

NIT NO	HYD/SBIIT/2024-25/07
DATE	16/01/2025

**PROPOSED REVAMPING OF EXTERNAL ELECTRICAL WORKS FOR**  
**STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY**  
**(SBIIT),**  
**SITUATED AT**  
**ROAD NO. 12, BANJARA HILLS, HYDERABAD, TELANGANA.**  
  
**TENDER SCHEDULE.**

CONSULTANTS:

**mape connoisseurs,**

(Milind Architectural, Interior & Pankaj Engineering Connoisseurs)  
3-4-485 & 485/1, D1, I Floor, Near Bank of Baroda,  
Opp.. Reddy women's college, Barkatpura,  
**HYDERABAD – 500 007.**  
Tel. : 27566409 – 48557866.  
URL: [www.mapeindia.com](http://www.mapeindia.com)  
E-mail: [info@mapeindia.com](mailto:info@mapeindia.com)

Last date for submission of Sealed Tender: 15.00 P.M. (IST) on 31/01/2025.

Opening of Sealed Tenders: 15.30 P. M. (IST) on 31/01/2025.

**Tender to be submitted to :**

**The Chief Manager (Admin)**  
State Bank Institute of Innovation and Technology (SBIIT)  
**8-2-695, Bank Sanchar Bhavan,**  
**Road No. 12, Banjara Hills,**  
**Hyderabad, Telangana 500034.**

Issued to: \_\_\_\_\_

**TENDER SCHEDULE FOR REVAMPING OF EXTERNAL ELECTRICAL**  
**WORKS FOR STATE BANK INSTITUTE OF INNOVATION AND**  
**TECHNOLOGY (SBIIT),**  
**SITUATED AT ROAD NO. 12 BANJARA HILLS, HYDERABAD,**  
**TELANGANA.**

Name of the Contractor to whom issued: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

CONSULTANTS:

**mape connoisseurs,**

(Milind Architectural, Interior & Pankaj Engineering Connoisseurs)

3-4-485 & 485/1, D1, I Floor, Near Bank of Baroda,

Opp. Reddy women's college, Barkatpura,

**HYDERABAD – 500 0027.**

Tel. : 27566409 – 48557866.

URL: [www.mapeindia.com](http://www.mapeindia.com)

E-mail: [info@mapeindia.com](mailto:info@mapeindia.com)

**CLIENTS:**

**The Chief Manager (Admin)**

State Bank Institute of Innovation and Technology (SBIIT)

**8-2-695, Bank Sanchar Bhavan,**

**Road No. 12, Banjara Hills,**

**Hyderabad, Telangana 500034.**

## NOTICE INVITING TENDER (NIT)

Online E-Tenders are invited from competent ELECTRICAL contractors who are on the banks approved panel of Hyderabad LHO in the appropriate category as per eligibility for External Electrification Works for SBIIT, Road No. 12, Banjara Hills, Hyderabad, Telangana.

1.	Name of the Work	<b>PROPOSED REVAMPING OF EXTERNAL ELECTRICAL WORKS FOR STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY (SBIIT), SITUATED AT ROAD NO. 12 BANJARA HILLS, HYDERABAD, TELANGANA.</b>
2.	Estimated cost of work	<b>Rs 66,30,513/- plus GST as applicable</b>
3.	Time for Completion of work	<b>60 DAYS</b> from the date of PO or handover of the site whichever is earlier.
4.	Eligibility of the contractor	1. Electrical Contractors of the respective category empanelled with SBI-LHO, Hyderabad 2. The vendor should have a valid digital signature to participate in the online tendering process
5.	Earnest Money Deposit (EMD)	<b>Rs. 66,400/-</b> Drafts/ BCs shall be in favour of “ <b>SBIIT The Chief Manager, State Bank Institute of Innovation and Technology (SBIIT), Road no. 12, Banjara Hills,</b> payable at Hyderabad.” Those empanelled contractors who have submitted onetime EMD, have to submit the proof.
6.	Address for submission of EMD & SB collect receipt for tender fee and opening of tenders :	Original EMD and the SB collect receipt for tender fee payment should be submitted (before due date and time) <b>physically</b> at the office of State Bank Institute of Innovation and Technology (SBIIT), <b>8-2-695, Bank Sanchar Bhavan, Road No. 12, Banjara Hills, Hyderabad, Telangana 500034.</b> Contact: 040-23388203. <a href="mailto:agmadmin.sbiit@sbi.co.in">agmadmin.sbiit@sbi.co.in</a> Technical Bid of those firms / contractors who do not submit EMD or tender fee shall be rejected.
7.	Tender documents available for download from the websites:	1) <a href="https://www.sbi.co.in">https://www.sbi.co.in</a> under “SBI in the News” link “procurement news” 2) <a href="https://etender.sbi">https://etender.sbi</a>
8.	Availability for download from the above web site	<b>From 16/01/2025 to 31/01/2025</b>
9.	Payment terms	i) No advance payment. ii) <b>NIL</b> iii) 100% payment after completion of the work subject to deductions as applicable.
10.	Initial Security Deposit (ISD)	2% of the Contract value
11.	Total Security Deposit	5 % of contract value which will be retained till the completion of the defects liability period
12.	Defects Liability Period	12 Months from the date of completion or commissioning and handover of the work.
13.	Liquidated Damages for delay in work	If the work is delayed beyond the scheduled completion date, then 0.50% of the total value of the contract per week (or part thereof) of delay will be deducted from the final bill value subject to max 5% of the value of work

14.	Validity of tender	90 days.
15.	Tax Deduction	As per applicable rates
16.	Rates quoted by bidder	<ol style="list-style-type: none"> <li>1. The quoted rate should be inclusive of Cost of materials, transport, loading , unloading charges, cost of installation, all taxes (excluding GST), wastages, machinery, temporary works such as scaffolding, cleaning, overheads, profit, statutory expenses, incidental charges and all related expenses required for the completion of the work.</li> <li>2. Additional claims other than the quoted amount will not be entertained.</li> <li>3. The quoted rates shall be firm throughout the completion of the project</li> </ol>
17.	<b>Check list of documents to be uploaded</b>	<ol style="list-style-type: none"> <li>1. Scanned copy of DD/BC of EMD</li> <li>2. Scanned copy of SBI Collect fee receipt</li> <li>3. Bidders are required to upload the NIT in PDF as uploaded by M/s SBI. This will satisfy digital signing of the terms and condition of the tender by the bidder.</li> <li>4. Proof of Empanelment with SBI in the respective category</li> </ol>
18.	Any additional information	<ol style="list-style-type: none"> <li>1. The make of materials should be chosen strictly from the preferred makes as given in the tender.</li> <li>2. Any clarifications sought after opening of the tenders will not be entertained at any cost. Firm should visit the website till last date of submission for changes/ corrigendum, if any</li> <li>3. The SBI reserves the right to cancel or postpone the tenders at any stage without assigning any reason.</li> <li>4. Claims for revision of the Quoted price by any bidder after the tender will not be entertained.</li> </ol>
19.	For any queries or support in connection with the online tendering process, please contact our E-procurement solutions agency	<p>e-Procurement technologies Limited, Ahmedabad.  Primary Contact: Ms. Shubhangi banodiya  +91-9081000427, 9904407997, 079-68136826 ,  <a href="mailto:shubhangi@auctiontiger.net">shubhangi@auctiontiger.net</a></p> <ol style="list-style-type: none"> <li>1. Anshul Juneja:- 079-68136840, <a href="mailto:anshul.juneja@eptl.in">anshul.juneja@eptl.in</a></li> <li>2. Kanchan Kumari:- 079-68136820, <a href="mailto:kanchan.k@eptl.in">kanchan.k@eptl.in</a></li> <li>3. Jaymeet Rathod:- 079-68136829, <a href="mailto:jaymeet.rathod@eptl.in">jaymeet.rathod@eptl.in</a></li> <li>4. Salina Motani:- 079-68136843, <a href="mailto:salina.motani@eptl.in">salina.motani@eptl.in</a></li> <li>5. Vinayak Khambe:-079-68136835, <a href="mailto:vinayak.k@eptl.in">vinayak.k@eptl.in</a></li> <li>6. Imtiyaz Tajani :- 079-68136831, <a href="mailto:imtiyaz@eptl.in">imtiyaz@eptl.in</a></li> <li>7. Hemangi Patel:- 079-68136852, <a href="mailto:hemangi@eptl.in">hemangi@eptl.in</a></li> <li>8. Nadeem Mansuri:-079-68136853, <a href="mailto:nadeem@eptl.in">nadeem@eptl.in</a></li> <li>9. Deepak Narekar:- 079-68136863, <a href="mailto:deepak@eptl.in">deepak@eptl.in</a></li> <li>10. Sujith Nair:- 079-68136857, <a href="mailto:sujith@eptl.in">sujith@eptl.in</a></li> <li>11. Devang Patel:- 079-68136859, <a href="mailto:devang@eptl.in">devang@eptl.in</a></li> </ol>

20.	The tender will be summarily rejected if the Bidder	<ol style="list-style-type: none"> <li>1. Failed to pay the required tender fee and submit the pro</li> <li>2. Failed to submit the original EMD at SBI office before due date</li> <li>3. Failed to upload Entire tender document, which is downloaded from the website as a proof of accepting the terms and conditions</li> <li>4. Failed to upload the Scan copy of required documents as mentioned in the documents to be uploaded.</li> <li>5. Partly or fully Modifies, alters or corrects the tender document uploaded by M/s SBI</li> </ol>
21.	Address of the Site:	<b>STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY (SBIIT), SITUATED AT ROAD NO. 12, BANJARA HILLS, HYDERABAD, TELANGANA.</b>
22.	SBI reserves the right to accept or reject any or all bids without assigning any reasons thereof, even after opening of the bids.	

## GENERAL CONDITIONS OF CONTRACT

### INTERPRETATION

In constructing these conditions, the specifications, the schedule of quantities, tender and agreement, the following words shall have the meaning herein assigned to them except where the subject or context otherwise requires.

In this connection, the following terms shall be interpreted as indicated below:

- i. **"The Employer/Bank"** 'means the STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY (SBIIT) and any of its employees or representative authorized on their behalf.
- ii. **"Bidder"** means an eligible entity/firm submitting the Bid.
- iii. **"The Contract"** means the agreement entered into between the Bank and the Contractor, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- iv. **"Vendor/Contractor"** is the successful Bidder to whom the work has been awarded.
- v. **"The Contract Price/Project Cost"** means the price payable to the Vendor under the Contract for the full and proper performance of its contractual obligations.
- vi. **"The Material/Product"** means all the materials along with the accessories which the contractor is required to supply to the Bank under the Contract.
- vii. **"The Works/Project"** shall mean the works to be executed or done under this contract.
- viii. **"The Site"** means locations where the proposed work is to be carried out and services as desired in this tender document are to be provided.
- ix. **"The Schedule of Quantities/BOQ"** shall mean the schedule of quantities as specified and forming part of this contract.

Words importing persons include firms and corporations. Words importing the singular only, also include the plural and vice versa where the Context requires.

### 1.0 SCOPE OF WORK

The detailed scope of the work is given in the BOQ

### 2.0 SITE AND ITS LOCATION

The proposed work is to be carried out at the site whose address is given in the NIT.

### 3.0 BID DOCUMENTS

3.1 The work has to be carried out strictly according to the conditions stipulated in Bid consisting the following documents and in the most workman like manner,

- NIT
- General Conditions of Contract
- Price Bid

3.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below :

- Price Bid
- General Conditions of Contract
- NIT

3.3 Complete set of Bid documents can be downloaded from the Bank's website <http://www.sbi.co.in> under "SBI in the News" link "procurement news" and also at our e-procurement agency's portal <https://etender.sbi> during the period mentioned in the NIT.

#### **4.0 BID PREPARATION:**

4.1 The Bidder is advised to inspect the site and satisfy himself on his own responsibility and his own expenses all the following information and data which may be required for the purpose of preparation and submission of their bids:

- i) The location of the Panel, DBs, Meter Board, Earth Pits etc
- ii) Required civil work like making opening in the wall for cable entry, chipping the wall for concealing the conduits, DBs, space and provision for erection of panel
- iii) feasibility for laying the cables and its route
- iv) Security gate pass requirements
- v) Storage space for the materials
- vi) Permissible working hours at the site
- vii) any other adverse conditions or hindrance for executing the work
- viii) traffic regulations, law & order situations in the area
- ix) Whether electrical work has to be executed in coordination with other agencies like interior, AC, Civil contractor etc

4.2 The Bidder will be fully responsible for considering the financial effect of any or all the above factors while submitting his Bid. The SBI or Bank shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder regardless of the conduct or outcome of the bidding process.

#### **5.0 CLARIFICATION/AMENDMENTS AND CORRIGENDUM:**

5.1 Bidder requiring any clarification of the bidding document may notify us in writing at the address/by e-mail given in the NIT within the date/time mentioned.

5.2. The clarifications to the queries received or amendments in the tender will be posted on the Bank's website and e-tender portal as a corrigendum/Addendum. No individual communication will be conveyed to the Bidders. The interested parties/Bidders are advised to check the above website regularly till the date of submission of Bid document and ensure that clarifications / amendments issued, if any, have been taken into consideration before submitting the Bid. Such amendments/clarifications, if any, issued by the Bank will be binding on the participating Bidders. SBI will not take any responsibility for any such omissions by the Bidder. SBI, at its own discretion, may extend the deadline for submission of Bids in order to allow prospective Bidders a reasonable time to prepare the Bid, for taking the amendment into account.

5.3 Depending upon the site conditions and the Bank's requirements, a pre-Bid meeting, if required, will be held on the date and time specified in the tender which may be attended by the interested Bidders or their representatives and get their queries clarified.

5.4. SBI reserves the right to amend, rescind or reissue the tender, at any time prior to the deadline for submission of Bids.

5.5. No request for change in commercial/legal terms and conditions, other than what has been mentioned in the tender or any addenda/corrigenda or clarifications issued in connection thereto, will be entertained and queries in this regard, therefore will not be entertained.

5.6. Queries received after the scheduled date and time will not be responded/acted upon.

#### 5.7 TENDER FEE:

The stipulated tender fee must be paid through SBI Collect only. Payment receipt must be enclosed along with EMD and submit at out office on or before stipulated time and date. **Bids without tender fee will be rejected.**

#### 6.0 EARNEST MONEY DEPOSIT (EMD):

6.1 The Bidder shall submit, as part of its Bid, an EMD as stipulated in the form of Demand Draft or Banker's Cheque in favour of "SBI, HYDERABAD" drawn on any Bank in India. EMD in any other form other than as specified above will not be accepted. **Bid not accompanied by the EMD as above shall be rejected.** No interest will be paid on the EMD.

6.2 The EMD of the unsuccessful Bidder shall be refunded soon after the decision to award the contract is taken. EMD of successful Bidder will be retained as a part of security deposit. EMD will be returned by M/s SBI if entire 2% ISD is submitted by contractor as a single DD.

6.3 The EMD shall stand absolutely forfeited :-

a. if the finally selected bidder revokes his Bid at any time during the period when he is required to keep his Bid open for acceptance by the SBI

(or)

b. after the bid is accepted by SBI, the vendor refuses to enter into a formal agreement with the Bank

(or)

c. the bidder fails to pay the initial security deposit as stipulated

(or)

d. the bidder fail to commence the works within the stipulated time.

6.4 If the tendering process is delayed for any reason, the Bank will insist on the revalidation of the DD and the bidder has to get it revalidated and submit again.

#### 7.0 BID SUBMISSION

7.1 Only those bidders satisfying the eligibility criteria given in the NIT need to apply. Tenders should be submitted online in the website <https://etender.sbi>. Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. The server time (which is displayed on the online portal dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission. Bidder will be responsible for any delay due to other issues.

7.2 The bidders should submit their bids online with their valid digital certificate, which confirms that the bidders have read and understood the tender terms and conditions. Claiming ignorance of all the terms and conditions in this tender either before or after the PO is issued or during the progress of the work will not be accepted.

7.3 The bidder shall submit the documents enlisted in the checklist in the NIT in the softcopy format. ie scanned copy of the documents either in PDF or JPEG format as required. The SBI will not be held responsible for any sort of delay or the difficulties faced during the submission of



bids online by the bidders. The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.

7.4 The documents submitted online in the **Technical Bid should NOT contain any price information.** Such Bid, if received, will be rejected.

7.5 The bidder shall submit his quotes **online** through the PRICE BID in the e-procurement portal. The price bid will be opened only if the Bid is **unconditional** and the bidder qualifies as per eligibility criteria and meets technical specifications.

7.6 If required, SBI shall conduct e-reverse auction among the qualified bidders and the same shall be communicated to the bidders.

7.7 No claim for submission of offline bids will be entertained. Such bids will not be considered.

## **8.0 PRICE BID: RATES QUOTED BY BIDDER**

8.1 The contractor shall satisfy himself before Bidding as to the correctness and sufficiency of his Bid for the works and the rates/ amounts stated in the schedule of quantities and / or the schedule of rates and amount as provided covering all his obligations under the contract and all matters necessary for proper completion of the works expected in this document.

8.2 The rate quoted shall be firm and shall include costs of all materials, loading, transport, unloading, Installation charges, wastage of materials during execution, levies, Octroi(if applicable), local body taxes(if applicable), all type of Insurance Charges, temporary works such as scaffolding, cleaning, overheads, profit, statutory expenses, incidental charges and all related expenses to complete the work etc..

8.3 Unless otherwise provided in the Schedule of Quantities/Specifications, the rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the work and No extra charges will be paid over and above the contract amount on account of any other charges (existing or future addition) or on any other account.

8.4 The GST shall be paid extra as applicable.

8.5 Rate Revision in the contract amount is not permitted during the validity period of the contract for any reason including during the extended period, if any.

8.6 Any request for review of the price bid after the bid opening will not be entertained.

8.7 The Bidder shall quote their offers he will be willing to execute the work, in terms of "Specific Percentage Numerical Value" (only upto two decimal places) above (+) / below(-) / at par with the total estimated cost put to bid. The same percentage offer is applicable for each and every item of the work including all sections / sub sections / sub heads of the work.

## **9.0 OPENING AND EVALUATION OF BIDS**

9.1 The online Bids will be opened at the office of the **STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY (SBIIT), 8-2-695, Bank Sanchar Bhavan, Road No. 12, Banjara Hills, Hyderabad, Telangana 500034.** Representatives of Bidder may be present during opening of Bids. However, Bids would be opened even in the absence of any or all the bidder's representatives.

9.2 In the two bid system, the technical bids will be opened at the scheduled time mentioned in the NIT. In case, if the date of opening is declared as nonworking day or Holiday, the bids will be opened on the next working day. The price bid of the qualified vendors will be opened on the same day or on a subsequent date which will be intimated to the bidders.

### 9.3 VALIDITY OF BID

Bids shall remain valid and open for acceptance for a period stipulated in this document from the date of opening of price bid. If the Bidder withdraws his/her offer during the validity period or makes modifications in his/her original offer, which are not acceptable to the Bank, without prejudice to any other right or remedy, the Bank shall be at liberty to forfeit the EMD.

### 10.0 PRELIMINARY EXAMINATION

10.1 M/s SBISPL will examine the Bids to determine whether they are complete, on required formats & accompanied by supporting Documents and the Bids are conforming to all the terms and conditions of the Bidding Document without any deviations and are generally in order.

10.2 If a Bid is not conforming to the terms and conditions, it will be rejected. However, SBISPL will have right to demand submission of more information as required, if any of the document is partly submitted. If the bidder does not respond within the stipulated time, SBISPL will reject or disqualify the bid.

### 11.0 TECHNICAL EVALUATION

11.1 Only those Bidders and Bids who have been found to be in conformity of the eligibility terms and conditions during the preliminary evaluation would be taken up for further detailed evaluation. Those Bids who do not qualify the eligibility criteria and all terms during preliminary examination will not be taken up for further evaluation.

11.2 During evaluation of bids, the SBI may, at its discretion ask the bidders for clarification of its bid. The request for clarification shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. No post bid clarification at the initiative of the bidder shall be entertained.

11.3 The tenders must be unconditional. Conditional tenders leading to unknown / indefinite liability may be summarily rejected.

### 12.0 EVALUATION OF PRICE BIDS AND FINALIZATION

12.1 Only those Bidders who qualify in Technical evaluation would be shortlisted and the online price bid submitted by the bidder will be opened.

12.2 The L1 Bidder will be selected on the basis of net total of the price evaluation as quoted in the Online Percentage rate bidding or Reverse Auction (if conducted).

12.3 In case, the L1 amount quoted by two or more contractors is the same, such lowest contractors will again be asked to submit sealed / online " Revised + Percentage Offers" on the original Estimated Cost of tender but the revised percentage shall, in no case, be higher than the percentage quoted during their initial offer for the project. The L1 shall be decided on the basis of revised offers.

12.4 The process of online rebidding amongst the two or more contractors offering same rates shall continue till L1 bidder is discovered. If required, SBI shall conduct reverse auction to discover the L1 bidder.

12.5 In case, any of such contractors or all contractors (who have quoted same tender amount in the initial bidding or subsequent bidding) refuse to submit revised offer, it shall be treated as “Withdrawal of tender” by the Contractor before acceptance by SBI and the EMD of such contractors shall be forfeited and they shall not be allowed to participate in the re-tendering process for the work.

12.6 If the final L1 bid is unreasonably low ie L1 bid is less by 10% or more of the Estimated Cost, the contractor shall submit additional Security Deposit in the form of PBG for an amount equal to difference in the estimated cost vis-a-vis final tender amount quoted by the L1 contractor.

12.7 If the L1 bidder refuses to give the PBG, then the EMD will be forfeited and the tender will be re-invited. The L1 bidder will not be allowed to participate in the retendering process.

### **13.0 CONTACTING THE SBI BANK:**

13.1 No Bidder shall contact SBI or Bank on any matter relating to its Bid, from the time of opening of Price Bid to the time the Contract is awarded.

13.2 Any effort by a Bidder to influence SBI or Bank in its decisions on Bid evaluation, or contract award may result in rejection of the Bid.

### **14.0 AWARD OF WORKS**

14.1 SBI will award the Contract to the successful Bidder whose Bid is the lowest evaluated Bid.

14.2 SBI / Bank reserves the right at the time of award of contract to increase or decrease the quantity of work and / or services from what was originally specified while floating the tender, without any change in unit price or any other terms and conditions.

### **14.3 SBI’s RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

SBI reserves the right to accept or reject any Bid in part or in full or to cancel the Bidding process and reject all Bids at any time prior to award of the contract, without incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the SBI action.

14.4 The acceptance of a tender rests with the Competent Authority, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received, without assigning any reasons. All tenders in which any of the prescribed conditions are not fulfilled, or are incomplete in any respect are liable to be rejected.

14.5 The notification of award will constitute the formation of the Contract. The selected Bidder should convey acceptance of the award of contract by returning duly signed and stamped duplicate copy of the PO within 15 days of receipt of the communication and to enter into an agreement with the Bank.

## **15.0 INITIAL SECURITY DEPOSIT**

15.1 Initial security deposit shall be 2% of contract value in favour of the Bank, unless or otherwise specified.

15.2 The successful Bidder will have to submit ISD by means of D/D within a period of 15 days of acceptance of Bid

15.3 No interest shall be paid on the amount retained by the Bank as Security Deposit.

## **16.0 SIGNING OF CONTRACT DOCUMENTS**

The successful Bidder shall be bound to execute the Agreement within 15 days from the receipt of intimation of acceptance of his Bid by SBI. However, the written acceptance of the Bid by the SBI will constitute a binding agreement between the Bank and successful Bidder pending execution of formal agreement. All expenses, stamp duty and other charges/ expenses in connection with the execution of the Agreement as a result of this tendering process shall be borne by the successful bidder.

## **17.0 EXECUTION OF ELECTRICAL WORKS:**

17.1 The Contractor shall carry out and complete the Electrical work as per standard specifications / as stipulated in this contract and relevant IS recommendations in coordination with other agencies like Interior, AC and civil contractors and to the satisfaction of the Bank / SBI with approval of Bank issue further written instructions, detailed directions and explanations with respect to the specifications, quality or quantity of works or the addition or omission or substitution of any work.

### **17.2 METER BOARD:**

The Main DB/Meter Board shall be provided in the place free from leakages and in a covered location. The Meter Board shall be as per TSSPDCL requirements and shall be fixed firmly on the wall. Any opening made in the wall for feeder cable entry should be sealed properly after installation to avoid entry of rodents and rain water. The meter Board shall be properly earthed as per the regulatory requirements.

### **17.3 LT PANEL INSTALLATION:**

Panel shall be covered properly to prevent dust, contamination & damage during transportation. In case of damages during transportation or unloading etc, the same shall be rectified and made to perfection before installation. No excuse for delay on account of the above will be accepted.

For floor mounted panel, the exact location of the panel and fixing holes to be marked on the concrete plinth for the installation. Install the panel in proper alignment and fix properly. Tighten all the connections as required. Access around the panel to be provided as per regulatory requirements for future maintenance. Ensure the services like AC drain lines or water pipe lines or sewage lines are away from the panel or the panel is properly protected against any accidental leakages.

Incoming and outgoing cables shall be marked/identified as per approved drawing. All components of the panel shall be verified against the approved panel drawing for correct rating & size. Ensure that all internal connections are proper and loose connections are tightened. All breakers (incoming/outgoing) shall be in "OFF" position and to be locked to prevent mishandling

Before commissioning. All earth terminals of the panel are firmly connected to the designated earth pits with suitable size of GI strips as required. Check whether the metering equipment and indication lamps are working as desired and rectify the defects, if any. After installation, the panel shall be properly cleaned and protected to prevent dust & contamination.

#### 17.4 INSTALLATION OF DBs :

All DBs wall mounting and floor mounted arrangement shall be in accordance with BOQ and the approved material. Ensure that painting of the wall is completed prior to marking and mounting of DB. Confirm label/markings to ensure that is the correct DB and check the position according to the approved layout and mark the fixing position of the DB's support. After marking, drill according to the selected sizes of anchor bolts to appropriate depth. Permanently fix the DB to the wall/slab with anchor bolts. If there is more than one DB to be installed at the same location, they shall be installed side by side and clearance shall be maintained for easy maintenance and trouble shooting. The height of Distribution Board shall be maintained so that easy access for termination of cables and other maintenance work can be carried out. Cut-out shall be made for inserting the wire in DB and same cut out shall be provided with a rubber gasket so that there will be no sharp edges and secure the wire insulation from damage.

Wire inserted in the DB shall be cross-checked for existing circuit number and **final ferruling** shall be done. Wire in DB shall be used cable tie and dress with bunching of the **phase-neutral and earth and suitably lugged to the respective MCBs and Bus bar. Bunching shall be done as per phase separation respectively R, Y and B.** After Crimping insulation sleeves shall be provided in the Wire/ Cable to avoid accidental short circuit between the adjacent terminals. DBs shall be provided with body earthing connections as per provisions available in the DB. Identifications labels of approved engraved type nameplate/Radium stickers of suitable font size shall be fixed on DB. After complete termination of wire/cable same DB compartment shall be cleaned before fixing the door.

When the DB is fixed on the partition care should be taken to ensure the holding capacity of the partition, to avoid the DB from falling and getting damaged or causing injury. The installation of DB shall be done in such a way to add to the ambience of the Branch. It shall be firmly fixed on the wall / partition.

#### 17.5 LAYING OF LT CABLE

##### 17.5.1 IN CABLE TRAY:

Wherever the cable trays are provided, the cables shall be laid in the cable tray. The cable shall be laid from one end of the route or any other suitable point as per site conditions. Wherever the cable needs to be bended, the cables bending radius shall conform to the cable manufacturer's recommendation. Prior to cable cutting, check both ends to make sure there is sufficient length for proper dressing and end termination. After cable laying is finished, all cables shall be tested for insulation resistance. Install the cable tags, dress the cables and clamp it as per the standards. Whenever, single core cables are used, Trefoil (three-foil formation) laying shall be used with single-core cables.

##### 17.5.2 LAYING THE LT CABLE UNDERGROUND:

A trench of about 1.5 meters deep and 45 cm wide is dug. Then the trench is covered with a 10 cm thick layer of fine sand. The cable is laid over the sand bed. The sand bed protects the cable from the moisture from the ground. Then the laid cable is again covered with a layer of sand of about 10 cm thick. When multiple cables are to be laid in the same trench, a horizontal or vertical spacing of about 30 cm is provided to reduce the effect of mutual heating. Spacing between the cables also ensures a fault occurring on one cable does not damage the adjacent cable. The trench is then covered with bricks and soil to protect the cable from mechanical injury. The LT Cable route markers shall be provided as per standards.

**17.5.3** The end termination shall be provided as per the cable size. Unless specified, the termination shall be single compression type glands of proper size and lugs shall be suitable for termination as per the point of termination like switchgear terminals, Bus bar, terminal connectors etc. Only the respective metal lugs shall be used for termination. Aluminium lugs shall not be used to terminate in the copper bus bars or vice versa.

17.5.4 The cables from the Panel to DB or from Main DB to Sub DBs should be duly fixed with suitable size clamps if laid in the wall. If more number of cables are to be laid, then they shall be laid in cable trays of suitable size firmly fixed to the ceiling with threaded rods.

17.5.5 To avoid rodent menace, the contractor shall close all openings made by him in the wall, the unused knockout holes in the DB, Panels, Junction Boxes with suitable dummies, Blanking plates etc and also provide sufficient protection to the panels, DB. No claim for additional amount towards rectifying the work on account of damages caused by rodents will be entertained during the defects liability period.

## 17.6 CONDUITS:

Unless otherwise specified all wiring shall be in rigid PVC conduit embedded in wall, or ceiling or concealed in the false ceiling. The size of conduits shall be selected in accordance with the IS regulations and the minimum size of the conduit shall be 20 mm dia unless otherwise indicated or approved. Conduits shall be kept at minimum of 100 mm from the pipes of other non-electrical services.

Separate conduits and runways shall be used for:

1. Lighting system.
2. Power outlets.
3. Emergency light.
4. Telephone system.
5. Fire alarm system.
6. Sound / public address system.
7. Television system.
8. Computer system.

Wiring for short extensions to outlets in hung ceiling or to equipment, motors etc. shall be installed in **flexible MS conduits**. Otherwise rigid conduits shall be used. PVC conduits shall not be used in outdoor system. Conduits shall be free from sharp edges and burrs and grease or oil shall not be used for the purpose of pulling the wire. The entire system of conduits must be completely installed and rendered electrically continuous before the conductors are pulled in.

All PVC conduits shall be jointed with plain PVC couples using approved PVC jointing materials as recommended by the manufacturer. All joints shall be water tight. Junction between conduit and adaptable boxes, back outlet boxes, switch outlet boxes and the like must be provided with entry spouts and smooth PVC bushes.

### 17.6.1 LAYING OF CONDUITS IN SURFACE:

Conduits run on surfaces shall be supported on galvanized / PVC saddles which in turn are properly screwed to the wall or ceiling. Saddles shall be at intervals of not more than 60 cm. Fixing screws shall be with round cheese head or and rustproof materials. Exposed conduits shall be neatly run parallel or at right angles to the wall of the building. Pull boxes must be provided at the right angles and at a distance of not exceeding 20 meter

### **17.6.2 CONCEALING THE CONDUITS IN THE WALL:**

Conduits embedded into the walls shall be fixed by means of staples at not more than 60 cm intervals. Chase in the wall shall be neatly made and refilled after laying the conduit and brought to the finish of the wall. Chasing shall be done with the wall cutting machine. Hammer and chisel shall be used on chased portion to get uniform depth of 50 mm. Uniform depth of 50 mm shall be maintained on chased portion. Conceal Back box shall be installed by using cement mortar. Alignment of the back box shall be done by using a calibrated spirit level. PVC adaptor shall be used for connection between JB and conduit. PVC solvent shall be used. PVC solvent cement shall be applied on conduit before interconnection. Embedded JB shall be protected by covering with brown tape filled with jute/gunny bag. Cement mortar 1:5 ratio (1 portion of the cement+5 portion of sand) shall be used for patchwork in chased area. Chicken (wire) mesh and GI nails shall be used for all chasing width of the embedded conduit. Curing shall be carried out for a minimum of three days.

### **17.6.3 CONCEALING IN THE CONCRETE:**

Conduits buried in concrete structure shall be put in position and securely fastened to the reinforcement and got approved by the consultant/Engineer before the concrete is poured. Proper care shall be taken to ensure that the conduits and boxes are neither dislocated nor choked at the time of pouring the concrete. Suitable fish wires shall be drawn in all conduits before they are embedded. Inspection boxes shall be provided for periodical inspection to facilitate draw and removal of cables. Such inspection boxes shall be flush with the wall in the case of recessed conduits. Inspection boxes shall be spaced at not more than 12 meters apart or two 90 degree solid bends or equal.

## **17.7 WIRING AND ACCESSORIES:**

### **17.7.1 LAYING OF WIRES:**

Unless otherwise specified all wires shall be FRLS PVC insulated single core, stranded copper conductor. All wires shall be colored as follows:

Phase R: Red Color of wire

Phase Y: Yellow Color of wire

Phase B: Blue Color of wire

Neutral: Black

Ground: Yellow Green or Green (One color only to be used for the complete Installation).

The size of wires shall be as indicated in the drawings or in the BOQ.

When more than one wires are installed in the same raceway, they should be pulled in the raceway at the same time. Use guide wires and similar equipment when wire pulling, to support the tension and avoid possible damage. Conductor splices must be enclosed in junction boxes. Use a minimum of 300mm of slack conductors inside DB and at each outlet as needed. Ensure proper wire installation in all boxes. After installation, the Wires Insulation Test should be conducted.

### **17.7.2 SWITCH BOARDS AND POWER OUTLET SOCKETS:**

Switch Boards for light points, socket outlets, power outlets, pull / junction boxes shall be of galvanized steel, and shall be of shapes and size to suit their respective locations and installations and shall be provided with covers to suit their function and installation. All outlet boxes shall be provided with brass ground terminals. All junction boxes/pull boxes shall have suitable covers. Surface mounted outlet and junction boxes in the outdoor locations shall be of weatherproof. The surface mounted indoor boxes shall be of sheet steel painted or PVC for surface installation. For internal use Switches shall be of the grid assembly pattern with rocker operated switch units suitable for operation with inductive loads. Switches shall be either one way or two way as specified in the BOQ. Switch plates shall be of suitable shade and size as specified in BOQ or approved by SBI. Surface installation switches shall be provided with matching steel box.

### **17.7.3 CIRCUIT WIRING**

Unless and otherwise specified in the BOQ, all sub main circuit conductor sizes for lighting and appliances, shall be as shown in the schedule of quantities. Each circuit phase wire from the distribution boards should be followed with a separate neutral wire of the same size as the circuit wire or as specified in the BOQ. For the light/fan point wiring individual phase, Neutral and Earth wires shall be run from the switch board to the respective ceiling rose. Looping of neutral and Earth wires for adjacent light points are not allowed except for the secondary points. For the secondary points Neutral and Earth looping should be done only from the respective primary points. This will avoid nuisance tripping of ELCB/RCCB in case of leakage and identifying the faulty circuit and rectifying will be easy. Each light point and outlet shall be identified with their circuit number and DB number with a label pasted on them. Flexible cords for connection to appliances, fans and pendants shall be 250/440V grade, three or four cores, with tinned stranded copper wires, insulated, twisted and sheathed with strengthening cord. If demanded by SBI, the contractor shall supply a certificate issued by the manufacturer of wires and switches stating origin, date of manufacture, batch number and standard to which it complies and the test certificates. Looping system of wiring shall be used. Wires shall not be jointed. Where joints are unavoidable, these shall be made through approved mechanical connector. 230 V power supply wiring shall be distinctly separate form any other different voltage system and lighting wiring.

### **17.7.4 CONTROL SWITCHES**

Control switches shall be connected in the phase conductors only and shall be 'ON' when knob is down. Switches shall be fixed in galvanized steel boxes. Chromium plated screws shall be used. The rating of the Switches shall as per the BOQ.

For the UPS power sockets provided in the workstations and counters, the control switches shall be provided separately above the counter and the sockets below the counter.

Similarly, for the wall mounting fan points, the control switches shall be provided separately in the Switch board and the socket outlet provided near the wall mounted fans.

### **17.7.5 TESTING OF ELECTRICAL WIRING SYSTEM**

The entire installation shall be tested in accordance with IS regulations for:

1. Insulation resistance.
2. Earth continuity.
3. Polarity of single pole switches.

### **17.8 LIGHT FIXTURE INSTALLATION:**

17.8.1 Inspect the site to install light fixtures as per approved lighting layout. If any mismatch is observed between the approved layout and the actual layout, please consult the SBI Engineer and replan the lighting layout to suit the actual site conditions.

If there is no false ceiling, chalk lines (geru powder cement colour removable type) shall be used to mark the spacing of light fixtures as per approved drawing. After marking, the light fitting support and accessories shall be fixed. Wires shall be connected to the connector of light fitting as per standard. Light fitting shall be mounted on the support fitted. Line level and final alignment shall be checked with line dori.

### **17.8.2 INSTALLATION OF LIGHT FIXTURES IN THE FALSE CEILING:**

While installing light fixtures in the false ceiling, the contractor has to check the distance between the roof and the false ceiling and ensure that the sufficient height is available for fixing the light fixtures and if requires any change in the lighting layout. Any hindrance like beams, sewerage pipe lines, electrical cables etc. has to be informed to the SBI Engineer and necessary guidance obtained before installation. Support to hang the fixture to be provided in the roof with suitable length of chain links or GI wires of suitable size, as per recommendation of the light



manufacturer. The supports shall be of sufficient length to enable change of location of fixtures to the adjacent grid/cutout, if required by Bank. The supports should not be fixed to the pipes or cables or electrical conduits running above the false ceiling. The Light fixtures should not be loosely laid on the false ceiling grid without any support.

17.8.3 In case of the Gypsum false ceiling, the marking shall be made in the false ceiling first as per the lighting layout and the cutout shall be made in coordination with the interior contractor. Wherever required, the suitable frame required have to provided by the contractor for the 2'x2' fixtures.

17.8.4 The cutouts for the light fixtures and down lighters shall be properly marked in the false ceiling to make the cutout neatly and as per the desired lighting layout. Nylon line dori shall be used to ensure that all light fixtures are in a straight line

17.8.5 If the works involves, some architectural features in the false ceiling, the contractor shall consult the interior contractor and SBI Engineers before installation of light fixtures, ceiling fans, laying of cables above false ceiling to avoid any damage or any hindrance to the proposed architectural features.

## **17.9 EARTH STRIPS / CABLE TRAYS:**

### **17.9.1 GI/COPPER STRIP LAYING:**

Before installation of GI and copper earth strip, the inspection shall be carried out to confirm size, quantity and galvanizing of GI strip. Arrangement shall be made for proper scaffold for strip laying on the tray. Check wall and beam finishing before strip clamping on the wall and beam. Ensure that all Earth strip installation are straight. The earth strip route and size shall be confirmed/verified with approved earthing drawing.

Ensure that there is no overlapping in strips at joints. Where required for Joint area, use "C" type holding clamp for avoiding gap between two strips. GI strip fixing inside cable tray with using of GI nut bolt at every 5 mtr.interval. Clamps shall be fixed at an interval of 1000mm. Copper to GI earth strip connection shall be done by using the bimetallic washer

### **17.9.2 EARTH STRIP LAYING BY WELDING ON WALL/SLAB.**

Whenever longer length of Earth strips are to be Installed on wall/ slab, the overlapping in strips at joints shall be minimum. Overlapping area to be properly welded and ensure no gap in the joint area. Approved PVC sleeve shall be provided to 50x6mm and 75x10mm GI earth strip wherever accessible areas such as inside substation, all embedded portion etc. Welding joints are cleaned with wire brush and then coated with Galva brite. All paint, scale and enamel shall be removed from the contact before the earthing connections are made. All sizes of GI strips shall be fixed by using GI clamp, GI spacer, and 35x8mm GI screw with PVC nylon fasteners (PVC Grip). Clamps shall be fixed at an interval of 1000mm (in case of wall/slab).The earthing for Equipment shall be tapped from the main earth conductor/strip. Equipment earthing shall be done by GI nut bolting. Ensure GI nut bolt shall be fully tightened at equipment earthing. GI strip laid underground shall be at depth of 500mm below finished grade level. All joint below ground level shall be welded by two coats of bitumen paint. All connections to the grounding grid shall be made with earthing strip welded to the grid and bolted at equipment ends. All joints and cut ends shall be properly painted with galvabrite.

### **17.9.3 CABLE TRAY INSTALLATION:**

Cable tray supports and cable tray material shall confirm the size, quantity and quality as per technical specification. Cable tray routes shall be cleared of any debris. Necessary cable tray route and supports shall be checked as per approved drawings. If required, make suitable size opening in the wall for cable tray entry into the building. All accessories used such as joint plate, nut, bolts

with washer, bends, reducers, etc. used in cable trays shall be of the same manufacturer as that of the cable trays. Necessary Scaffolding shall be arranged wherever applicable. Throughout the work execution, safety standards shall be followed.

Chalk lines (geru powder cement colour removable type) are used to mark the cable tray route at the deck slab. After marking of supports location, drill the hole & install anchor fastener. Ceiling bracket and top hat section shall be fixed on anchor fastener. Install the threaded rod supports using with ceiling bracket as per approved drawing. Check the vertical and horizontal alignment of threaded rod support by spirit level. Supports shall be installed at spacing not exceeding 1.5 meters and all branches, bends, Endpoints supports shall be installed as shown on the approved drawings. Nylon line dori will be used to ensure that all supports are in a straight line. After the installation of supports install the proper size cable tray and check the alignment using of line dhori & Spirit level. Two lengths of cable tray shall be connected with the joint plate. Minimum clearance shall be maintained between bottom of the tray and the ceiling. End cap to be provided at end cut portion of tray.

#### **17.10 CORE CUT:**

Core cut hole shall be carried out at the site as per the site requirement after consulting Civil Engineer. Ensure marking of core cut is in line of existing cut out at the floor above or below to have vertical alignment. If more than one Core cut is required, required spacing shall be provided. Centre of core cut to be drilled with drill machine to receive core bit of machine. This will avoid displacement of core machine bit. The Core cut Machine will be Fixed to Slab using Machine Clamp and anchor Fastener. Check that machine is firmed enough not to be displaced from its location. Check the electrical supply and run the machine with minimal force. Maintain proper gaps between adjacent core cuts to allow pipe jointing in future. Upon completion of the core cut, protect the Core cut hole using the ply piece.

#### **17.11 CONCEALING INSIDE WALL/PARTITIONS/GROUND/CEILING :**

17.11.1 The contractor shall give due notice to the Employer whenever any work like opening for the earth pits, under ground laying of cables, concealing the conduit piping, cabling or any work is to be concealed in the wall/false ceiling/partitions or finished up or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before concealing.

17.11.2 If the Contractor has concealed the items without informing SBI Engineer, the same shall be opened up for measurement and made good to the original finishing at the contractor's expenses. If the contractor refuses to do so, then the same will not be considered for measurement and no payment may be made for such materials.

17.11.3 The contractor shall not execute any extra work other than the Bank's or SBI written instruction. No works, for which rates are not specifically mentioned in the price bid, shall be taken up without written permission of the Bank/SBI.

17.11.4 Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the decision of SBI shall be accepted as correct and binding on the contractor.

17.11.5 It is the responsibility of the Contractor to arrange/provide the tools, ladder, stands or any other gadgets or supports required for the execution of the work at site and Bank will not provide or entertain such requests.

### **18.0 MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS**

18.1 All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workman like manner with materials of the best and approved quality of the respective kinds in accordance with the particulars contained in and implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by SBI during the execution of the work and to his entire satisfaction. The Contractor shall use only products bearing ISI marking in the work for those materials for which no makes are mentioned in the tender.

18.2 No refurbished, second hand and spurious materials should be used. If required, the contractor has to submit the details of the source of his purchase of materials to SBI. SBI reserves its right to enquire and collect data from the supplier to confirm the authenticity of the materials. SBI has the right to stringent action against the contractor, as deemed fit, in addition to suspend / cancel the contract.

18.3 Contractor should get approval of the samples of materials in advance with SBI Engineer before use of the same in the work. Should be contractor desire to substitute any specified materials with "Equal" or "Other approved" etc., he/they must obtain the specific approval of the Bank/SBI in writing for any such substitution, well in advance.

18.4 Samples of all materials to be used must be submitted when so directed by SBI. If required, the contractor shall have to carry out tests on materials in approved materials testing laboratories or as prescribed by SBI at his own cost to prove that the materials etc., under test conform to the relevant I.S Standards or as specified in the specifications. The necessary charges, transporting, testing etc., shall have to be borne by the contractor. No extra payment on this account will be entertained.

18.5 If the contractor has used any material which is not complying with the specifications or the workmanship is bad or the material used is substandard or second hand etc, SBIISMPPL shall during the progress of the work have power to order the removal and substitution of the material or proper re-execution of the work within a reasonable time. In case the contractor refuses to comply with the order, SBI shall have the power to employ other agencies to rectify or re-execute the work at the cost and risk of the contractor.

18.6 Any damage (during the work) to any part of the work or to the premises for any reasons due to rain, storm or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

18.7 Should the work be suspended by reason of rain, strike, lock-outs or any other cause, the contractor shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes.

18.8 When the employer observes that the progress of the work is not satisfactory or very slow or not in a workmanship manner or of poor quality or violative of safety protocols etc, the contractor shall be issued a suitable advise to rectify the same or replace the materials or redo the entire work, within a reasonable time frame. If the contractor could not rectify the things within the time frame given, in the interest of the work, the Employer reserves the right to execute any part of the work included in this contract or the entire work by any other Agency or persons and contractor shall allow all reasonable facilities and extend cooperation for the execution of such work.

18.9 All expenses consequent thereon or incidental thereto as certified by SBI shall be borne by the contractor or may be deducted from any money due to or that may become due to the

contractor. No certificate, shall relieve the contractor from his liability in respect of unsound work or bad materials.

## **19.0 PERIOD OF CONTRACT & EXTENSION OF TIME**

19.1 Time is the essence of the contract. The Contract shall be executed within the stipulated period in the NIT. No request for extension will be entertained and the bidder has to plan and mobilize his resources for the satisfactory completion of the project within the time period agreed in the tender.

19.2 If in the opinion of the Employer, the work is delayed due to the following reasons not attributable to the contractor, the employer shall make a fair and reasonable extension of time, for completion of the Contract works

- a) By force majeure (or)
- b) By reason of any exceptionally inclement weather (or)
- c) By reason of proceedings taken or threatened by or dispute with adjoining or neighboring owners of public authorities arising, than through the Contractor's own default (or)
- d) By the works not referred in the Schedule of Quantities or specifications (or)
- e) By reason of civil commotion, workmen strike or lock-out (or)
- f) In consequence of the Contractor not having in due time, necessary instructions from the Employer for which he shall have specifically applied in writing ahead of time, giving reasonable time to prepare such instructions

19.3 In case of such strike or lock-out, the Contractor shall as soon as possible give written notice thereof to the employer, but the Contractor shall nevertheless constantly use his endeavors to prevent delay and shall do all they may reasonably be required, to the satisfaction of the employer to proceed with the work.

19.4 In case the work is held up for any site conditions not attributable to the contractors or for any decisions instructions / want of details from Employer or for any of the conditions, the contractor shall be allowed reasonable extension of time by the employer but any claim for idle labour shall not be entertained by the employer. Contractor's quoted rates should include for all such contingencies.

## **20.0 PAYMENT TERMS**

- i) No advance payment.
- ii) No part payment. For certain works, part payment will be considered if stipulated in the NIT.
- iii) Payment shall be made by way of Electronic fund transfer and the bill will be paid by the Branch.
- iv) Contractor should furnish details of the bank a/c no, IFSC code along with their invoices.

20.1 Part/Interim payment is paid as per the payment terms mentioned in the NIT. All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, unsound, and imperfect or unskilled work to be removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in any way the power of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract.

20.2 If the Bank has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the contractor in accordance with the quantities consumed in the work.

20.3 The final bill shall be accompanied by a certificate of completion or Commissioning report signed by an official of the Bank. Payments of final bill shall be made after deduction of Retention Money as specified, which shall be refunded after the completion of the Defects Liability Period provided the contractor has rectified all defects to the satisfaction of the Bank. The acceptance of the payment of the final bill by the contractor would indicate that he has no further claim in respect of the work executed.

20.4 **GST as applicable shall be paid extra** and the same shall be clearly shown in the invoices.

20.5 Statutory deduction towards income tax and other taxes as and when directions from statutory bodies are received will be made at the time of making payments. Currently, I.T. will be recovered @ 2 % plus surcharge or as applicable as per Government Rules. GST-TDS as per applicable rates will be deducted, wherever applicable.

**20.6 GST:**

- a. It is the responsibility of the bidder to ensure that the GST is valid and active. Payments will not be made to inactive or invalid GST invoices.
- b. Reimbursement of GST will be made only on submission of proper GST invoice as per applicable GST provision. Non-GST invoices will not be accepted. The contractor should comply with the following.
- c. Contractor should have GST Registration Number
- d. Invoice should specifically disclose the amount of GST levied at applicable rate as per GST provision
- e. In case of Correction in the bills after scrutiny, contractor should submit fresh bills for payment
- f. Contractor should timely file his GST return in accordance with GST provisions to enable the bank to claim the credit of GST paid to the contractor
- g. The GST Number of State Bank of India for Telangana State -36AAACS8577K1ZQ

20.7 The works will be paid for as “measured work” on the basis of actual work done and not as “lump sum” contract, unless otherwise specified.

20.8 All items of work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including preparatory and finishing works involved, directly related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump-sum charges in the tender, in respect of any items of work, payment will be made for the actual work done, on the basis of lump sum charges, as will be assessed by SBI.

## **21.0 SECURITY DEPOSIT**

21.1 Retention Money: From each running bill, an amount at the rate of 8% of the gross value of the running bill shall be recovered as retention money, till the total retention amount including the ISD amount already with the Bank become 5% of the value of the contract amount. This amount is called as Total Security Deposit, which consists of two components

- a) ISD - Initial Security Deposits.
- b) RM - Retention Money.

21.2 The total security deposit(5%) will be kept with the Bank. The total security deposit amount shall be refunded without interest to the contractor 30 days after the end of defects liability period, provided he has satisfactorily carried out all the works and attended to rectification of all defects in accordance with the conditions of the contract including clearing the site.

21.3 The contractor shall make good at his own cost and to the satisfaction of the Employer all defects, which may appear within the defects liability period. In case of failure on the part to do so, the cost of rectifying the defects through any other agency shall be deducted from the amount of security deposit due to the contractor.

21.4 During the contract period, all compensation or other sums of money payable by the Contractor to Bank under the terms of this contract, will be deducted from the security deposit, or from any sum that may become due to the Contractor on any account whatsoever.

21.5 In the event of the Security Deposit being reduced by reasons of any such deductions, the Contractor shall within 7 days of being asked to make good, by DD, any sum which have been deducted from his security deposit.

## **22.0 PENALTY CLAUSE**

The successful bidder shall execute the work in a workmanship like manner and complete the work within the stipulated period in the NIT. If the work is delayed beyond the stipulated period for reasons attributable to the bidder, SBI shall penalize them a penalty @ 0.5% per week for every week of delay or part thereof beyond the scheduled date of completion, in any case, not exceeding 5% of the contract value or the completed value of work.

## **23. VARIATION IN QUANTITY / SUBSTITUTION OF ITEM**

23.1 The Schedule of Quantities unless otherwise stated shall be deemed to have been prepared in accordance with the Standard Procedure shall be considered to be approximate and no liability shall attach to the employer for any error which may be discovered therein.

23.2 The Employer reserves the right to increase or decrease or delete or omit or execute only a part or the whole or any excess thereof, as per the site requirements, without assigning any reason therefor at the time of allotment / execution of work. Contractor will be paid for the actual work done at the site. No variation shall vitiate the contract.

23.3 The tender rates shall be fixed and applicable for any increase or decrease in the tendered quantities. Nothing extra will be paid by the Bank on account of omission / deletion of items or decrease in the quantity of items. The Bank shall not entertain any claim whatsoever from the contractor on this account. Payment will be made on actual measurement of the work done. All measurements shall be as per relevant I.S. standards

23.4 Bank reserves the right to order more quantities than what is mentioned in this tender (at the same rate and terms and conditions) either at the same site or other sites as per the need within the validity of this tender.

23.5 The price of all additional items/non-tendered items will be worked out on the basis of rates quoted for similar items in the contract wherever existing. If similar items are not available, the rates for such items will be derived as per standard method of rate analysis based on prevalent fair price of labour, material and other components as required with 15% towards contractor's profit and overheads.

## **24. CONTRACTOR'S EMPLOYEES**

24.1 The Contractor shall employ technically qualified / having appropriate skill and competent persons fully trained and adequately experienced Electricians, who are medically fit. They should be free from any contagious diseases. The Electricians shall be well mannered and properly dressed with shoes etc.

24.2 The contractor shall provide necessary training on safety measures while executing the work wherever necessary so as to avoid accident. The Bank shall not be responsible for any accident occurred or damage incurred or claims arising there from during the execution of work. The contractor shall also provide all risk insurance policy including third party insurance as may be necessary to cover the risk.

24.3 The contractor / firm shall be held responsible for any misdeeds / misbehaviour of their employees within the premises. Bank is not responsible for any damages or claims on account of the misbehavior / misdeeds of his employees. For this purpose, any person supplied by the contractor to be engaged on the work on regular basis or as an alternate arrangement, under the direct order or control of the Employer or his representative shall be deemed to be a person employed by the contractor.

24.4 The contractor shall on the request of the Employer immediately dismiss from works any person employed thereon by him, who in the opinion of the Employer be unsuitable or incompetent or who may misconduct. Such discharges shall not be the basis of any claim for compensation or damages against the Employer or any of their officer or employee.

24.5 No employee of the Bank is allowed to work as a contractor for a period of 2 years of his/her retirement from Bank Services without previous permission of the Bank. This contract is liable to be cancelled, if either the contractor or any of his employees is any time to be such a person who had not obtained the permission of Bank as aforesaid before submission of the tender or engagement in the contractor's service.

24.6 Contractor should not engage child labour in any of the activities in this contract.

24.7 The contractor shall not employ person who is not an Indian National.

24.8 The Electrician shall not over stay in the Bank premises other than the time permitted by the Bank or in the odd hours or holidays unless or otherwise required by the Branch for specific reasons like maintenance, repair works etc.

24.9 In respect of all labour employed directly or indirectly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions, B.I.S recommendations, factory act, workman's compensation act, CPWD code and instructions issued from time to time.

24.10 The Contractor's workmen will not have any right whatsoever to get absorbed in the Bank. The Contractor shall be responsible for all the claims of the employees of the Contractor

and shall not make and claim whatsoever against the Bank. The Contractor shall be responsible for all statutory requirements e.g. ESI, PF, labour registrations, Insurance coverage etc. The operator is responsible for compliance of all the rules & safety regulations etc.

Minimum wages as prescribed by the Labour Act shall be payable to the operator(s) by the contractor as the case may be. The Contractor shall bind himself and keep the Employer saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Employer in connection with any claim that may be made by any workmen.

## **25. WORKING HOURS AT THE SITE**

As instructed by Bank. Contractor to ensure that the routine operations at the site are not affected by the contract work. If required, they have to work on the Bank Holidays in coordination with other agencies and Bank.

## **26.0 SUBCONTRACTING**

26.1 The whole of the works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor, shall take a new partner, without written consent of the Employer and no subletting shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress

## **27.0 STORAGE OF MATERIALS**

27.1 The contractor shall store their materials like fixtures, cables, conduits, wires, tools etc in the site with the permission of the Bank. However, the contractors shall be responsible for the custody and security of all materials and equipment at site. No claim for loss or theft will be entertained by SBI or the Bank.

27.2 Shelter or stay and other amenities for the electricians have to be arranged by the contractor at his own expense and responsibility.

27.3 On completion of the works, the contractor shall remove all tools, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the Bank

## **28.0 FORCE MAJEURE**

28.1 Notwithstanding the provisions of General terms and conditions of the Contract, the contractor shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that the delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

28.2 For the purposes of this clause, 'Force Majeure' means and includes wars, insurrections, revolution, civil disturbance, riots, terrorist acts, public strikes, hartal, bandh, fires, floods, epidemic, quarantine restrictions, freight embargoes, declared general strikes in relevant industries, Vis Major Act of Government, impeding reasonable performance of the Contractor and / or Sub-Contractor but does not include any foreseeable events, commercial considerations or those involving fault or negligence on the part of the party claiming Force Majeure.

28.3 If a Force Majeure situation arises, the Vendor shall promptly notify the Bank in writing of such condition and the cause thereof. Unless otherwise directed by the Bank in writing, the Vendor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.



## **29.0 COMPLIANCE OF STATUTORY REGULATIONS**

29.1 The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-Laws of any authorities like Electricity, Pollution Control Boards, Municipal Authorities, water and Sewerage boards and shall before making any variations from the drawings or specifications that may be associated to so conform, give the Employer written notices specifying the variations proposed to be made and reasons for making them and apply for instruction thereon. The Employer on receipt of such intimation shall give a decision within a reasonable time.

29.2 The contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer. The Contractor shall indemnify the Employer against all claims in respect of patent rights, designs, trademarks or name or the protected rights in respect of any equipment, machine, work or material used for or in connection with the works or temporary works and from and against all claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto. The Contractor shall defend all actions arising from such claims, unless he has informed the Employer, before any such infringement and received their permission to proceed and shall himself pay all royalties, license fees, damages, coat and charges of all and every sort that may be legally incurred in respect thereof.

29.3 The contractor should strictly abide by the Central/State labour regulation for the Minimum Wages, Payment of wages, Workmen Compensation, PF, ESI, Contract labour, including the latest amendments, if any and other safety regulations.

29.4 The contractor shall keep the Employer saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Employer in connection with any claim that may be made by any workmen.

## **30.0 INSURANCE & DAMAGE TO PERSONS AND PROPERTY ETC**

30.1 The insurance shall be for an amount equal to 110 percent of the value of the contract on "All Risks" basis, valid until the Completion of the project or handing over whichever is later.

30.2 Should any loss or damage occur, the Vendor shall initiate and pursue claim till settlement and promptly make arrangements for repair and / or replacement of any damaged item to the satisfaction of the Bank, irrespective of settlement of claim by the underwriters.

30.3 The contractor shall be responsible for all injury to the work or workmen to persons, animals or things and for all damages to the structural and / or decorative part of property which may arise from the operations or neglect of himself or of any sub-contractor or of any of his or a sub-contractor's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract.

30.4 The contractor shall reinstate all damages of every sort mentioned in this clause so as to deliver the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property of third parties.

30.5 The contractor shall affect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect.

30.6 The contractor shall be responsible for anything, which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract.

30.7 The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due to or to become due to the contractor.

### **31. TERMINATION OF CONTRACT BY SBI**

If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number or amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a receiver of the contractor's firm appointed by the court shall be unable within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the SBI that he is able to carry out and fulfill the contract, and if so required by the SBI to give reasonable security therefore, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to contractor, there under, or shall neglect or fail to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the contractor to observe or perform the same or shall use improper materials of workmanship in carrying on the works, or shall in the opinion of the SBI not exercise such due diligence and make such progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the SBI after three clear days notice requiring the contractor so to do shall have been given to the contractor as hereinafter mentioned or shall abandon the contract, then and in any of the said cases, the SBI may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the SBI of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the works subsequently executed by or on behalf of the contractor (without thereby creating any trust in favor of the contractor) further the SBI or his agent, or servants, may enter upon and take possession of the work and all plants tools scaffolding sheds machinery, steam, and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be the SBI shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor to remove his surplus materials after receipt by him the SBI may sell the same by Public Auction and shall give credit to the contractor for the amount so realized. Any expenses or losses incurred by the contractor for the amount so realized. Any expenses or losses incurred by the SBI in getting the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other contractors or against the Security Deposit.

### **32.0 DISPUTES/ARBITRATION:**

32.1 All disputes or differences whatsoever arising between the parties out of or in connection with this contract or in discharge of any obligation arising out of the Contract (whether during

the progress of work or after completion of such work and whether before or after the termination of this contract, abandonment or breach of this contract), shall be settled amicably.

32.2 If however, the parties are not able to solve them amicably, either party (SBI or Vendor), give written notice to other party clearly setting out there in specific dispute(s) and/or difference(s) and shall be referred to a sole arbitrator mutually agreed upon, and the award made in pursuance thereof shall be binding on the parties.

32.3 In the absence of consensus about the single arbitrator, the dispute may be referred to joint arbitrator; one to be nominated by each party and the said arbitrators shall nominate a presiding arbitrator, before commencing the arbitration proceedings. The arbitration shall be settled in accordance with the applicable Indian Laws. Any appeal will be subject to the exclusive jurisdiction of courts at Hyderabad.

32.4 The Vendor shall continue work under the Contract during the arbitration proceedings unless otherwise directed by the Bank or unless the matter is such that the work cannot possibly be continued until the decision of the arbitrator is obtained.

32.5 Arbitration proceeding shall be held at Mumbai, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.

### **33. Governing Language:**

All communication with respect to the Bid, clarifications, replies, contract documents etc shall be in English.

### **34. Safety Guidelines for the Contractor:**

The Contractor should follow the following General safety Guidelines while executing the work:

34.1 Smoking is strictly prohibited at workplace.

34.2 No one is allowed to work at or more than three meters height without wearing safety belt and anchoring the lanyard of safety belt to firm support preferably at shoulder level. Chinstrap of safety helmet shall be always on and safety boot is worn.

34.3 Usage of eye protection equipment shall be ensured when workmen are engaged for grinding, chipping, welding and gas-cutting. For other jobs eye protection has to be provided as per the need.

34.4 All safety appliances like Safety shoes, Safety gloves, Safety helmet, Safety belt, Safety goggles etc. shall be arranged before starting the job.

34.5 Excavated pits for earthing, cable laying shall be barricaded till the backfilling is done. Safe approach to be ensured into every excavation.

34.6 Preferably the work shall be carried out during the daytime. However, adequate illumination at workplace shall be ensured in case any work is carried out at night.

34.7 All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.

34.8 Ladders being used at site shall be adequately secured at bottom and top. Ladders shall not be used as work platforms.

34.9 Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work everyday. Dismantled Material shall not be thrown from the height and shall be properly disposed off to prevent any injury to public/staff.

- 34.10 Other than electricians no one is allowed to carry out electrical connections, repairs on electrical equipment or other jobs related thereto.
- 34.11 All electrical connections shall be made using 3 or 5 core cables, having a earth wire.
- 34.12 Inserting of bare wires for tapping the power from electrical sockets is completely prohibited and plug tops of suitable capacity only shall be used.
- 34.13 All the unsafe conditions, unsafe acts identified by contractors, reported by SBI/SBI to be corrected on priority basis.
- 34.14 No children or physically challenged persons shall be allowed to enter the workplace and shall not be utilized for any service during execution of the work.
- 34.15 All the Gas cutting, sharp tools, flammable materials and tackles shall be stored properly and safely when not in use.
- 34.16 Clamps shall be used on Return cables to ensure proper earthing for welding works.
- 34.17 Return cables shall be used for earthing.
- 34.18 All the pressure gauges used in gas cutting apparatus shall be in good working condition and in case of any leakages, the same shall not be used.
- 34.19 Proper eye washing facilities shall be made in areas where chemicals are handled.
- 34.20 Connectors and hose clamps are used for making welding hose connections.
- 34.21 Tapping of power by cutting electric cables in between must be avoided. Proper junction boxes must be used.

**READ, UNDERSTOOD AND ACCEPTED**



## FORM OF SUBMISSION OF TENDER

(To be filled by the tenderer)

The Chief Manager (Admin),  
State Bank Institute of Innovation and Technology (SBIIT),  
8-2-695, Bank Sanchar Bhavan,  
Road No. 12, Banjara Hills,  
Hyderabad, Telangana 500034.

Dear Sir/s,

Ref: TENDER FOR \_\_\_\_\_

I/We have examined the above tender and subsequent pre-bid clarifications/ modifications / revisions, if any, furnished by SBI and I/We have inspected the site of works and have made me / us fully acquainted with the local conditions in and around the sites of works and offer to undertake Contract as detailed in this tender by submitting my/our online bids in the Bank's e-tender portal.

2. While submitting this Bid, I / We certify that:

i) The undersigned is authorized to sign on behalf of the Bidder and the necessary support document delegating this authority is uploaded along with the bid.

ii) We certify that we have not made any changes in the contents of the tender document read with its amendments/clarifications provided by M/s SBI, submitted by us in our Bid document.

iii) The rate quoted in the *price Bids are as per the tender* and subsequent pre-Bid clarifications/ modifications/ revisions furnished by the Bank, without any exception.

3. We agree to abide by all the Bid terms and conditions, contents of Agreement and the rates quoted in the bid, which shall remain binding upon us.

4. If our Bid is accepted, we undertake to enter into and execute at our cost, when called upon by the Bank to do so, a contract in the prescribed form and we shall be jointly and severally responsible for the due performance of the contract.

5. Until a formal contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

6. It is further certified that the contents of our Bid are factually correct. We also accept that in the event of any information / data / particulars proving to be incorrect, SBI will have the right to disqualify us from the Bid.

7. We understand that you are not bound to accept the lowest or any Bid you may receive and you may reject all or any Bid without assigning any reason or giving any explanation whatsoever.

8. We hereby undertake that our name does not appear in any "**Caution**" list of RBI / IBA or any other regulatory body.

9. We also confirm that we have not been **blacklisted** by any Bank / PSU / State or Central Govt departments for any reasons.

10. We confirm that we do not have any **litigation / cases** pending against us in any Bank / PSU / State or Central Govt departments.

11. We confirm that we are responsible to obtain all necessary licenses, permission, NOC from all the statutory /local authorities for the smooth execution of this contract in SBI premises.

12. We hereby confirm that all the materials/components/spare parts/equipment etc. to be supplied / used as a part of this contract shall be original / new materials / components / parts / equipment only, from respective OEMs of the products and that no refurbished / duplicate / second hand materials/components / parts/ equipment shall be supplied or shall be used.

13. For any type of deviation (to any of above or subsequent instructions), it will be my/ our responsibility to obtain the written instruction of the Engineer-in-charge for the same failing which it shall be deemed that I have carried out any such deviations at my own and I shall be duty bound to replace the all deviated material/ works from the site at my/ our cost as well as I shall be liable to penalized by the SBI as deemed fit and for all such loses made thereof, I/ we shall not have any right to arbitrate in any manner.

Yours Faithfully,

**Contractor's Signature**\_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\*\*\*\*\*

## FORM OF AGREEMENT

ARTICLES of AGREEMENT made this \_\_\_\_ day of \_\_\_\_\_ year 2025 between \_\_\_\_\_ (Hereinafter referred to as the “Employer/Bank” which expression shall, unless excluded by or repugnant to the context, includes its successors and assigns) of the ONE PART and \_\_\_\_\_ of \_\_\_\_\_ (Hereinafter referred to as “Contractor” unless excluded by or repugnant to the context, includes its successors and assigns) of the OTHER PART.

WHEREAS the Employer intends to carry out \_\_\_\_\_ and shall herein after referred to as “Project”.

AND WHEREAS for the purpose of the above said project, the Employer invited ONLINE E-tenders from experienced, resourceful and bonafide contractors through M/s SBI,Hyderabad vide its Notice Inviting Tender (No. \_\_\_\_\_ dated. \_\_\_\_\_).

WHEREAS the contractor submitted his Online Tender containing Notice Inviting Tender, General Conditions of Contract, Special conditions, Bill of Quantities, Form of Agreement, Preferred makes of materials, Form of Submission of tender, Technical Specifications etc. for the above said project, (Hereinafter collectively referred to as the “said conditions”), digitally signed as a token of his acceptance of the same, along with requisite Cost of tender and Earnest Money Deposit.

AND WHEREAS out of the Tenders received, the Tender of the contractor was found to be most suitable for the project.

AND WHEREAS the Employer through SBI has accordingly issued the work order (No. \_\_\_\_\_ dated. \_\_\_\_\_) to the contractor subject to his furnishing the requisite Security Deposit.

AND WHEREAS the Contractor has accepted the aforesaid Work Order vide his letter of acceptance No. \_\_\_\_\_ dated \_\_\_\_\_ and has also deposited with the Employer a sum of Rs. \_\_\_\_\_ which with the Earnest Money of Rs. \_\_\_\_\_ forms the requisite Security Deposit @2 % of the accepted Tender Value of Rs. \_\_\_\_\_.

NOW, therefore, it is hereby agreed to and between the parties as follows:

1) Contract documents

The following documents shall constitute the Contract Documents.

I. This Article of Agreement.

II. Tender Document submitted by the Contractor including the “said conditions”, N.I.T and Schedule of quantities.

III. All correspondence between the Employer and the Contractor from the date of issue of N.I.T and the date of issue of work order.

IV. Work order No. \_\_\_\_\_ dt. \_\_\_\_\_

2) In consideration of the payments to be made to the Contractor as hereinafter provided the Contractor shall upon and subject to the said conditions, execute and complete the contracted project works and such further detailed drawings as may be furnished to the contractor by the said Employer and described in the said Specifications and the said Schedule of Quantities.

3) Notwithstanding what are stated in the N.I.T conditions of Tendering, Conditions of Contract of herein stated before, the Employer reserves itself the right of altering the nature of the work and addition to or omitting any items of work or of having portions of same carried out through another agency or otherwise and such alterations or variations shall be carried out without prejudice to this contract.

4) As mentioned above, the "said conditions" shall be read and be treated as forming part of this agreement and parties hereto will respectively be bound thereby and to abide by and submit themselves to the conditions and stipulations and perform the same on their parts to be respectively observed and preferred.

5) Any dispute arising under this agreement shall be referred to the Arbitration in a manner specified in the General Conditions of the Contract and all legal disputes shall be limited within the territorial jurisdiction of the Hyderabad thereto. The decision of the arbitration shall be final and binding on both the parties.

6) The Vendor / Contractor shall promptly notify SBI of any changes in the constitution of their firm. It shall be open to SBI to terminate the agreement on the death, retirement, insanity or insolvency of any person/s is being director/s or partner/s in the said company / firm, or on the addition or introduction of a new partner without the previous approval in writing of SBI. But in absence of and until its termination by SBI as aforesaid, this agreement shall continue to be of full force and effect notwithstanding any changes in the constitution of the firm by death, retirement, insanity or insolvency of any of its partners or the addition or introduction of any new partners. In case of retirement / death, the surviving or remaining partners of the firm shall be jointly and severally liable for the due and satisfactory performance of the terms and conditions of the agreement.

7) The Contractor agrees and hereby keeps the Bank indemnified against all claims, actions, loss, damages, reputation loss, costs, expenses, charges, including legal expenses (Attorney, Advocates fees included) which the Bank may suffer or incur on account of any deficiency in Services rendered by The Contractor or breach of any obligations under this contract, including without limitation, breach of confidentiality obligations or any acts of commission / omission on the part of employees, agents, representatives or Sub-Contractors of the Contractor. The Contractor agrees to make good the loss suffered by the Bank.

IN WITNESS WHEREOF THE PARTIES to their present have here under set and subscribed their hands, the day, month and year first above written.

Signed and delivered for and on behalf of

Shri. \_\_\_\_\_ its duly authorized official, In the presence of -

1. (Name and Address)

2. (Name and Address)

Signed and delivered for and on behalf of the Contractor \_\_\_\_\_ by

Shri \_\_\_\_\_ his duly authorized representative, in the presence of

1. (Name and Address)

2. (Name and Address)



**PREFERRED MAKE OF MATERIALS TO BE USED :**

<b>Sno</b>	<b>ITEMS</b>	<b>BRAND NAME</b>
1.	ACB/MCCB /MCB/RCCB/MCB DB	L&T/SIEMENS/ SCHNEIDER/ ABB / LEGRAND / HAVELLS
2.	HT/LT CABLES	L&T/UNIVERSAL / FINOLEX / POLYCAB / HAVELLS
3.	CABLE GLANDS	HAX/DOWELLS/HMI/BRACO/COMET/
4.	CABLE LUGS	DOWELL/3D/JAINSON
5.	CHANGE OVER SWITCH	HPL/L&T/C&S
6.	INDICATING METERS	L&T/AE/IMP/MECO/CONZERV
7.	RELAYS	L&T/ GE/TELEMECANIQUE/AREVA
8.	CT'S RESIN-CAST	KAPPA/IMP/AE/KALPA
9.	SELECTOR SWITCHES	L&T/SIEMENS/KAYCEE
10.	FRLS WIRES	RR KABEL/FINOLEX/POLYCAB/L&T/HAVELLS/KEI
11.	MODULAR SWITCHES	ANCHOR/LEGRAND/ HONEYWELL/HAVELLS/SCHNIDER
12.	PVC CONDUITS	VIP/PRECISION/ATUL/SUDHAKAR/MODI
13.	CASING / CAPPING	CLASSIC/ MODI/SUDHAKAR
14.	LIGHT FITTINGS	PHILIPS / CROMPTON/ WIPRO/ HAVELLS
15.	EXHAUST FANS	CROMPTON/ GEC/ ARMONALD/HAVELLS
16.	CEILING FANS	CROMPTON/HAVELLS/ BAJAJ/ USHA
17.	ACB	L&T/SIEMENS/ SCHNEIDER/ ABB
18.	CONTACTORS	L&T/SIEMENS/ SCHNEIDER/ ABB
19.	CABLE TRAY	STELCO/STEELWAYS/SLOTCO/PILCO
20.	BUS BAR SUPPORT SYSTEM(SMC SHEETS)	POWERMAT/L&T/C&S/LEGRAND
21.	BUS BAR TAPING BOX	SIEMENS/SCHNEIDER/ABB/C&S
22.	M S CONDUITS	BHARAT / ZINDAL/
23.	CAPACITOR BANKS	SCHNIDER/L&T/LEGRAND/EPCOS
24.	CAT-6/TELEPHONE CABLES	D- LINK/FINOLEX/POLYCAB/LEGRAND/SKYTONE
25.	LAN SWITCHES I/O PORT	CISCO/D-LINK/ JUNIPER/LEGRAND
26.	NETWORK RACK	D-LINK/VALRACK/NETRACK/EMERSON
	Important: Please Tick (/) the make of materials considered in the Tender.	

# TECHNICAL SPECIFICATIONS

## CHAPTER 1

### POWER TRANSFORMER

#### 1.0 General

#### 1.1 Scope

The transformer shall be manufactured to the relevant IS specifications.

Scope covers manufacturing, supply, storage, installation, testing and commissioning of power transformers and associated equipment of required ratings.

#### 1.2 Codes and Standards

The design, material, construction, manufacture, inspection, testing and performance of Dry type Cast Resin (AN) power transformer shall comply with all currently applicable standards, regulations and safety codes in the locality where the equipment shall be installed. The equipment shall also conform to the latest applicable standards and codes of practice.

In case of conflict between the applicable standards and this specification, this specification shall govern.

The transformer shall generally conform to [IS: 1180, Part-1, EEL-1](#), IS 11171, IEC 60726, IEC: 62271-202 etc.

#### 1.3 Rating

The Transformer shall be continuously rated for a full load temperature rise not exceeding 55 deg.C by resistance method.

#### 1.4 Equipment

Each cast resin type transformer shall be fitted with all standard and special accessories and shall include but not limited to the following:

- 2mm thick sheet steel enclosure. The housing shall have ventilation louvers provided with punched steel plate and shall be supplied with suitable lifting lugs
- Primary side cable box with detachable gland plate to suit the number and size of the XLPE armoured cables specified and with intermediate disconnecting chamber.
- [HV Cable End Box](#)
- [LV Cable End Box](#) / Bus-duct flange (relative orientation of primary and secondary side terminals shall be 180 degrees to each other)
- Lifting lugs for core and coil assembly
- Lifting device for Transformer with enclosure
- Eye bolts only for enclosure lifting
- Under-carriage haulage with holes
- Flat bi-directional rollers with locking arrangement
- Marshalling box
- Winding temperature Indicator

- Earthing Terminals with lugs
- Winding Temperature signalizer with communication port as well as with necessary devices with alarm and trip contact.
- Rating and diagram Plate
- LV Neutral CT with secondary terminal box in marshalling box
- Emergency press to trip and key operable to unlock type pushbutton located on the Marshalling box.
- Maintenance Instructions Manual

## 1.5 Tap Changing Arrangement

The transformer shall be provided with a Motorized On-Load Tap Changing Gear, covering a total tapping range as mentioned in Data Sheet in steps of 1.25% to accommodate for a corresponding HV voltage variation so as to ensure a constant no load secondary voltage of 433V.

The On Load Tap Changing equipment shall be complete with:

- On Load Tap Changing Gear, mounted on to the transformer tank.
- Indoor type Remote Tap Changing Control Cubicle (RTCC) panel, fitted with Electronic Automatic Voltage Regulating Relay (AVR)

The On Load Tap Changing equipment shall be suitable for the following tap-change operations:

- Local Manual tap change operation, with cranking handle
- Local electrical tap change operation, with raise and lower switches or push buttons on the OLTC panel.
- Remote electrical, non-automatic independent / Group simultaneous tap change operation, with raise and lower switches or push buttons on RTCC Panel.
- Remote electrical, automatic tap change operation, with AVR. A PT of suitable ratio shall be provided on the LV side as a feedback signal to the AVR to effect automatic changeover without additional cost to the Employer.

## 1.6 HV Terminal arrangement

Terminal Box shall be provided suitable to receive **3C X 120Sqmm** A2xFY Cables

## 1.7 LV Terminal arrangement

A four pole cable box shall be provided suitable to receive **2-Runs x 3.5C x 185Sqmm** or bare flanges and a three pole plus neutral (TPN) Bus Duct.

If additional neutrals are required, these shall be brought out through an Outdoor Bare Bushing.

Care shall be taken in the installation of cable sockets and lugs.

The number of runs of cable, type and size shall be as per the Data Sheet.

## **1.8 General Constructional Features**

All the materials used shall be of the best quality and of class most suitable for working under the conditions specified to withstand the variations of temperature and atmospheric conditions without distortion, deterioration or undue stresses in any part.

Pipes and pipe-fittings, screws, studs, nuts and bolts used for external connections shall be as per the relevant standards. Steel bolts and nuts exposed to the atmosphere shall be galvanized.

**All bolts and nuts shall be in metric sizes.**

Rating and terminal marking plates indelibly marked shall be provided. All label plates shall be of galvanized material.

All internal connections and fastenings shall be capable of operating under overload condition.

## **1.9 Painting**

The interior of the transformer tank and other chambers and internal structural steel work shall be cleaned of scale and dust by sand-blasting. These surfaces shall be painted with heat resistant and insulating varnish.

Exposed surfaces of the transformer shall be painted with weather proof paint of specified shade 631 of IS5 or any other required shade.

## **1.10 Design Features**

The transformer shall:

- be capable of delivering the rated current at a voltage equal to 110% of the rated voltage without exceeding the limiting temperature rise.
- be capable of operation continuously, in accordance with the applicable standard loading guide at its rated kVA and at any of the specified voltage ratios.
- be complete with cable boxes designed and constructed to withstand without damage, the effects of external short circuits as per the specified Standards. Account shall be taken of the different forms of system faults that can arise in service such as line to earth faults and line to line faults associated with the relevant system and transformer earthing conditions.
- The dynamic ability to withstand short circuit shall be demonstrated by tests or by reference to tests on identical transformers.
- All rated parameters such as voltage ratios, impedance, regulation, load losses, and no load losses subject to the suppliers' guarantees shall be within the tolerances given in the applicable Standards.

- The transformer windings shall be designed for Basic Impulse insulation Level not lower than those specified in IS:11171
- The Dry type Transformers shall be provided with suitable protective sheet steel housing with easily removable sections/ doors, having minimum IP20 degree of protection for the enclosure. The housing shall have ventilation louvers provided with punched steel plate and shall be supplied with suitable lifting lugs.

### 1.11 Tests

The tests listed below shall be carried out on the transformer and shall be deemed to be included in the Contractor's scope.

- a. Routine tests as per IS.
- b. 2kV withstand test for all wiring circuits.
- c. Dimensional Check
- e. Visual
- g. Vector group

### 1.12 Data Sheet

Rating	400KVA
Installation	Outdoor suitable
Type	Two Windings
Phase	3 Phase
Primary Voltage	11000V
Secondary Voltage	433 V
Tap changeover	ON LOAD
Tapping on windings HV/LV	HV winding
Motorized load tap changer-20% to + 10%, in steps of 1.25%	
Winding connection	
H.V	Delta
L.V	Star Grounded
Winding material	Copper
Insulation Material	Class F (Minimum)
Vector Group	Dyn 11
Percentage Impedance	As per IS

Fault Level HV system	350MVA
Transformer Neutral	Effectively earthed through an additional bushing on LV side
Transformer Terminations:	
Primary side	Cable Termination
Secondary side	To suit Aluminum conductor BUS DUCT/ Armored cable

### 1.13 Installation of Transformer

Transformer shall be installed and commissioned as per the requirements of IS 1886 (latest edition) and regulations of local authorities.

### 1.14. Handling

Transformer and all its accessories shall be handled carefully in its upright position as indicated on the packing case. Lifting lugs and jacking pads shall be used for lifting of the transformer. While using jacking pads utmost care shall be taken in proper application of jacks. Where transformer is dragged or pulled on sleeper or rollers the traction eyes provided at the bottom frame shall be used with suitable wire ropes and shackles.

### 1.15 Storage

Transformer shall be stored under shelter in a place free from fire and explosion hazards.

### 1.16 Cabling and Earthing

Cables shall be terminated at cable boxes only after IR values are measured and found to be in order. Cable termination shall be carried out with utmost care and H.T. cable box shall be filled with compound after jointing and termination. The neutral of the transformer shall be connected to two separate and distinct earth stations through a double run of copper flats of suitable size. The body of the transformer shall also be provided with effective earthing as per the drawings and specifications.

### 1.17 Pre-commissioning Tests

The Consultant / Client shall witness the pre-commissioning tests and the erection of the transformer.

The Consultant / Client will perform a general inspection of bolts, nuts and checking of all accessories.

### 1.18 Mounting and Erection

The transformer shall be lifted by lugs or shackles or by any other suitable means (such as dragging on rollers) and mounted on the rails which are embedded in concrete prepared for the purpose. Care shall be taken to see that the transformer is not tilted during lifting and erection of the transformer. The rollers shall be checked to prevent movement of the transformer after being positioned on the rails. Adequate and necessary clearance from walls, and other equipment, shall be provided as indicated in the drawing and as per regulation of local inspection authorities. After positioning of the transformer

stoppers are to be welded to the rails so that transformer is finally fixed at its place.

All the accessories and parts shall be mounted on the transformer. Tighten all bolts and nuts.

Phasing out tests shall be performed with 415 Volts applied to HV windings and voltage across LV winding checked.

Measurement of neutral and body earth resistance shall be performed using an earth testing megger. The values shall not exceed 1 to 2 Ohms respectively.

The transformer shall be charged only after the above tests are conducted and approval of local authorities is obtained. The earthing of neutral and body of the transformer shall be done as per I.E. regulations and the requirements and of local authorities.

However, general mode of earthing arrangement is indicated on the drawings. The Contractor shall supply all the material and labour for erection and commissioning of the transformer.

#### **1.19 Warranty and Maintenance**

The installation shall be guaranteed against faulty workmanship for minimum of one year from the date of practical completion. All faulty workmanship shall be replaced and restored to full operation at no cost to the Employer within the guarantee period.

Manufacturer's guarantees and warranties shall be obtained as agreed. The warranty period shall be for eighteen months commencing from the date of installation or twelve months from the date of practical completion, whichever is the first to occur.

## CHAPTER 2

### HT VCBs

#### I SUBSTATION EQUIPMENT :

**1. Circuit Breaker: The panel shall be fabricated with CRCA sheet and powder coated with Siemens Grey paint**

- 1.1 Quantity : 1no INDOOR TYPE - 3-Breaker VCB Panel (1No Incomer & 2nos Outgoings) (as per Schedule)
- 1.2 Installation : 1no INDOOR TYPE
- 1.3 Nominal system voltage : 11 KV, 3 phase
- 1.4 Highest system voltage : 12 KV, 3 phase
- 1.5 System frequency : 50 Hz +/- 5%
- 1.6 Details of neutral earthing : Solidly earthed
- 1.7 Rated current : As per schedule
- 1.8 Rated insulation level : 28 KV
- 1.9 Rated symmetrical short circuit breaking capacity : 350 MVA for 11KV
- 1.10 Operating duty : As per IS:2516 (part 1 sec.3) or latest revision.  
The circuit breaker is not intended for rapid auto-reclosing.  
Operating Duty : O-0.3sec - CO- 3min-CO
- 1.11 Type of breaker : VCB
- 1.12 Closing mechanism : Motor operated (230V AC) spring charged electrically released true trip free closing mechanism with 6 NO & 6NC auxiliary Contacts.
- 1.13 Tripping mechanism : Self powered packs i.e. built-in Power Pack for minimum of 3Openings & 3Closings Operations .
- 1.14 Fittings : Operation counter; space heater; incoming and outgoing bushings.



1.15 Special tools : Portable hoisting gear crank for manual charging of springs and other tools required for maintenance.

1.16 Mechanical & Electrical : Nil

## 2. Current Transformers

2.1 Quantity : 1no

2.2 Type : Indoor epoxy resin cast type suitable for effectively earthed system.

2.3 Rated voltage : 11 KV, 3 phase

2.4 Rated primary current : As given in the Schedule

2.5 Rated secondary current : 5 Amp.

2.6 No. of secondary : Two - 1 for metering; 1 for Protection

2.7 Rated burden : 15 VA for each winding

2.8 Insulation level : 75KV

2.9 Short time current : 18.1KA min.for 1 second rating

2.10 Class of accuracy : 0.5 – Metering 5 p - Protection

2.11 Reference standard : IS 2705

## 2A. Potential Transformers

2A.1 Quantity : As per schedule

2A.2 Type : Indoor, epoxy resin cast.

2A.3 Rated Primary voltage : 11/ SQRT3 KV

2A.4 Rated secondary voltage : 110/ SQRT3 V

2A.5 No. of windings : One

2A.6 Accuracy class : 0.5

- 2A.7 Rated burden : 100 VA for main winding
- 2A.8 Impulse withstand : 28 KV rms (induced voltage)  
75 KV peak for 11KV
- 2A.9 Reference standard : IS: 3156

### 3. Relays

3.1 The following shall be provided on the panel.

#### A) Metering :

- i/ 1 No. Ammeter, Digital type, suitable for operation from 5Amp. CT secondary, 96 mm sq. flush mounting. Selector switch shall be provided with each ammeter. **(For all Breakers)**
- ii/ 11KV Digital load manager with RS485 protocol, class 0.5 Accuracy (Make similar to ENERCON) with Modbus connectivity
- iii) 1 No. Voltmeter, Digital type, along with PT of 11000/110V Selector switch shall be provided with each Voltmeter.
- iv) Digital PF Meter

#### B) Protections

- i/ 1 No. - Three Element IDMTL Over-current cum Earth Fault Relay (EE Make CDG 31) Horizontal version in flush pattern, drawout cases. **( For all Breakers)**
- ii/ Master trip relay type VAJH13 of EE make. **( For all Breakers)**

#### C) Auxiliary relays(VAX 31)

- i/ Suitable relays of EE for tripping with "Auto trip" indicating lamp.
- ii/ Indicating lamps for ON-OFF position of the circuit breaker.
- iii/ Breaker spring charged
- iv)/ R , Y , B Indications
- v)/ Trip Circuit Healthy
- vi)/ Buchholtz,s Alarm & Trip, Oil Temperature Alarm & Winding Temperature Alarm

#### 4. Fault Annunciation (12 Windows for Transformer Breakers & 4 windows for Incomer Breaker & Outdoor Breakers)

Suitable scheme shall be provided for annunciating trip & non-trip faults with separate annunciators and lamps with necessary relays and push buttons for accept & reset. High speed trip relay type VAJH13 of EE shall be used for tripping circuit breaker. The general Specifications of the Annunciator are given below.

i) Face : Translucent Glass / Plastic Window with Engraving

ii) Operation :

a) On Occurrence of Fault : Audible Hooter and flashing of Indication lamp.

b) Acknowledge Button Pressed : Audible hooter and flashing of Indication lamp shall stop. Indication lamp shall become steady.

c) Reset Button Pressed : If Fault is removed then Indication lamp shall go off

d) Test Button Pressed : All lamps shall Glow.

iii) Monitoring : Power supply to Annunciator shall be monitored.

iv) Indications : The Indications shall be provided for following  
Incomer VCB : Breaker On/ Breaker Off/ O.C Trip/ E/F Trip  
Outgoing VCB: Breaker On/ Breaker Off/ O.C Trip/ E/F Trip,  
Buchholtz's alarm & Trip, Winding Temp alarm & Trip

## II. INSPECTION AND TESTING SCHEDULE AT MANUFACTURE'S WORKS

The supplier shall offer the above equipment for following inspections / Tests which may be witnessed by the purchaser / purchasers representatives. The supplier shall be responsible for providing instruments of correct range and accuracy that may be required for carrying out these tests. All tests shall be carried out as per relevant Indian standard specifications or other approved International standard specifications.

### 1. CIRCUIT BREAKER

#### 01 Visual Inspection

a) Layout of component dimensions bus bar mounting arrangements and bill of materials as per the approved drawings.

b) Checking tightness of joints, phase markings, electrical clearance etc.

- c) Routing of control wiring and power cables, their termination etc.
- d) Verification of test certificates for bought out components.
- e) General workmanship, finish, interchangeability, compartmentalization, identification, tags etc.
- f) Check of earth arrangements, provision of shutters and mechanical interlock arrangement.
- g) Verification of Conformity to Engineering Standards

## 02 Routine Tests

- a) Measurement of resistance of main circuit.
- b) Operation tests including measurement of closing & opening time on oscilloscope.
- c) One minute power frequency voltage dry withstand test on circuit breaker.
- d) One minute power frequency voltage dry withstand tests on auxiliary circuits.

Routine tests mentioned above shall be carried out as per IS:2516 (part -II / sec.2) latest revision.

## 2. CURRENT TRANSFORMER

### 01 Visual Inspection

- a) Dimensional check and general arrangement.
- b) Terminal marking.
- c) Name plate details.

### 02 Routine Tests

- a) Determination of error according to the requirements of appropriate accuracy class.

- b) Verifications of terminal markings and polarity.
- c) High voltage power frequency test on primary and secondary windings.

Routine tests shall be carried out as per IS:2705 (part-I) - latest revision.

### 3. RELAYS

#### 01 Visual Inspection

- For layout components, bus mounting, compartmentalization etc. as approved drawings.
- For checking of dimensions, electrical clearances, phase marking, tightness of joints etc. p73
- General workmanship, finish identification labels, routing and termination of control and power wires / cables etc.
- Verification of test certificates for bought out components.

#### 02 Running Tests

- High voltage power frequency withstand test
- Insulation resistance test
- Functional test including simulation test on relay.

#### III) Manuals & Guarantee Cards :

The successful Contractor shall submit all the Operation and Maintenance Manuals for all Major equipment (in 3 Sets)

## CHAPTER 3

### POWER CONTROL CENTRES

#### 1.0 Scope :

This specification is to cover the requirement of design, supply, installation, testing and commissioning of LT power control centres / main switch boards with all components, Instruments, fittings and accessories for efficient operation without any trouble.

#### 2.0 Standards :

The PCC specified herein, unless otherwise stated shall conform to the relevant and latest revisions of Indian standards and Indian Electricity Rules.

#### 3.0 Design and construction :

3.1 Design requirements : The power control centres shall be suitable for operation on 440volt, 3 phase,4wire 50HZ system to withstand a short circuit level of 50 KA RMS symmetrical.

The PCC shall be designed for operation in high ambient temperature upto 45 degrees centigrade and high humidity upto 95% and tropical atmospheric conditions. Means shall be provided to facilitate ease of inspection, Maintenance and Servicing.

#### 3.2 Constructional requirements :

The power control centre shall be of

- i) Metal clad, cubicle, indoor, free standing type suitable for Mounting on Built up Trenches with U Channels of adequate size.
- ii) Made up of the requisite vertical sections, which when coupled together shall form continuous dead front switch board.
- iii) Dust and damp protected, the degree of protection shall be better than IP - 54 as specified in IS-2147.
- iv) Readily extendable on both sides by the addition of vertical sections after removal of the end covers.
- v) Single front construction with the circuit breaker feeder and switch fuse feeders suitable for operation from the front of the panel.

The PCC shall have the feeder ratings as per the schematic diagrams enclosed with the schedule and constructed only of materials capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity, which are likely to be encountered in normal service.

3.3 Vertical Sections :Each vertical section shall comprise a front framed structure rolled folded sheet steel channel section of minimum 2 mm thickness rigidly bolted together. This structure shall house the components contributing the major weight of the equipment such as circuit breaker, switch fuse units, main horizontal busbars, vertical risers and other front mounted accessories. The structure shall be mounted on a rigid base frame of folded sheet steel of minimum of 2.5 mm thickness and 100mm height. The design shall ensure Structural stability during Transit and also during Operation after Commissioning Suitable cable chamber housing the cable end connections and power / control cable terminations shall be

provided. The design shall ensure generous availability of space for ease of installation and maintenance of cabling and adequate safety for working in one vertical section without coming into accidental contact with live parts in the adjacent section.

A cover plate at the top of the vertical section shall be provided with necessary ventilating arrangements. Any aperture for ventilation shall be covered with a perforated sheet having less than 1 mm diameter perforations to prevent entry of vermin.

#### 3.4 Sheet Steel Cubicle :

3.4.1 The sheet steel cubicle shall be designed in fully segregated multitier formation. Each cubicle shall have hinged front access door with easy operating fasteners. All the doors and covers shall be heavily gasketed to make the compartment dust tight. Each cubicle shall have a covering at the bottom to make a dust and vermin proof construction. Door hinges shall be of concealed type.

The cubicle shall be of minimum 2 mm thick sheet steel. Sheet steel shrouds and partitions shall be of minimum 1.6 mm thickness. All sheet steel work forming the exterior of switch boards shall be smoothly finished, leveled and free from flaws. The corners shall be rounded. The minimum Thickness of Gland plates shall be 3mm.

3.4.2 The apparatus and circuits in the power control centers shall be so arranged as to facilitate their operation and maintenance at the same time to ensure the necessary degree of safety. Apparatus forming part of the control centers shall have the following minimum clearance.

- i) between phases - 25 mm,
- ii) between phase and neutral - 25 mm,
- iii) between phases and earth - 25 mm,
- iv) Between neutral and earth - 19 mm,

When, for any reason, the above clearances are not available suitable insulation shall be provided. Clearance shall be maintained during normal service conditions. Creepage distances shall comply with those specified in relevant standards.

3.4.3 All insulating materials used in the construction of the equipment shall be non hygroscopic duly treated to withstand the effect of high humidity, high temperature and tropical ambient service conditions.

3.4.4 Functional units such as circuit breakers and fuse switches shall be arranged in multitier formation, except that not more than One air circuit breaker housed in a single vertical section.

3.4.5 Metallic/insulated barriers shall be provided within vertical sections and between adjacent sections to ensure prevention of accidental contact with :

- i) Main busbars and vertical risers during operation, inspection or maintenance of functional units and front connected accessories.
- ii) Cable terminations of one functional unit, when working on those of adjacent unit/units.

3.4.6. All doors / covers providing access to live power equipment / circuits shall be provided with tool operated fasteners to prevent unauthorized access.

3.4.7 Provisions shall be made for permanently earthing the frames and other metal parts of the switchgear by two independent connections.

### 3.5 Metal treatment and finish :

All steel works used in the construction of the switch boards shall have undergone a suitable rigorous metal treatment process so as to remove oxide scales and rust formation and to facilitate a durable coating of the paint on the metal surfaces and also to prevent the spreading of rust, in the event of the paint film being mechanically damaged.

Two coats of Anti Corrosive primer followed by a finishing coat of Epoxy spray power coating of the shade 631 of IS : 5 (i.e. Siemens grey) shall be given. The total thickness of paint shall not be less than 25 micron.

### 3.6 Bus Bars :

3.6.1 The busbars shall be housed in non-segregated sheet steel compartments in the cubicle at convenient locations with provision for access to the buses from the front of the panel. The busbar shall be suitably braced with DMC/SMC supports to provide a through fault withstand capacity of 50 KA RMS symmetrical for one second and a peak short circuit withstand capacity 150 KA minimum. The neutral as well as the earth bus shall be capable of withstanding the above fault level.

3.6.3 Large clearance and creeping distance shall be provided on the busbar system to minimize the possibility of a fault.

3.6.4 High tension bolts, nuts and spring washers shall be provided at all busbar joints.

3.6.5 The continuous rating of the busbar shall be 125% of the rated current. Maximum temperature of the bus and the connections shall not exceed 85 degrees centigrade. The busbars shall be of liberal design for the required current rating i.e. 0.8Amp/sq.mm.

The main phase busbars shall have continuous current rating throughout the length of each power control centre and the neutral busbars shall have continuous rating of at least 50% of phase busbars.

3.6.6 Connections from the main busbars to functional circuits shall be arranged and supported so as to withstand without any damage or deformation, the thermal and dynamic stresses due to short circuit currents.

All busbars and tapings shall be provided with color coded sleeves for phase identification.

All joints/tapping points of the buses shall be suitably shrouded to prevent accidental contact.

## 4.0 Circuit Breakers :

### 4.1 General :

4.1.1 Circuit breakers shall be of triple pole / four pole, air break, horizontal draw out /Fixed type, as given in the schedule of work and comply with the requirements of relevant IS with latest amendments and shall have the following :

i) A short circuit breaking capacity of not less than 50 KA RMS at 415 volts, 50 Hz AC.



ii) A short circuit making capacity of 105 KA.

iii) A short time withstand capacity of 150 KA for one second.

iv) Electrical overload performance at 6 times the rated current, 100% of the rated voltage as recovery voltage at 0.5 power factor.

v) Dielectric test of 2.5 KV applied for one minute on main circuits.

4.1.2 The circuit breakers shall be fitted with detachable arc chutes on each pole designed to permit rapid dispersion, cooling and extinction of the arc. Interphase barriers shall be provided to prevent flash over between phases.

4.1.3 Arcing contacts shall be of hard wearing material copper tungsten or silver tungsten and shall be easily replaceable. Main contacts shall be of silver plated copper of high pressure type and generous cross section.

#### 4.2 Operating Mechanism :

The operating mechanism shall be of robust design, with minimum number of linkages to ensure maximum reliability. Manually operated circuit breakers shall be provided with spring operated closing mechanism which are independent of speed of manual operation. Electrically shall be independent of the motor which shall be used slowly for charging the closing spring.

The operating mechanism shall be such that the breaker is at all times free to open immediately when the trip coil is energized.

Mechanical operation indicators shall be provided to show open and close positions of the breaker. Electrically operated breakers shall be additionally provided with mechanical indications to show charged and discharged conditions of the charging spring.

Means shall be provided for slow closing and opening of the breaker for maintenance purposes, and for manual changing and closing of electrically operated breakers during emergencies,

#### 4.3 Protection :

Provisions shall be available for fitting a minimum of five trip devices - three over current, as shunt trip and an under voltage release or two over current and earth fault release, a shunt trip and one under voltage release. The breakers shall be of the shunt or series trip type as specified in the schedule.

#### 4.4 Housing of Circuit Breaker :

Circuit breakers shall be individually housed in sheet metal castle provided with hinged doors. The breaker along with its operating mechanism shall be mounted on a robust carriage moving on guide rollers with in the castle. Isolating contacts for both power and control circuits shall be of robust design and fully self aligning. The assembly shall be designed to allow smooth and easy movement of the breakers within its castle.

The breaker shall have three distinct positions within the castle as follows :

i) 'Service' position : With main and auxiliary contacts connected.

- ii) 'Test' position : with power contacts fully disconnected and control circuit contacts connected.
- iii) 'Isolated' position : with both power and control circuit contacts fully disconnected.

It shall be possible to achieve any of the above positions with the castle doors closed. Mechanical position indicators shall be provided for the three positions of the breakers.

#### 4.5 Interlocking :

4.5.1. The moving portion of the circuit breaker shall be interlocked so that :

- i) It shall not be possible either to isolate it from the connected position, or to plug it in from the Isolated position with the breaker closed.
- ii) The circuit breaker can be closed only when it is in one of the three positions or when it is fully out of the castle.
- iii) It shall not be possible to open the hinged door of the castle unless the breaker is drawn to the isolated position.
- iv) Inadvertent withdrawal of the circuit breaker too far beyond the supporters is prevented by the suitable stops.

4.5.2 Provisions shall be available for the padlocking of the circuit breaker access frame in any of the three positions.

4.5.3 Automatically operated safety shutters shall be provided to screen the fixed isolating contacts when the breaker is drawn out from the castle.

4.5.4 The moving portion of the circuit breaker shall be provided with a heavy duty, self aligning earth contact, which shall make before and break after the main isolating contacts during insertion into with drawl from the service position of the breaker. Even in the isolated position positive earthing contact should exist.

4.5.5 Auxiliary switches directly operated by the breaker operating mechanism and having 4 'NO' and 4 'NC' contacts, shall be provided on each breaker. The auxiliary switch contacts shall have a minimum rated thermal current of 10 amps.

### 5.0 Switch Fuse Units :

#### 5.1 General :

The switch fuse units shall be of the load break, heavy duty, cubicle type conforming to the requirements IS and of AC 23 duty.

The switch fuse units shall be capable of withstanding the thermal and electromagnetic stresses caused by short circuits for the time of operation of the associated fuse links.

The switch fuse units shall be double break and have quick make break mechanism, designed to ensure

positive operation.

All switch fuse contacts shall be silver plated at the current transfer surfaces.

The unit shall be provided with a front operating handle. The ON and OFF positions of the switch handle shall be clearly marked.

## 5.2 Interlocks and Safety :

Interlocks shall be provided so as to prevent opening of the unit door when the switch is in the ON position and also to prevent closing of the switch with the door not properly secured. It should however be possible for a competent person to operate the switch shall be suitable for locking with switch in the OFF position by means of a padlock.

The interior arrangement of the switch fuse unit shall be such that all 'Live' parts are shrouded.

## 5.3 HRC Fuses :

The switch fuse units shall be fitted with High rupturing capacity cartridge fuse links with ISI marking for a rupturing capacity of not less than 80 KA at 415 volts. The fuse links shall be mounted in a drawout carriage, thus ensuring positive isolation of contacts during fuse replacements.

## 6.0 Current Transformers.

Current transformers shall comply with the requirements of relevant latest amendment IS. They shall have ratios, outputs and accuracy as specified in the schedule.

## 7.0 Indicating / Integrating Meters :

All indicating instruments shall be of flush mounted industrial pattern conforming to the relevant latest amended IS. The instrument shall have non reflecting bezels, clearly, divided and indelibly marked scales, and shall be provided with zero adjusting devices in the front. Integrating instruments shall be of flush mounted switch board pattern complying with the requirements of relevant latest IS.

8.0 **Relays** :Circuit breakers shall be provided with integrally mounted relays as specified in the schedule.

The relay shall have a set of three phase characteristics, which shall be adjustable over a wide range, to provide discrimination between a multiplicity of devices. The relay shall be able to provide over current and earth fault protection. Also UV and Shunt trip Relays are to be provided.

9.0 **Control switches/Selector switches** :Control switches/Selector switches shall be of the heavy duty rotary type, with plates clearly marked to show the operating position. They shall be of semi-flush mounted type with only the front plate and the operating handle projected.

Circuit breakers control switches shall be of the spring return to neutral type.

## 10.0 Indicating lamps and push buttons :

Indicating lamps shall be of the LED type of low watt consumption, provided with series resistors where necessary and with translucent lamp covers. Bulbs and lenses shall be easily replaceable from the front.

Push buttons shall be of the momentary contact, push to actuate type fitted with self-reset contacts and provided with plates marked with its junctions.

#### 11.0 Cable terminations :

Cable entries and terminals shall be provided in the switch board to suit the number, type and size of aluminum conductor power cables and copper conductor control cables as indicated in the schematic diagram.

Provision shall be made for top or bottom entry of cables as required. Generous size of cabling chambers shall be provided, with the position of cable glands and terminals such that cables can be easily and safely terminated.

Barriers or shrouds shall be provided to permit safe working at the terminals of one circuit without accidentally touching that of another live circuit.

Cable riser shall be adequately supported to withstand the effects of rated short circuit currents without damage and without causing secondary faults.

Cable sockets shall be of copper and of the crimping type/soldering as required.

**12.0 Control wiring :**All control wiring shall be carried out with 1100/650 V grade single core Copper cable conforming to relevant IS having stranded copper conductors of minimum 2.5 sq.mm. section for CT Wiring and 1.5sq.mm for Control/indicating Instruments.

Wiring shall be neatly bunched, adequately supported and properly routed to allow easy access and maintenance.

Wires shall be identified by numbered ferrules at each end. The ferrules shall be of the ring type of non-deteriorating material. They shall be firmly located on each wire so as to prevent free movement.

All control circuit fuses shall be mounted in front of the panel and shall be easily accessible.

#### 13.0 Terminal blocks and lables :

Terminal block shall be of 500 volts grade of the stud type. Insulating barriers shall be provided between adjacent terminals.

Terminal block shall have minimum current rating of 10 amps and shall be shrouded.

Provisions shall be made for lable inscriptions.

Lables shall be made of anodized aluminum, with white engraving on black background. They shall be properly secured with fasteners. Danger plate of size and descriptions as recommended in the relevant IS shall be provided on the PCC.

#### 14.0 Tests :

i) The power control centre shall be completely assembled, wired, adjusted and tested for operation under simulated conditions to ensure correctness of wiring and interlocking and proper functioning of all

components.

- ii) Each power control centre and components shall be subjected to standard routine tests as per applicable clauses of relevant standards.
- iii) All current carrying parts and wiring of power control centre shall be subjected to power frequency voltage withstand test.

15.0 **Drawings** :After the award of the contract the contractors shall submit three copies of the following drawings for approval of the Department.

- i) Outline dimensional drawing of the PCC showing the general arrangement indicating the following :
  - a) Busbar clearances;
  - b) power and control cable entry points;
  - c) Configuration of busbars;
  - d) Details of support insulations and spacings;
  - e) Outgoing power cable termination arrangements.
- ii) Single line diagram of power control centre showing Protection, Metering etc.
- iii) Cubicle wiring diagram.
- iv) List of Firements with Ratings & makes / Models

16.0 Installation Testing and commissioning :

The power control centre shall be installed over the cable trench/cable pit using suitable size of MS channel including grouting of the channel with necessary bolts and nuts. Proper earthing of PCC shall be done using two independent copper/GI strip of sizes as indicated in the schedule. The channel shall be painted with one coat of red oxide primer and two coats of anticorrosive enamel paint of proper shade as directed by the Engineer-in-charge.

The pre-commissioning tests as required shall be done and the PCC shall be commissioned.

## CHAPTER 4 LAYING OF CABLES

### 1.0 Scope :

This specification is intended to cover the requirements of installation and energizing of PVC/XLPE/PILCDSTA power cables including jointing of cables.

### 2.0 Standards :

The power cable and its fixing accessories shall comply with the latest relevant Indian Standards and National Electrical Code.

### 3.0 Laying of Cables :

#### 3.1 General :

3.1.1 Before the commencement of cable laying, it shall be ensured by the Engineer-in-Charge that only ISI marked cables are used. It shall be the responsibility of the contractor to check the soundness and correctness of the size of the cable while taking delivery of the cable from stores. Any defect noticed shall be brought to the notice of the issuing authorities immediately. If any defects is noticed after the cable is laid or during the process of laying, it shall be brought to the notice of the Engineer-in-Charge and upon his satisfaction, that the cable is not damaged due to bad handling, it will be the entire responsibility of the contractor to retrieve the cable already laid and return the defective cable to store and take fresh length of the cable from the store and relay the same.

3.1.2 The material such as bricks, sand, cable route markers, RCC slab of best quality as approved by the Engineer-in-Charge only shall be used for cable laying works.

3.1.3 The contractor shall provide all the necessary labour, tools, plants and other requisites at his own cost for carrying out pumping of water and removing of water from trenches, if any, where required.

3.1.4 Installation shall be carried out in a neat, workman like manner by skilled, experienced and competent workman in accordance with standard practices.

3.1.5 While laying the cable care shall be taken to avoid formation of kinks and also damage to the cable. In the case of cable bends, it shall not have bent radius lesser than 20 times the overall diameter of the cable.

3.1.6 A cable loop of about five meters length and as directed by the Engineer-in-Charge / SBIIMS shall be provided at the following locations.

- a) Near the termination points
- b) Near to the straight through joint

3.1.7 The method of cable laying and routing of cables, shall in every case be as directed by the Engineer-in-Charge / consultant / SBIIMS.

3.1.8 Whenever cable passes through hume pipes/GI pipes embedded across the wall in a building, both the ends of the pipe shall be suitably sealed.

3.1.9 Identification tags indicating the size of the cable and feeder designation shall be securely attached at both ends of the cable. Such tags shall also be attached to the cable at intervals of 50 Mtrs. The materials of

the tag shall be of either 12 SWG GI sheet. In case of plastic, the details have to be engraved and in case of GI sheet, the details should be punched. Cable route markers shall be provided at the intervals of 200 M with a minimum of one number route marker. The details of the route makers shall be as per the drawing. At the locations of straight through joints, necessary joint-markers shall be provided.

3.1.10 When cable runs vertically, it shall be clamped on mild steel flats or angle iron fixed on walls and are spaced at such intervals as to prevent buckling of the cables. All steel work shall be painted with a coat of red oxide and thereafter finished with suitable anticorrosive paints.

### **3.2 Cable laid in ground :**

3.2.1. All MV cables (up to 1.1 KV) shall be laid at a minimum depth of 0.75 M & HT cables (1.1 KV to 11 KV) shall be laid at a depth of 1.0 M when laid in ground. When cable pass through roads, nallahs etc. they must be protected by either hume pipe or GI pipe of suitable dimensions.

3.2.2. Excavations of trenches shall be carried out as indicated in the drawing. The width of the trench at the bottom shall be 0.4 M for one cable. In case the total number of cables laid in trenches is more than one, then the width shall be such that the spacing between the cables is maintained as shown in the drawing. Before the cable is laid in the trench the bottom of the trench shall be cleared from stones and other sharp materials and filled with sand layers of 75 mm, as shown in the drawing.

3.2.3. While removing the cable from the drum, it shall be ensured that the cable drum is supported on suitable jacks and the drum is rotated to unwind the cable from the drum. The cable should never be pulled while unwinding from the drum. It shall be ensured that the cables are run over the wooden rollers placed in the trench at intervals not exceeding 2 M.

3.2.4. After placing the cables in the trench shall be filled in layers ensuring that each layer is well rammed by spraying water and consolidated. The extra earth shall be removed from the place of trench and deposited at a place as directed by the Engineer-in-Charge/consultant / SBIIMS.

3.2.5. The HT cables shall be provided with RCC slabs (marked HT cable) on top as protection.

### **3.3 Cables laid in built up trench :**

3.3.1. Before the commencement of cable laying the cable trench shall be drained properly. Cable shall be laid as explained in item 3.2. Cable shall be properly clamped to the cable supports, which are provided in the cable trench. The method of clamping shall suit the size of the cable and the cable supports, which are provided in the cable trench. The method of clamping shall suit the size of the cable and the cable supports, as directed by the Engineer-in-Charge / SBIIMS.

Care shall be taken while removing and replacing the trench cover slab. It is the responsibility of the contractor to make good any damaged trench covers.

### **3.4. Cable terminations and straight through joints :**

3.4.1. All cable jointing materials such as straight through joint boxes, cable compound, cable lugs, insulation tapes etc. shall be of best quality and as approved by the Engineer-in-Charge / SBIIMS.

3.4.2. Cable glands for strip / armoured cables shall include a suitable armour clamp for receiving and securely attaching the armouring of the cable in a manner such that no movement of the armour occurs when the assembly is subjected to tension forces.

The cable gland shall not impose on the armouring, a bending radius not less than the diameter of the cable. The clamping ring shall be solid and of adequate strength.

Provision shall be made for attachment of an external earthing bond between the metallic covering of the cable and the metallic structure of the apparatus to which the cable box is attached.

### 3.5 Sealing boxes :

3.5.1 A sealing box, irrespective of the class of insulation of the cable for which it is intended, shall be so designed that it may be filled with compound after connecting the cable specially in flame proof/hazardous areas.

3.5.2 All parts and connection for attaching the armouring, wiping or clamping the metallic sheath in a sealing box, shall be easily accessible. This may be achieved by splitting the box or by providing a suitable cover or other such means.

3.5.3 The joints in the box shall prevent leakage of the compound.

3.5.4 Provision shall be made to ensure that the cores of the cable are efficiently sealed to prevent moisture penetrating along the strands or the cable conductors.

3.5.5 The sealing box shall be provided with compound filling orifices with suitable covers or plugs of size that will permit easy pouring of the compound.

In all cases where screwed plugs are used, one or more air vents shall be provided to ensure complete expulsion of air and total filling of the box with compound. 3.5.6 The box shall be of sufficient length to allow for manipulation of the insulated cover without damage to them or to the insulation.

3.5.7 A sealing box intended to be attached directly to the apparatus shall be designed such that the box together with the connected cable may be detached from the apparatus without disturbing the sealing compound.

3.5.8 Cable sealing and dividing boxes intended for use in the flame proof areas shall comply additionally with the relevant requirements of IS:2148-1968.

### 4.0 Testing

Once cable is laid, following tests shall be conducted in the presence of Engineer-in-Charge, before energizing the cable:

- i) Insulation resistance test (Sectional and Overall).
- ii) Sheathing continuity test.
- iii) Continuity and conductor resistance test.
- iv) Earth test.
- v) High voltage test.

Tests conducted shall be as per Indian Standards and National Electrical Code.



## CHAPTER 5

### EARTHING

#### 1.0 SCOPE:

This specification is intended to cover the requirements of supply, installation, testing and commissioning of

- a) Pipe earthing
- b) Plate earthing
- c) Strip earthing

#### 2.0 STANDARDS:

Earthing installations shall conform to the Indian Electricity Rules - 1956, as amended from time to time and IS 3043-1989 "code of practice for earthing", with latest amendments.

#### 3.0 Earth electrode arrangement :

##### 3.1 Pipe electrode :

3.1.1 Electrode shall be made of CI pipe having a clean surface and not covered with paint, enamel or poorly conducting material. Galvanized pipe shall not be smaller than 100 mm ID. Earthing with pipe electrode shall be done as per the details indicated in IS : 3043/87 .

3.1.2 Electrodes shall be embedded below permanent moisture level.

3.1.3 The length of pipe electrodes shall not be less than 2.5 m. if rock is encountered, pipes shall be driven to a depth of not less than 2.5 m with suitable inclination. Pipe shall be in one piece and deeply driven.

3.1.4 To reduce the depth of burial of an electrode without increasing the resistance, a number of rods or pipes may have to be connected together in parallel. The distance between two electrodes in such a case shall not be less than twice the length of the electrode. The earthing lead shall be connected by means of a through bolt, nuts and washers and cable socket.

##### 3.2 Plate electrode :

For plate electrodes, minimum dimensions of the electrode shall be as under.

3.2.1 GI plate electrode : 600 x 600 x 6 mm thick.

3.2.2 Copper plate electrode : 600 x 600 x 3.15 mm thick

3.2.3 The electrode shall be buried in ground, with its faces vertical and top not less than 2.5 M from the surface of the ground.

3.2.4 Earthing using plate electrode shall be done as per details, indicated in drawing.

3.2.5 Plate electrodes shall have a galvanized iron water pipe, buried vertically and adjacent to the electrode. One end of pipe shall be atleast 5 cm above the surface of the ground and need not be more than 10 cm. The internal diameter of the pipe shall be atleast 19 mm. The length of pipe under the earth's surface shall be such that it shall be able to reach the center of the plate. The earthing lead shall be securely bolted the plate with two bolts, nuts, check nuts and washers.

##### 3.3. Strip or conductor electrodes :

3.3.1. Strip electrode shall not be smaller than 25 x 1.6 mm, if of copper and 25 x 3 mm, if of galvanized iron and steel. If round conductors are used as earth electrodes, their cross sectional area shall not be smaller than 3 sq.mm , if of copper and 6 sq.mm. if galvanized iron and steel.

3.3.2. Conductor shall be buried in trenches not less than 0.5 m deep.

#### 4.0 General :

i) All materials used for connecting the earth lead with electrode shall be of GI in case of GI pipe and GI plate electrodes, and of tinned brass in case of copper plate electrode. The earthing lead shall be securely connected at the other end to the main board.

ii) The earthing lead from electrode onwards shall be suitably protected against mechanical injury by routing the earth wire / strip through a suitable size of GI pipe.

iii) All medium voltage equipments shall be earthed by two separate and distinct connections with the earth. In the case of high and extra high voltages, the neutral points shall be earthed by not less than two separate and distinct connections with the earth, each having its own electrode at the generating station or substation.

iv) All materials, fittings etc. used in earthing shall conform to Indian standard specifications wherever they exist. In the case of materials for which Indian standard specifications do not exist, such materials shall be approved by the Engineer-in-Charge.

v) The earth electrode shall be kept free from paint, enamel and grease.

vi) It shall be ensured that similar materials for respective earth electrodes and earth conductors are used.

vii) Earth electrode shall not be installed in proximity to a metal fence.

viii) Copper/GI strip shall be connected to the respective earth electrodes, either by brazing or welding respectively. The Copper/GI strip shall be jointed only either by brazing or by riveting at the end of overlapping portions. The over lap shall not be less than 50 mm.

ix) Earthing clamps used for supporting earth strips shall be made of such materials so as to avoid bimetallic action between strip and clamps.

#### 5.0 Testing :

The earth resistance of each electrode shall be measured by using a reliable and calibrated earth megger and the value shall be as per IS/IE rules .

## LIST OF I.S.CODES FOR INTERNAL ELECTRIFICATION INSTALLATIONS

### B.

1. EXTERNAL ELECTRIFICATION wiring installation (system voltage not exceeding 650V) IS 732 – 1989
2. Graphical symbols used in Electro-technology art-XI-Electrical Installation buildings IS 2032-1969
3. Fire safety of buildings (General) Electrical Installation IS 1646-1961
4. 3 pin plugs and sockets IS 1293
5. Earthing. IS 3043-1966
6. Rigid steel conduits for electrical wiring IS 9537-PII-1989
7. Fittings for electrical wiring IS 2667-1964
8. Flexible steel conduits electrical wiring IS 3430-1966
9. Accessories for rigid steel conduit insulated cables IS 3837-1966
10. General and safety requirements for electric lighting fittings IS 1913-1969
11. Protecting of buildings and allied structures against lightning IS 2309-1967
12. Busbar ratings IS 8084-1976
13. On load change over switches IS 4064-1978

<b>STATE BANK OF INDIA</b>	
<b>LIST OF APPROVED MANUFACTURERS OF MATERIALS TO BE USED IN THE ELECTRICAL WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY THE CONSULTANT/ENGINEER</b>	
<b>S.No</b>	<b>Material Name.</b>
1	<b>MCCBs/Switchgear</b> : GE Power /Hager(Compact) /L&T/ ABB/Schneider/ Legrand/ Siemens
2	<b>Underground Cables</b> : CCI /Nicco /Havells/ Universal/ Poly Cab/ Gloster
3	<b>Cable Glands</b> : HMI /Comet/ Cosmos/Dowells (Biller India)/ Hax Brass
4	<b>Capacitor Bank</b> : Epcos /Neptune/ Tibcon
5	<b>Cable Lugs</b> : Dowell's / 3D
6	<b>MV Panels (PCCs)</b> : OEMs only or Manufacturers with CPRI Test Certificate.
7	<b>Measuring Instruments</b> : Conzerv/ CMS/ El measure/IME/ L&T/ Nippen/ Schneider Electric
8	<b>Selector Switches:</b> Vaishno / Salzer / Kaycee
9	<b>Indication Lamps LED</b> :Schneider / Vaishno / Binay
10	<b>Resin cast CTs</b> : AE / Kappa
	<b>Note: All Items Materials Used on site shall be ISI Mark only &amp; Materials will be selected by bank only</b>

**LIST OF DRAWINGS:**

<b>S.No.</b>	<b>Dwg No.</b>	<b>Title.</b>
1.	1.	SINGLE LINE DIAGRAM.

**PROPOSED REVAMPING OF EXTERNAL ELECTRICAL WORKS FOR**

**STATE BANK INSTITUTE OF INNOVATION AND TECHNOLOGY, SITUATED AT ROAD NO. 12, BANJARA HILLS, HYDERABAD.**

**TENDER BOQ ELECTRICAL EXTERNAL**

S.No.	Description	Quantity	Units	Rate (Rs.)	Amount (Rs.)
<b>I</b>	<b>HT SWITCHGEAR - RELATED WORKS ONLY</b>				-
1	<b>11KV HT 3- BREAKER PANEL (1no I/C + 2nos O/G) - Indoor type</b>				-
	Supply, Installation, Testing & Commissioning of HT 3 - Breaker panel as per details given below. Separate cables to be provided to install Trivector Meter by TS Transco. The CTPT shall be tested for Accuracy at manufacturer premises in the presence of TS Transco engineer (if required). Cost towards the same is deemed to be included.				-
	<b>Incomer :</b>				-
	630A, 18.4KA, TP, EDO VCBs with Voltmeter with 11KV/110V PT, Ammeter with 50/5A CTs, Over current & Earth Fault Numerical relays similar to CDG31, Phase Indication Lamps, Breaker On/ Off/ Trip and Spring Charge, and Trip Circuit healthy indications, 8-Point Annunciator & suitable power pack for required number of Operations etc - 1no ( <b>NOTE: Refer SLD enclosed</b> ).				-
	<b>Outgoings :</b>				-
	630A, 18.4KA, TP, EDO VCBs with Multi Function Meters (MFMs) Model -3440, Ammeter with 25/5A CTs, Overload & Earth Fault Numerical relays similar to CDG31, Phase Indication Lamps, Load manager with RS232 connectivity, Breaker On/ Off/ Trip and Spring Charge, and Trip Circuit healthy indications, 12-Point Annunciator etc & suitable power pack for required number of Operations, Transformer protection relays as required - 2nos ( <b>NOTE: Suitable for 400KVA Transformers, refer SLD enclosed</b> ).				-
	Supply	1	Nos		
	Installation	1	Nos		
2	Construction of Civil Foundations, trench (1000mm Wide x 600mm Depth) with required MS Channels etc for HT panel new location.	1	JOB		
3	Supply, laying and commissioning of following size 11KV grade(E), XLPE insulated, armored, aluminium conductor under ground cable in ground at a depth of 1000mm below ground level including excavation and refilling of earth after cables are laid, providing protection with sand and bricks at sides and PCC slab on top and cable route markers at every 50mtr. interval and also at the turnings. The cable shall conform to IS 7098. <b>NOTE:</b> Cable pull chambers with covers shall be provided @ every 20mtrs interval with suitable dimensions for easy cable laying.				
3.1	3CX 185sq.mm, 11KV (E)				
	Supply	200	Mtr		
	Laying in ground	50	Mtr		
	Laying in existing trench/hume pipes/ tray	150	Mtr		
3.2	3CX 120sq.mm, 11KV (E)				
	Supply	75	Mtr		
	Laying in ground	0	Mtr		
	Laying in existing trench/hume pipes/ tray	75	Mtr		

4	Providing end termination for Cable specified under above item with Ray chem Heat shrinkable cable jointing kits.				
4.1	3CX185sq.mm, 11KV Outdoor type	2	Nos		
4.2	3CX185sq.mm, 11KV Indoor type	4	Nos		
4.3	3CX120sq.mm, 11KV Outdoor type	2	Nos		
4.4	3CX120sq.mm, 11KV Indoor type	2	Nos		
5	Dismantling /Removing the existing 3- Breaker HT panel/ HT Cabling etc.	1	JOB		
6	Miscellaneous items, if any viz. Reconditioning of the existing Single Pole Structures, Replacement of PIN Insulators etc.	1	JOB		
<b>II</b>	<b>NEW OUTDOOR TYPE LT KIOSKS (2nos) + INDOOR TYPE MAIN PCC PANEL + APFCR PANELS (2nos) ONLY</b>				-
1	<b>LT KIOSKS -OUTDOOR TYPE PANELS :</b> Supply, installation, testing & Commissioning of 630A, 50KA, 4Pole MCCB with Thermal Magnetic Protection based releases and Metering (Voltmeter, Ammeter, KWH and Indication Lamps) in Outdoor type enclosure made out of 2mm thick CRCA sheet including all accessories. The enclosure shall have provision for busduct entry/ for incoming & cables for outgoing. The Panel shall be Outdoor kiosk type ( <b>NOTE: FOR 2Nos TRANSFORMERS)- OUTDOOR TYPE KIOSK PANELS</b>				
	Supply	2	Nos		
	Installation	2	Nos		
2	Design, Fabrication, Testing and Commissioning of floor mounted Panel with as per given specification and following switchgears. The panel will be manufactured/ Fabricated in accordance with IS specifications using good quality 14/16SWG CRCA sheets, dust and vermine proof Aluminium busbar of suitable size rated to the I/C switch gear heat shrinkable colour code sleeves and busbar supports and assembly. Panel should be mounted on a suitable ISMC frame.				
a	<b>MAIN PCC PANEL - INDOOR</b>				
	a) EB SIDE INCOMERS : 630A, FP, 50KA ACB - 2Nos				
	b) DG SIDE INCOMER : 630A, FP, 50KA ACB - 1No				
	BUSCOUPLER : 630A, FP, 50KA ACB - 1No				
	<b>NOTE: PLC based Interlocking shall be provided for Auto Operation of the Incomers/ Buscoupler to satisfy the Logic Table Conditions indicated in the SLD (Plz refer SLD).</b>				
	c) Phase Indicating lamps LED type with fuse control - 3Sets				
	d) On, off, trip, indication lamps - 3Sets				
	e) 0 to 600A Ampere meter with selector switch with 3nos of 600A/5A, CL-1, 5VA CT's with tape wound & 600A/5A, CL-1, 5VA CT's with tape wound for APFCR - 1job				
	f) 0 to 500V voltage meter with selector switch - 3Sets				
	g) Including Digital Energy Meter with RS-485 Communication Port.				
	<b>OUT GOINGS</b>				
	a) 400A 36KA, TPN MCCB – 4Nos				
	b) 250A, 25KA, TPN MCCB - 4No's				
	c) 160A, 25KA, TPN MCCB - 5No's				
	d) 100A, 25KA, TPN MCCB - 2No's				
	e) 63A, 50KA, FP, MCCB with TVSS - 2Nos				

	BUS BAR 2RX 40mm X 10mm				
	Supply	1	Nos		
	Installation	1	Nos		
<b>b</b>	<b>AUTOMATIC PF IMPROVEMENT PANEL (APFCR PANEL-1 &amp; 2) - INDOOR</b>				
	Incoming : 250A 25KA FP MCCB with Thermal Magnetic based releases – 1set				
	Bus bars : 250A TPN Aluminium Bus bar-1set				
	Outgoings:				
	63A,25KA TP MCCB and 70A AC3 Contactor and 25 KVAR 440V Delta connected MPP Capacitor Banks -VARIABLE TYPE - 2nos				
	63A,25KA TP MCCB and 20 KVAR 440V Delta connected MPP Capacitor Bank - FIXED TYPE -1no				
	40A,25KA TP MCCB and 40A AC3 Contactor and 10 KVAR 440V Delta connected MPP Capacitor Banks --VARIABLE TYPE - 3nos				
	Spare Cubicles for 40A,25KA TP MCCB with 40A AC3 Contactor and 10 KVAR 440V Delta connected MPP Capacitor Banks ---VARIABLE TYPE -2nos				
	8-Stage APFC Relay - 1set				
	Metering:				
	0-500V Digital Voltmeter with selector switch and fuses- 1 Set				
	0-250A Digital Ammeter with resin cast CTs of ratio 250/5A, Class 1.0 Accuracy with 5VA burden and selector switch – 1 set				
	LED Phase indication lamps with individual fuse and control with toggle switches- 1set				
	All the Capacitor feeder shall have ON/ OFF/ TRIP indications and AUTO/ MANUAL selector switches and Ammeter with required CTs and selector switches				
	Supply	2	Nos		
	Installation	2	Nos		
<b>III</b>	<b>CABLES /EARTHING / SAFETY ACCESSORIES</b>				
1	Supply and laying following size 1.1KV grade PVC insulated armoured aluminium/Cu. FRLS conductor under ground cable on the surface of wall, above false ceiling along with 2runs of 12swg GI wire with all installation materials.The cable shall conform to IS 1554 Part- I.scope also includes termination of the cable as required with suitable glands and lugs				
a	3.5 core x 185sqmm Aluminium Cable - Between Transformers - LT Kiosk Panels - till New panel & 320KVA DG set to New Panel ONLY- And between the proposed Main PCC Panel to the existing Main Bldg & Annexe Bldg panels.	465	Mtr		
b	3.5 core x 120sqmm Aluminium Cable - For Existing Sub-Panels, if required ONLY	60	Mtr		
c	3.5 core x 95sqmm Aluminium Cable - For Existing Sub-Panels, if required ONLY	60	Mtr		
d	3 core x 2.5sqmm Copper Armour Cable	75	Mtr		
e	3 core x 4sqmm Copper Armour Cable	30	Mtr		
f	16 Core 2.5 Sq mm Copper Armour Cable	50	Mtr		
g	4 Core 2.5 Sq mm Copper Armour Cable	30	Mtr		
h	7core 1.5sq.mm	50	RMT		

i	14core 1.5sq.mm	50	RMT		
2	Providing end terminations for following size cables including supply of Compression type cable gland, lugs, insulation tape and identification tags complete with end termination and earthing of gland.				
a	3.5 core x 185sqmm Aluminium Cable	28	Nos		
b	3.5 core x 120sqmm Aluminium Cable	10	Nos		
c	3.5 core x 95sqmm Aluminium Cable	10	Nos		
d	3 core x 2.5sqmm Copper Armour Cable	10	Nos		
e	3 core x 4sqmm Copper Armour Cable	8	Nos		
f	16 Core 2.5 Sq mm Copper Armour Cable	8	Nos		
g	4 Core 2.5 Sq mm Copper Armour Cable	8	Nos		
h	7core 1.5sq.mm	2	EACH		
i	14core 1.5sq.mm	2	EACH		
3	<b><u>EARTHING</u></b>				
a	Providing standard copper plate earth station ,with 600x600x3.15mm thick copper plate, 40mm dia, 2.5 mtr GI pipe with 25X3 copper strips runs on both sides up to top of the earth pit including excavation and construction of brick pedestal providing meshed funnel, CI cover and other Civil works, spreading a homogeneous mixture of salt, charcoal around the plate etc completely as per IS 3043,1987 or latest revision (T/F- 4nos, DG set- 2nos).	6	Nos		
b	Providing G.I earth station, with 40mm dia, 2500mm long galvanized iron pipe including construction of brick pedestal providing meshed funnel CI cover and other Civil works, spreading a homogenous mixture of salt charcoal around the pipe etc., Completely as per IS 3043,1987 or latest revision (T/F- 2nos, DG set- 2nos, Body Earthing - 2nos).	6	Nos		
c	Providing Cast Iron (C.I.) Earth station,with 100mm dia. Cast iron pipe having a brazed 12mm dia X 50mm long brass bolt at the top end with 2 nuts and 4 washers,including construction of brick pedestal, providing meshed funnel,CI cover and other civil Engineering works, spreading a homogenous mixture of salt, charcoal around the pipe etc, completely as per IS 3043, 1987 or latest revision.	2	Nos		
d	Supply & Laying of 600mmX 50mmX 5mm Copper strip with supporting insulator and holes	2	Nos		
e	Supply & Laying of 600mmX 50mmX 6mm GI strip with supporting insulator and holes	2	Nos		
f	Supply & Laying of 50mmX 6mm Copper strip with heat sinkable sleeve supporting	60	Mtr		
g	Supply & Laying of 50mmX 6mm GI Flat strip with with all accessories required for support and shall have two coats of Redoxide and Green paint	80	Mtr		
h	Supply & Laying of 25mmX 6mm GI Flat strip with with all accessories required for support and shall have two coats of Redoxide and Green paint	40	Mtr		
4	Supply and fixing of following size GI perforated cable tray made out of 2mm thick galvanized sheet and the tray covered with 2mm thick cover including GI / MS supports for fixing the tray, anchor fasteners etc., complete as required.				
a	500mm wide	10	Mtr		
b	300mm wide	10	Mtr		



c	150mm wide	10	Mtr		
5	Supply and laying of following NP2 RCC hume pipes with collars for road crossings, laid 600/750/1000mm below ground level including civil engineering works. <b>NOTE:</b> Cable pull chambers with covers shall be provided @ every 15mtrs interval with suitable dimensions for easy cable laying.				
a	200mm dia	40	Mtr		
b	300mm dia	5	Mtr		
6	Construction of Civil trench inside the Electrical room with 1000mm Wide x 750mm Depth with required MS Channels, Angles including supply of all the required materials etc. as per the clients Civil Engineers standards .	1	LS		
7	Arrangements of temporary power in all aspects at site, so that there is no Power interruption to the operation of the branch working hours. Coordination with the Bank maintenance team, supply authorities and other Government bodies (if required) is within the scope of the contractor.	1	LS		
8	Spreading of two layers of 40mm stone metal near point of supply and inside the HT yard with 300mm depth.				
	Supply	2	Cu.Mtr		
	Laying	2	Cu.Mtr		
<b>IV</b>	<b>SUBSTATION ACCESSORIES AND MISCELLANEOUS ITEMS</b>				
1	<b>SUBSTATION ACCESSORIES</b>				
1.1	Supply and laying of 11kV Grade Rubber Mats of size 1000mm x2000mm bearing IS marking	1	Nos		
1.2	Supply and laying of 1.1kV Grade Rubber Mats of size 1000mm x2000mm bearing IS marking	2	Nos		
1.3	Supply of 11kV Grade Hand Gloves, bearing IS marking	1	Pair		
1.4	Supply of 1.1kV Grade Hand Gloves, bearing IS marking	1	Pair		
1.5	Supply and fixing of CO2 Fire Extinguishers 4.5kg Capacity with floor mounted suitable stand, accessories etc.	2	Nos		
1.6	Supply and fixing of Fire Buckets with stand (with two nos of Buckets in each) painted in Post Office red	1	Nos		
1.7	Supply and Fixing of Laminated First Aid Charts in Telugu & English	1	No		
1.8	Supply & Installation of Danger Boards-Stove enamelled (150mm X 150mm) with warnings in English, Telugu and Hindi.	2	Nos		
1.9	Supply & Installation of First-Aid Box, as per relevant IS along with all necessary medicines	1	Nos		
	<b>TOTAL</b>				
<b>V</b>	<b>BUY BACK (amount to be paid to the Bank)</b>				
a	Existing HT Panel (3-Breaker with 1no Incoming & 2nos Outgoings)	-1	LS		
b	LT Kiosk Panels	-2	LS		
c	HT & LT Cables as dismantled from the site	-1	LS		
	<b>(NOTE: THE VENDOR SHALL MAKE A SITE VISIT FOR BETTER UNDERSTANDING OF THE REQUIREMENTS).</b>				

	<b>TOTAL</b>				
	<b>GRAND TOTAL:</b>			<b>RS.</b>	
	<b>(Rupees Only.)</b>			<b>SAY RS</b>	<b>LAKHS.</b>

NOTE: The quote/scope of works shall include preparation & submission of drawings, documents, Liaisoning with TRANSCO / CEIG /Local authorities for load sanction, shutdown, release of power supply into the premises etc., complete as required **(NOTE: However all the Official Charges as estimated by the TRANSCO / TSSPDCL shall be reimbursed by the users/ clients upon submission of the receipt/challan etc.)**

(Rupees \_\_\_\_\_  
\_\_\_\_\_ Only.)

(Signature and Seal of the Contractor.)

