number of phases and number of wires for which the meter is suitable.
- (5) Guarantee period.
- (6) Purchaser's name & meter number.
- (7) Principal unit in which the meter records.
- (8) Reference voltage & frequency in Hz.

(9) Basic current and rated maximum current.

(10) Meter constant (pulse rate of testing signal).

(11) Class index.

#### 25.6 **Fixing Arrangement:**

Every meter shall have three fixing holes one at the top and two at the bottom. The fixing holes shall be properly matched for mounting inside the meter compartment as per the drawing, and this specification.

#### 25.7 **Operational Requirements:**

##### 25.7.1 Performance under Influence Quantities:

As per IS 14697.

Accuracy for measurement & display of instantaneous quantities shall conform to IS-14697 (read with latest amendment).

##### 25.7.2 **Additional Technical Features:**

###### a) **Output Device:**

i) Energy Meter shall have test output, accessible from the front, and be capable of being monitored with suitable testing equipment while in operation at site.

ii) Operation indicator must be visible from the front.

iii) Test output device shall be provided in the form of LED/LCD.

Resolution of the test output device shall be sufficient to enable the starting current test in less than 10 minutes. Nameplate shall indicate the 'impulse/ Unit' with appropriate resolution.

###### b) **Cumulative Energy Register**

Meter should have provision for automatic recording of cumulative kWh & MD kW at say 24.00 hours on the last day of the month for each of the past six calendar months and same to be stored in the register/memory.

###### c) **Temperature Conditions**

As per IS- 14697;

Meter to perform satisfactorily under Non-Air Conditioned environment in HT sub-station with Indoor switchgear in some of the locations.

##### 25.7.3 **Real Time Internal Clock (RTC) of Energy Meter :**

RTC shall be pre-programmed for 30 Years Day/date without any necessity for correction. Maximum drift shall not exceed +/- 300 Seconds per year.

Time & date setting shall only be possible through one of the following:

Common Meter Reading Instrument (CMRI) or Meter testing work bench and this shall need password enabling for Consumer meter;



#### 25.7.4 Clock Day/Date Synchronization:

Synchronization of Energy Meter 'RTC' Time/Date shall be possible thro' password/Key code enabled command from remote server or Substation 'PC' as per the arrangement. Master Clock reference shall be obtained from Main server or local 'PC'. However the master clock, Main server and Local PC is not in scope of supply.

Synchronization shall be carried only if the 'RTC' drift is within  $\pm 10$  minutes.

Error log to be recorder by the system S/W if the 'RTC' time is out of range.

#### 25.7.5 Quantities to be Measured & Displayed

As per Appendix G of IS- 14697.

- a) TOD 'time slot register-wise & Import of kWh & kVAh, kVAh energy;
- b) Maximum kVA or kW demand with elapsed time.
- c) Instantaneous kW, kVA, PHASE WISE kW & kVA, OVERALL p.f, MD reset count, frequency, time & date, RTC battery health;

In addition, present status of abnormality shall also be possible to be displayed.

Tamper details shall be stored in internal memory for retrieval by authorized personnel through either of the following:

- i) Common Meter Reading Instrument (CMRI)
- ii) AMR and this shall need password enabling.

#### 25.7.6 Demand Integration Period (DIP):

i) Energy Meter shall continuously monitor and calculate the average maximum demand for each demand interval time of 30 minutes and maximum of these in a calendar month shall be stored along with date and time when it occurred;

ii) It shall however be possible to change the demand integration period (DIP), from 30 to 15 minutes at site, with proper security;

iii) The Maximum demand of past six months shall be stored in the memory with date and time.

iv) It shall be also possible to retrieve this data through communication port and MRI.

v) Media copy of software for downloading of meter data through MRI on to a PC shall be provided on a compact disc. This shall be suitable to window-based operating system. Installation and commissioning manual for the same shall also be provided.

#### 25.7.7 Time of Day (TOD) Registers:

6 different TOD energy registers as per Clause G-8 of IS- 14697 are required. Time block settings shall be advised to the supplier at least 4 weeks before commencing delivery. Change of time period for TOD metering shall be with password enabling from CMRI or from base computer.

#### 25.7.8 Load Survey Data Registers:

Storage in Non Volatile Memory (NVM) for 40 days, 30 minute demand of any of the flow parameters of kW, kVA, kVA<sub>r</sub> (or P.F), Average of 3 voltages and phase currents shall be provided.

#### 25.7.9 INDICATIONS:

- i) Meter healthy indicator must be visible from the front.
- ii) Test output device shall be provided in the form of LED/LCD.
- iii) Energy Meter shall have test output, accessible from the front, and be capable of being monitored with suitable testing equipment while in operation at site.
- iv) Resolution of the test output device shall be sufficient to enable the starting current test in less than 10 minutes. Nameplate shall indicate the 'impulse/ Unit' in appropriate resolution.

#### 25.7.10 Communication Facilities & Standards:

For data communication, the data structure adopted within the energy meter shall be on an internationally acceptable method. The data structure/coding details shall be furnished to the Employer. However minimum shall be provided.

- a) Local communication port: Energy meter shall have a galvanically isolated Optical communication port as per IEC- 62056-21 or any other internationally accepted port in front of the meter for data transfer to or from a hand held data Collection Device (Common Meter Reading Instrument 'CMRI' - conforming to CBIP technical report-111) with proper security and without error.
- b) Meter shall be provided with 'RS 485' port. 'RS485' communication port shall be suitable for interfacing multiple Energy Meters. It shall be possible to download stored meter data, on polling basis with the aid of a software schedule by addressing one meter at a time and downloading the stored data into the sub-station data logger/Central data center computer.
- c) Energy Meter shall operate on industry standard 'MODBUS' protocol and shall be individually addressable

#### 25.7.11 Tamper & Fraud Monitoring and Recording

Meters shall at least be immune to tampers elaborated in IS -14697, ANNEX G-10.

All types of tampers for which meter is made immune, shall be listed by the bidder. These tampers records need not be recorded or stored in the meter memory. Further, compliance to these are to be demonstrated by the bidder during acceptance test by successful bidder.

The meter should have anti tamper features. These shall at least include:

- i) Phase Sequence Reversal: Meter should work accurately irrespective of phase Sequence of supply.
- ii) Bypassing of Current Coil: Meter must have capability to record bypassing (shunting) of current coil(s) of one or any two phases with date, time and duration

with normalisation time. Meter should not record tamper if load currents are unbalanced within specified limits permissible in the system.

iii) Current reversal in current coil: The meter shall register energy consumption correctly in forward direction irrespective of the direction of current in the current coil/Coils with date and time of first occurrence and last restoration along with total number of such occurrences for all phases during the above period.

iv) Missing potential: Meter shall be capable of detecting and recording occurrences of missing potential (One phase or two phases) and its restoration which can happen due to intentional/accidental disconnection of potential leads with date and time along with total number of such occurrences for all phases during the above period. This recording of tampering shall not be done when meter is without any load i.e. Current in all phases is Zero.

v) Error recording shall include current unbalance beyond 30% in the phases, RTC clock correction failures (when drift is beyond specified value etc);

vi) Missing Neutral: Meter shall continue to record accurately even if the neutral of potential supply gets disconnected.

#### **25.7.12 Accuracy :**

In case any drift is noticed in the accuracy of the meter, which is beyond the permissible limits, the concerned meter shall be with-drawn from service and Bidder shall supply a new meter without any extra cost as a replacement (with in one month of receipt from Employer), during the guarantee period.

#### **25.8 INSPECTION, TESTING AND DESPATCH:**

##### **25.8.1 TYPE TESTS :**

The meter offered should have successfully passed all type tests described in the IS 14697 and IEC -61000 4-5 Type test certificate shall be submitted along with the offer and the same shall not be more than 36 months old on the date of opening tender. Make & type of major components used in the type-tested meter shall be indicated in the type test certificates.

##### **25.8.2 Acceptance and Routine Tests:**

Criteria for selection for such tests and performance requirements shall be as per IS - 14697, IEC -61358.

**26. APPROVED MAKE:**ABB/ANDREW YULE/AREVA/SIEMENS/ADVANCE  
PANEL/SWITCHGEAR PVT. LTD./ ANY OTHER BRAND TYPE TESTED BY CPRI

**TECHNICAL SCHEDULE-A1 :**

**11kV 18.4KA (350 MVA) Indoor Switchgear Panels-Indoor Type  
(Configuration 2I+10/G)**

**S# GTP Parameters**

**To be filled  
by Bidder**

1	Make of Indoor Vacuum Circuit Breaker	
2	Indoor Circuit Breaker shall be VCB Type	
3	Indoor Circuit Breaker shall be horizontal draw out type.	
4	Designation of Indoor Circuit Breaker	
5	Make of Vacuum Interrupter	
6	Rated voltage of Indoor Circuit Breaker shall be 11kV	
7	Indoor Circuit Breaker shall be suitable for 50 Hz frequency.	
8	Maximum continuous voltage of Indoor Circuit Breaker shall be 12 kV	
9	Rated Continuous current of Indoor Circuit Breaker used in Incomer shall be minimum 630 Amps	
10	Rated Continuous current of Indoor Circuit Breaker used in Bus Coupler shall be minimum 630 Amps	
11	Rated Continuous current of Indoor Circuit Breaker used in feeder shall be minimum 630 Amps	
12	Rated Symmetrical Short Circuit Breaking Current of Indoor Circuit Breaker for 3 seconds shall be minimum 25 kA	
13	Rated Operating Sequence of Indoor Circuit Breaker shall be O -	
14	0.3 sec - CO – 3min. - CO	
15	First pole to clear factor of Indoor Circuit Breaker shall be 1.5	
16	Rate of Rise of transient recovery voltage of Indoor Circuit Breaker	
17	Peak Voltage of transient recovery voltage of Indoor Circuit Breaker	
18	Rated Symmetrical Short Circuit Making Current of Indoor Circuit Breaker shall be minimum 62.5 kA	
19	Power frequency withstand voltage for 1 minute of Indoor Circuit Breaker shall be minimum 28 kV.	
20	Impulse withstand voltage of Indoor Circuit Breaker shall be minimum 75 kV	
21	Indoor Circuit Breaker shall have Motor wound spring charging type closing mechanism.	
22	Voltage rating of spring released coil used in Indoor Circuit Breaker shall be 30 V DC	
23	Burden of spring released coil used in Indoor Circuit Breaker in Watts.	
24	Voltage rating of spring charging motor used in Indoor Circuit Breaker shall be 230 V AC	
25		

24 Watts of spring charging motor used in Indoor Circuit Breaker in VA.

25	Indoor Circuit Breaker shall have shunt tripping mechanism	
26	Voltage rating of tripping coil used in Indoor Circuit Breaker shall be 30 V DC	
27	Burden of tripping coil used in Indoor Circuit Breaker in Watt.	
28	Whether mechanical ON/OFF indication provided for Indoor Circuit Breaker.	
29	Whether mechanical spring charged indication provided for Indoor Circuit	
30	Breaker. Whether manual Trip/Close provided for Indoor Circuit Breaker.	
31	Whether mechanical spring charging provided for Indoor Circuit Breaker.	
32	Whether electrical anti-pumping device provided for Indoor Circuit Breaker.	
33	Whether any contact multiplier used for Indoor Circuit Breaker.	
34	If contact multiplier used for Indoor Circuit Breaker then voltage rating of contact multiplier used.	
35	If contact multiplier used for Indoor Circuit Breaker then burden of contact multiplier used.	
36	Indoor Circuit Breaker : No of auxiliary contacts available for purchasers use shall be at least 4 NO + 4 NC	
37	Indoor Circuit Breaker : Whether potential free contact available for remote indication of "Spring charged"	
38	Clearance between phases in breaker chamber for Indoor Circuit Breaker shall be at least 130 mm.	
39	Clearance between phases in busbar chamber for Indoor Circuit Breaker shall be at least 180 mm.	
40	Clearance between phase and earth in breaker chamber for Indoor Circuit Breaker shall be at least 80 mm.	
41	Clearance between phase and earth in busbar chamber for Indoor Circuit Breaker shall be at least 115 mm.	
42	Make of Current Transformer	
43	Type of Current Transformer	
44	Designation of Current Transformer.	
46	One minutes Power Frequency withstand voltage of Current Transformer shall be minimum 28 kV.	
47	Impulse withstand voltage of Current Transformer shall be minimum 75 kV	
48	Current Transformer Ratio used in Incomer panel shall be 140/5-5A.	
49	Current Transformer used in Outgoing feeder panel shall be 140/5-5A.	

51	Burden of core 1 of Current Transformer used in Incomer panel shall be 5 VA subject to calculation of Burden to be provided by bidder	
52	Burden of core 2 of Current Transformer used in Incomer panel shall be 15 VA subject to calculation of Burden to be provided by bidder	
53	Burden of core 3 of Current Transformer used in Incomer panel shall be 15 VA subject to calculation of Burden to be provided by bidder	
56	Burden of core 1 of Current Transformer used in Outgoing feeder panel shall be 5 VA subject to calculation of Burden to be provided by bidder	
57	Burden of core 2 of Current Transformer used in Outgoing feeder panel shall be 15 VA subject to calculation of Burden to be provided by bidder	
58	Accuracy class for core 1 of Current Transformer used in Incomer panel shall be Cl: 0.5	
59	Accuracy class for core 2 of Current Transformer used in Incomer panel shall be Cl: 5P10	
60	Accuracy class for core 3 of Current Transformer used in Incomer panel shall be Cl: PS	
61	Accuracy class for core 1 of Current Transformer used in bus coupler panel shall be Cl: 0.5	
62	Accuracy class for core 2 of Current Transformer used in bus coupler panel shall be Cl: 5P10	
63	Accuracy class for core 1 of Current Transformer used in Outgoing feeder panel shall be Cl: 0.5	
64	Accuracy class for core 2 of Current Transformer used in Outgoing feeder panel shall be Cl: 5P10	
65	Limitation of exciting current of Current Transformer	
67	Material use for primary/secondary winding of Current Transformer shall be Copper	
68	Cross section of primary winding of Current Transformer used in incomer panel	
69	Cross section of primary winding of Current Transformer used in bus coupler panel	
70	Cross section of primary winding of Current Transformer used in feeder panel	
71	Short Time Current rating for 3 seconds of Current Transformer shall be minimum 25 kA.	
73	I. S. F. at lower ratio of Current Transformer shall not be more than 5.	

74	Type of Insulation Housing of Current Transformer shall be epoxy/resin cast.	
75	Make of Potential Transformer	
76	Type of Potential Transformer	
77	Designation of Potential Transformer	
78	Maximum continuous voltage of Potential Transformer shall be 12 kV	
79	One minutes Power Frequency withstand voltage of Potential Transformer shall be minimum 28 kV.	
80	Impulse withstand voltage of Potential Transformer shall be minimum 75 kV	
81	Is offered Potential Transformer three/single phase units	
82	Voltage Ratio of Potential Transformer shall be $11kV/\sqrt{3}/2X(110V/\sqrt{3})$	
83	Potential Transformer shall have two secondary cores.	
84	Burden of Core 1 of Potential Transformer shall be 30 VA	
85	Burden of Core 2 of Potential Transformer shall be 50 VA	
86	Accuracy class of Core 2 of Potential Transformer shall be CI 0.5	
87	Rated Voltage factor and time of Potential Transformer shall be 1.2 Continuous and 1.5 for 30 seconds.	
88	Type of insulation housing of Potential Transformer shall be resin/epoxy cast.	
89	Whether HT fuses provided for Potential Transformer.	
90	Material used for primary/secondary winding of Potential Transformer shall be Copper.	
91	Type of Indoor Switchgear	
92	Designation of Indoor Switchgear	
93	Degree of protection provided to Indoor Switchgear shall not be less than IP4X	
94	Thickness of sheet steel of Indoor Switchgear (load bearing member) shall not be less than 3 mm.	
95	Thickness of sheet steel of Indoor Switchgear (non load bearing member) shall not be less than 2 mm.	
96	Number and name of compartments of Indoor Switchgear.	
97	One minutes Power Frequency withstand voltage of Indoor Switchgear shall be min. 28 kV.	
98	Impulse withstand voltage of Indoor Switchgear shall be min. 75 kV	
99	Short Circuit withstand current at rated voltage for 3 second of Indoor Switchgear shall be min. 25 kA for Breaker	
100	Short Circuit withstand current at rated voltage for 3 second of Indoor Switchgear shall be min. 25 kA for Bus Bar.	
101	Whether power cable entry provided from rear bottom of Indoor Switchgear.	

102 Whether control cables are routed through H. T. Cubicle.

103	Paint shade of Indoor Switchgear shall be 694 as per IS:5.	
104	Type of paint used for Indoor Switchgear.	
105	Number of heaters provided per panel shall not be less than 2.	
106	Whether automatic safety shutter provided to Indoor Switchgear.	
107	Material of earth bus provided for Indoor Switchgear shall be copper.	
108	Size of earth bus provided for Indoor Switchgear.	
109	Material of terminal connector provided in Indoor Switchgear.	
110	Type of terminal connector provided in Indoor Switchgear.	
111	Whether Indoor Switchgear panels shall be of unitized construction.	
112	Whether extension on both sides of panels is possible.	
113	Material of bus bar provided for Indoor Switchgear shall be copper.	
114	Size of bus bar provided for Indoor Switchgear.	
115	Current rating of bus bar provided for Indoor Switchgear shall be minimum 800A	
116	Current density adopted for bus bar provided in Indoor Switchgear shall be more than 1.6 A/sq.mm	
117	Number of fasteners used for bus bar joints provided for Indoor Switchgear.	
118	Size of fasteners used for bus bar provided for Indoor Switchgear.	
119	Material used for fasteners used for bus bar joint shall be non-magnetic stainless steel.	
120	Material used for Bus Support Insulator used in indoor switchgear.	
121	Voltage class of Bus Support Insulator used in indoor switchgear shall be min 12 kV.	
122	Creepage Distance of Bus Support Insulator used in indoor switchgear	
123	Cantilever strength of Bus Support Insulator used in indoor switchgear	
124	Phase to phase clearance of Bus Support Insulator used in indoor switchgear shall be 180 mm.	
125	Phase to earth clearance of Bus Support Insulator used in indoor switchgear shall be 130 mm.	
126	Make of non-direction 3 O/C + 1 E/F relay.	
127	Type of non-direction 3 O/C + 1 E/F relay.	
128	Designation of non-direction 3 O/C + 1 E/F relay.	
129	Setting of O/C elements of non-direction 3 O/C + 1 E/F relay shall be 50% to 200 % of Base Current.	
130	Setting of E/F elements of non-direction 3 O/C + 1 E/F relay shall be 10% to 40 % of Base Current.	



131 Characteristics of non-direction 3 O/C + 1 E/F relay shall be 0-3 sec.

132	Number of N/O & N/C contacts provided for non-direction 3O/C + 1E/F relay.	
133	Non direction 3O/C + 1E/F relay shall be suitable for 30 V DC Auxiliary Voltage.	
134	Operational indicator of non-direction 3 O/C + 1 E/F relay shall be flags.	
135	Make of High speed Master Trip relay.	
136	General Design of High speed Master Trip relay.	
137	Designation of High speed Master Trip relay.	
138	Number of poles of High speed Master Trip relay shall be 3.	
139	High speed Master Trip relay shall be suitable for 5 amp C. T. Secondary current.	
140	Time setting of High speed Master Trip relay.	
141	High speed Master Trip relay shall be suitable for 50 Hz frequency.	
142	Auxiliary contacts available for High speed Master Trip relay shall be at least 2 NO + 2 NC of Hand Reset	
143	High speed Master Trip relay shall be suitable for 30 V DC Auxiliary Supply.	
144	Operational indicator of High speed Master Trip relay shall be Hand reset type with Mechanical flag	
145	Make of Digital Ammeter	
146	Size of Digital Ammeter	
147	Response time of Ammeter shall be 1 second.	
148	Ammeter shall be operable up to 55°C	
149	Dielectric strength of Ammeter shall be 2 kV (rms) for 1 min.	
150	Make of Ammeter selector switch	
151	Designation of Ammeter selector switch.	
152	Make of Digital Voltmeter	
153	Type of Digital Voltmeter.	
154	Size of Digital Voltmeter.	
155	Response time of Voltmeter shall be 1 second.	
156	Voltmeter shall be operable up to 55°C	
157	Dielectric strength of Voltmeter shall be 2 kV (rms) for 1 min.	
158	Make of Voltmeter selector switch	
159	Designation of Voltmeter selector switch.	
160	Make of DLMS compatible Trivector energy meter.	
161	Type and Designation of DLMS compatible Trivector energy meter.	
162	Class of accuracy of DLMS compatible Trivector energy meter shall be 0.5S	
163	Measuring parameters of DLMS compatible Trivector energy meter.	

164	DLMS compatible Trivector energy meter shall have customized backlite Liquid Crystal Display.	
165	Make of Digital Frequency Meter.	
166	Size of Digital Frequency Meter.	
167	Range of Digital Frequency Meter shall be 45 Hz to 55 Hz.	
168	Type of Digital Frequency Meter.	
169	Display of Digital Frequency Meter shall be seven segment red colour LED Display with 12 mm height.	
170	Material of Terminal Connector shall be Nickel Plated Brass.	
171	Size of stud of Terminal Connector shall be Minimum 4 mm dia.	
172	Normal current capacity of terminal connector shall be 10 amps.	
173	Breaking current capacity of terminal connector.	
174	Whether list of testing equipment submitted.	
175	Whether the list of plant and machinery submitted.	
176	Whether test certificates of Bus Bar for STC rating submitted.	
177	Whether Quality Assurance Plan submitted.	
178	Whether names of sub suppliers submitted.	
179	Whether Type Test Reports for Lightning Impulse Withstand Voltage test for switchgear panel (with circuit breaker installed) submitted.	
180	Whether Type Test Reports for Dry H.V. 1 min power frequency withstand test for switchgear panel (with circuit breaker installed) submitted.	
181	Whether Type Test Reports for Short time and peak withstand current test for switchgear panel (with circuit breaker installed) submitted.	
182	Whether Type Test Reports for Short Circuit Test with basic duties for switchgear panel (with circuit breaker installed) submitted.	
183	Whether Type Test Reports for Single phase breaking capacity test for switchgear panel (with circuit breaker installed) submitted.	
184	Whether Type Test Reports for Temperature Rise Test for switchgear panel (with circuit breaker installed) submitted	
185	Whether Type Test Reports for Mechanical Endurance test for the offered circuit breaker installed submitted.	
186	Whether Type Test Reports for Short Time Current test for Current Transformer submitted.	
187	Whether Type Test Reports for Impulse Voltage Withstand Test for Current Transformer submitted.	
188	Whether Type Test Reports for Temperature Rise Test for Current Transformer submitted.	
189	Whether Type Test Reports for Impulse Voltage Withstand Test for Potential Transformer submitted.	

190 Whether Type Test Reports for Temperature Rise Test for Potential Transformer

	submitted.	
191	Whether test certificate in respect of Vacuum Interrupter submitted.	
192	Whether test certificate in respect of Insulators submitted.	
193	Whether test certificate in respect of Bus Bar Material submitted.	
194	Whether test certificate in respect of current transformer submitted.	
195	Whether test certificate in respect of Potential Transformer submitted.	
196	Whether test certificate in respect of terminal Connectors submitted.	
197	Vacuum Interrupter Particulars:	
(i)	Rated Voltage	
(ii)	Normal current	
(iii)	Short Time current:	
	(a) Symmetrical	
	(b) Asymmetrical	
(iv)	Making Current	
(v)	Contact force due to Atmospheric pressure	
(vi)	Max. contact separation length	
(vii)	Max contact erosion	
(viii)	Average opening speed	
(ix)	Closing speed at contact touch	
(x)	Max allowable over travel	
(xi)	Max allowable contact bounce	
(xii)	Mechanical life in number of operation:	
	(a) at rated normal current	
	(b) at rated symmetrical Short Circuit Current	
	(c) at 25% rated Short Circuit Current	
	(d) at 50% rated symmetrical Short Circuit Current	
(xiii)	Name & Address of the Vacuum Interrupter Manufacturer with mention of type	

## TECHNICAL SCHEDULE-A2

### GUARANTEED TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE STATIC TRIVECTOR DLMS COMPLIANT ENERGY METERS, ACCURACY CLASS 0.5S & CATEGORY TYPE "A"

S.	Description	Required Specification	To be filled by Bidder
1.	Maker's Name and country	Secure/ L&T/ABB	
2.	Type of meter/Model	3 Phase 4 Wire	
3.	Application	3 Phase 4Wire, CTPT	
4.	Rated Current Basic Current	Operated 5A for -/5A	
5.	Frequency	50 Hz +/- 5%	
6.	Overload capacity	120% of Ib	
7.	Minimum starting current	0.1% of Ib	
8.1	Power Loss in Potential Circuit	Less than 1.5VA/8W	
8.2	Power Loss in Current Circuit	Less than 1VA (less VA/W getting preference)	
9.	Accuracy Class	0.5S	
10.	Change in error due to		
10.1	(a) Variation in Frequency	As per IS 14697:1999 (read with latest amendment)	
10.2	(b) Variation in temperature	-do-	
10.3	© Variation in Voltage	-do-	
11.	Details of case	Ultrasonically welded break to open	
12.	HV withstand	As per IS-14697 Voltage in kV (rms) (mention the kV for conducting and insulating portion separately)	
13.	Insulation Resistance	As per IS 14697:1999 (read with latest amendment)	
14.	Standard to which the TVM conform	As per IS 14697:1999 along with CBIP TR 325 (read with latest amendment)	
15.	Number of digits of Display and height of characters	7 segment, minimum 7 digits LCD with Backlit of LED having minimum character height of 10 mm.	

16.	MD reset mechanism	(a) Automatic resetting at preset date and time (b) Through authenticated CMRI or remote communication command	
17.	Temperature co-efficient from 10% rated load to 100% rated load (-25 oC to 55 oC)	As per IEC 62053-22/IS 14697 & CBIP TR 325	
18.	Working range :		
18.1	at which meter functions normally Voltage	(-) 30% to (+)20% of rated Voltage	
18.2	Current	0.1% to 120 % of Ib	
19.	Type of load (linear, non linear, Balanced/unbalanced at any Power Factor)	All type of load	
20.	Memory	Non Volatile Memory	
21.	Non Volatile Memory (NVM)	without battery back up at least 12 years To be mentioned	
22.	Principle of operation	To be mentioned	
23.	MD Integration period	To be mentioned	
24.	Weight of Energy Meter	To be mentioned	
25.	Dimension	To be mentioned	
26.	Warranty	5 years from the date of commissioning or 5.5 years from the date of supply	
27.	Outline drawings & Leaflets	To be mentioned	
28.	Energy Meter :		
	(a) remote read out facility	To be mentioned	
	(b) Communication protocol used	To be mentioned	
	© Sealing provision for meter & Optical port	To be mentioned	
29	Baud rate of data transmission	To be mentioned	
30.	Required software to be resident in CMRI and BCS	To be mentioned	
31.	Ultrasonic welding of body	To be mentioned	
32.	Manufacture's seal provided	To be mentioned	
33.	Base Computer Software	Windows XP based or suitable for latest version	

34.	Type Test Certificates	To be furnished	
35.	Time of Day Zones (Selectable)	To be mentioned	
36.	Whether meter measures both fundamental & Harmonic Energy	Both required	
37.	Real time clock Accuracy	Maximum drift per annum +/- 5 minutes for Class 0.5S	
38.	Capability for fraud Prevention and Detection		
	(i) Phase Sequence reversal	Meter should record actual energy	
	(ii) Missing Potential & Potential imbalance	Meter shall log the event with date & time	
	(iii) CT Open & CT Short	Meter shall log the event with date & time	
	(iv) Reversal of CT Polarity	The Meter should be capable of detecting and recording occurrence & restoration with date & time of CT reversal with Phase identification	
	(v) Power Off	Meter shall log the event with date & time persistence time 5 minutes	
	(vi) Current imbalance	Meter shall log the event with date & time (30% or more for more than 15 minutes programmable and will work as per prevailing electrical condition.	
	(vii) Magnetic Tamper	As per CBIP TR 325 (read with latest amendment)	
	(viii) Change of phase association	Meter shall be provided with proper logic to identify change of phase association and record the event with detect time and time of occurrence & restoration	
	(ix) Neutral disturbance	Meter shall be provided with proper logic to identify neutral disturbance and record the event	
	(x) Hardware Locking	Meter shall have hardware locking provision so that expect chance of T.O.D	

timings, other internal data

	Type of communication	can not be interfered / accessed through remote communication Optical Port, RS232 / RJ11	
39.	Data retention by NVM without battery	Port 10 Years	
40.	backup and un-powered condition Guarantee period of meter	5-1/2 years from the date of supply. Guarantee period shall be printed on the name plate	
41.	BIS license	After publishing New IS	
42.	BIS license No. & date with its validity	To be mentioned	
43.	for ISI certification mark on offered meters Details of meter design for which above BIS certification has been obtained:	To be mentioned	
(i)	Ratio of Ib to I <sub>max</sub>	To be mentioned	
(ii)	Material of meter body	To be mentioned	
(iii)	Grade of printed circuit Board material	To be mentioned	
(iv)	Type of assembly of component used	To be mentioned	
(v)	(SMT) Meter constant (IMP / kWh)	To be mentioned	
(vi)	Auxiliary power circuit (with PT or PT less)	To be mentioned	
(vii)	Accuracy class	To be mentioned	
44.	ISO accreditation No. & date with its validity	To be mentioned	
45.	Other parameters / features not covered in the above GTP	Conform to specification of IS 14697, CBIP Technical Report No. 325(read with latest amendment)	
46.	Past experience	Copies of order executed in last three years along with GTP of the supplied meters to be enclosed for manufacturing meters as per IS:14697 & CBIP	
B.	<b>Pre-Qualification Condition for HT Static Energy Meters</b>		

1. Bidders must have valid BIS Yes /No certification

	for the offered meter. If it has started to issue by appropriate authority		
2.	Bidder possess ISO 9001 Certiifcation	Yes /No	
3.	Bidder should be manufacturers of Yes /No static		
	Energy Meters having supplied Static 11/33 kV H.T. Meters with memory and LCD display as per IS 14697 & CBIP TR 325 to Electricity Boards / Utilities in the past 3 years		
4.	Bidders should have dust free, static	Yes /No	
	protected environment for manufacture, assembly and Testing		
5.	Bidder should have automatic	Yes /No	
	computerized test bench for testing of meters		
6.	Bidder has facilities of Oven for ageing	Yes /No	
	test.		



# **QUALIFICATION FORMS**

**APPLICATION FORM - 1**  
**General Information**

PAGE \_\_\_\_ OF \_\_\_\_ PAGES

1.	Name of firm	
2.	Head office address	
3.	Telephone Fax Email	
4.	Contact Person(s) Name Title/Position	
5.	Place of incorporation / registration Date	
6.	Legal status of firm	
7.	Field of specialty in business	
8.	Number of persons	

Date \_\_\_\_\_

Signature \_\_\_\_\_

Name of the Applicant
-----------------------

**General Work-Experience:**

**1. Annual Turnover**

*The information supplied should be the annual turnover of the Applicant (separately for each partner of a joint venture/ each member of a consortium), in terms of the amounts paid by the clients for each year in the last five (5) years. Unless specifically asked for, Applicants need not to enclose testimonials, certificates, and publicity material with their applications; they will not be taken into account in the evaluation of qualifications.*

Fiscal Year	Turnover (unit )
1.	
2.	
3.	

Fiscal year begins on \_\_\_\_\_ in each calendar year.

**2. Selection Criteria:**

*Experience as Contractor ( relevant categories of works) completed in the last Five(5) years to demonstrate the Applicant's business experience should be listed in separate sheets in a form as shown below:*

No.	Name of Project	Role of the Applicant (sole contractor, or partner in JV/Consortium)
1		
2		
3		

Date \_\_\_\_\_ Signature \_\_\_\_\_

NB : To please attach detailed data sheet wherever possible.

**Current Contract Commitments/ Works in Progress**

Name of Applicant

*Applicants shall provide detail about current List of projects on which he is working*

Name of contract	Description of works	Stipulated date of completion
1.		
2.		
3.		
4		
5		
6.		
7.		
8.		
9.		
10.		

Date \_\_\_\_\_

Signature -----

**AFFIDAVIT**

1. I, the undersigned, do hereby certify that all the statements made in the required statements are true & correct.
2. The undersigned also hereby certifies that neither our firms M/s \_\_\_\_\_ have abandoned any work in JKPCCLtd. or any other Department nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorizes (s) and request (s) any bank, person, firm or corporation to furnish pertinent information deemed necessary & requested by the department to verify this statement or regarding any (our) competence and general reputation.
4. The undersigned understands and agrees that further qualifying information may be requested and agrees to furnish any such information at the request of the department/project implementing authority.

\_\_\_\_\_  
(Signed by an Authorized Officer of firm)

\_\_\_\_\_  
Title of Officer

\_\_\_\_\_  
(Name Firm)

\_\_\_\_\_  
(Date)

## TENDER PROFORMA OF BID

Managing Director,  
JKPCC Ltd.,  
Jammu.

### **Sub: Supply, Installation, Testing & Commissioning of 11 KV H.T Panels set as per latest IEC standard at New Legislature Complex, Jammu**

Sir,

This has reference to above mentioned NIT and our offer against the same is as under:

1. I/We hereby affirm that I/We have read and have fully understood all terms, conditions and technical specifications of tender document.
2. I/We hereby offer to supply genuine goods and material at the rates and quantities as described in our subject offer and shall execute the work(s) truly and faithfully within the time specified and set forth in the aforesaid offer. The goods and material to be supplied will be of the quality answerable in every respect with our offer / tender quoted above.
3. I/We shall be responsible for all complaints as regard the quality of material and all material and equipment shall comply in all respects with the requirement of quoted standard specifications.
4. I/We do hereby certify that the material and equipment offered are free from legal encumbrances and any claim regarding infringement and any patent of country of origin or India and shall be defended by us at our own cost and damages/ cost, if forwarded against purchaser in such a suits shall be borne by us.
5. I/We shall be hereby responsible for all complaints as regards quality of the material/ bad workmanship and for all such complaints the decision of the Corporation will be final and binding on us.
6. I/we enclosed a DD No. :\_\_\_\_\_ dt:\_\_\_\_\_ for the prescribed amount of Rs:\_\_\_\_\_(Rs:\_\_\_\_\_)drawn in favour of " \_\_\_\_\_"as Cost of Tender Document and CDR/FDR:\_\_\_\_\_ dt:\_\_\_\_\_ for the prescribed amount of Rs:\_\_\_\_\_(Rs:\_\_\_\_\_) drawn in favour of " \_\_\_\_\_"as earnest money and as required in terms of tender specification. I/we fully understand that in the event of my / our tender being accepted, the earnest money shall be returned back to me after successful completion of the work.
7. I/we shall have no claims to the refund of the earnest money prescribed against this tender in the event of my / our non-compliance of the work order, provided such order is placed within the period of validity of my / our tender as indicated in paragraph 10 below.
8. I/we further understand that my earnest money will stand forfeited even if I withdraw my tender at any stage during the currency of the period of validity.
9. My/our tender shall remain valid for a period of 90 days from the date of opening of the tender against the **NIT No:-EJ/NIT/02/ASSEMBLY/ 2018-19 .**
10. My/our tender along with the terms and conditions with relevant columns and annexure duly filled in under my / our attestation and with each page of the tender papers including the enclosed terms and conditions signed by me / us (in the capacity of sole owner / general or special / attorney, in proof of which power of attorney is attached) is submitted for your favorable consideration.
11. I/we have read the enclosed terms and conditions carefully and have signed the same in token of their absolute and unqualified acceptance. My/our tender constitute a "firm" offer under the J&K contract Act and is open to an acceptance, in whole or in part. My/our offer, if accepted on the attached terms and conditions will constitute a legal binding contract and shall operate as contract as defined in the J&K Contract Act and the Sales of Goods Act.
12. I/We understand that Managing Director, JKPCC Ltd., reserves the right to accept or reject the tender without giving any reason thereof.

Thanking you,

Yours faithfully

Place .....

Signature  
Name & Full address of tenderer with stamp  
Date.....

**Bid Security Forms  
Bank Guarantee**

Date: \_\_\_\_\_

**(Name of Contract)**

To: (Name and address of Employer)

WHEREAS (name of Bidder) (hereinafter called “the Bidder”) has submitted its Bid dated (date of bid) for the performance of the above-named Contract (hereinafter called “the Bid”)

KNOW ALL PERSONS by these present that WE (name of Bank) of (address of bank) (hereinafter called “the Bank”), are bound unto (name of Employer)(hereinafter called “the Employer”) for the sum of: (amount), for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents.

THE CONDITIONS of this obligation are as follows:

1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder in the Bid Form, or adopts corrupt and fraudulent practices.
2. If the Bidder, having been notified of the acceptance of its Bid by the Employer during the period of bid validity
  - a) Fails or refuses to sign the Contract Agreement when required, or
  - b) Fails or refuses to submit the performance security in accordance with the bidding documents or.
  - c) Adopts corrupt or fraudulent practices.

WE undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will mention that the amount claimed by it is due , owing to the occurrence of one or both of the two above-named CONDITIONS, and specifying the occurred condition or conditions.

This guarantee will remain in force up to and including (date 90 days after the period of bid validity), and any demand in respect thereof must reach the Bank not later than the above date.

For and on behalf of the Bank

\_\_\_\_\_  
in the capacity of Common Seal of the Bank  
\_\_\_\_\_