SBI INFRA MANAGEMENT SOLUTIONS PVT. LTD., (SBIIMS)  
(WHOLLY OWNED SUBSIDIARY OF SBI)  
Invites tenders on behalf of lho, hyderabad.  
In a two bid system through e-tendering process.  
Electrical Contractors who are on the panel of SBI, Hyderabad Circle, (LHO) in the appropriate category are only eligible.  
(Contractors should submit proof of the same)  

FOR  
EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA  

Last date for submission of E Tender : 15.06.2020 at 3.00 P.M.  
Opening of E Tenders : 15.06.2020 at 3.10 P.M.  

ARCHITECTS :  
MURTY & MANYAM  
ARCHITECTS & ENGINEERS  
859, BANJARA AVENUE,  
(6–3–597/A/12/A/6B)  
HYDERABAD–500004  

The Vice president,  
SBI Infra Management Solutions Pvt. Ltd.  
SBI LHO, Adjacent to Commercial Branch,  
Bank Street, Koti,  
Hyderabad – 500 095  
Ph: 040-23466346/43  

Signature of the contractor with seal
### NOTICE INVITING TENDER (NIT)

<p>| | |</p>
<table>
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<tr>
<td><strong>1</strong></td>
<td><strong>Name of the work</strong></td>
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<td><strong>2</strong></td>
<td><strong>Estimated cost</strong></td>
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<td><strong>3</strong></td>
<td><strong>Cost of Tender Documents</strong></td>
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<td><strong>4</strong></td>
<td><strong>Quantum of Earnest Money Deposit (EMD)</strong></td>
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<td><strong>5</strong></td>
<td><strong>Date and Time where tender forms are available</strong></td>
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<tr>
<td><strong>6</strong></td>
<td><strong>Last date and time of submission of online Tender</strong></td>
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| **7** | **Place, date & time for submission of e tender** | a) On line submission up to 15.06.2020 Up to 03:00PM at https://etender.sbi  
b) EMD & Cost of tender Document submission Address: The Vice president, SBI Infra Management Solutions Pvt. Ltd, Adjacent to Commercial Branch, Ground Floor, SBI LHO Campus, Bank Street, Koti, Hyderabad – 500 095  
15.06.2020 Up to 03:00PM  
Contact: Vice President  
040- 23466346/43. vg.reddy@sbi.co.in |
| **8** | **Date, Time and Place of opening of e-Tenders** | 15.06.2020 Up to 03:10PM  
The Vice president, SBI Infra Management Solutions Pvt. Ltd, adjacent to Commercial Branch, Ground Floor, SBI LHO Campus, Bank Street, Koti, Hyderabad – 500 095 |
| **9** | **Quantum of Security Deposit (percentage)** | 1. Initial Security Deposit (ISD) – 2% of the Tender value including EMD  
2. Retention Money- 10% of the running bills@ 10% and Total deduction of 5% of value of work including EMD, ISD. |
<p>| <strong>10</strong> | <strong>Terms of payment of Bills, if any (specify the minimum value of work for</strong> | Each Running Bill of Minimum Rs. 8 Lakhs |</p>
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<td><strong>payment of running account bills</strong></td>
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<td><strong>11</strong></td>
<td>Stipulated time for completion of the Work/supply.</td>
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<tr>
<td><strong>12</strong></td>
<td>(Penalty clause) Liquidated Damages</td>
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<tr>
<td><strong>13</strong></td>
<td>Validity period of the tender.</td>
</tr>
<tr>
<td><strong>14</strong></td>
<td>Defect Liability Period.</td>
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</table>
| **15** | Eligible Taxes | A) Income Tax will be deducted at source as per Govt. Guidelines.  
B) Reimbursement of GST will be made only on submission of proper GST invoice as per applicable GST provision. The contractor should comply with the following;  
1. Contractor should have GST Registration Number  
2. Invoice should specifically/separately disclose the amount of GST levied at applicable rate as per GST provision  
3. In case of Correction in the bills after scrutiny, contractor should submit fresh bills for payment  
4. 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  
5. The GST Number of State Bank of India are For Telangana State -36AAACS8577K1ZQ |
| **16** | Electronic Payment | Payment shall be made by way of Electronic fund transfer and the bill will be **paid by the Branch**. Firm should furnish details of the bank, a/c no, IFSC code |
| **17** | Agency for arranging online bidding | e-Procurement technologies Limited, Ahmedabad.  
Email id:- sujith@eptl.in, jaymeet.rathod@eptl.in, pratik.parekh@eptl.in, dharam@eptl.in  
Primary Contact No:- 079-61200579/580/566/576/569/567, 9374519754;  
Alternate Contact No.:- Mr. Yashrajsinh Rathod:- 079/68136815, shubhangi@auctiontiger.net; |
| **18** | Any additional Information | The quoted rate should be inclusive of materials, labour, wages, fixtures, transportation, installation, all taxes (excluding GST), wastages, Octroi, machinery, temporary works such as scaffolding, cleaning, overheads, profit, statutory expenses, incidental charges and all related expenses to complete the work |
| **19** | Pre Bid Meeting | Will be held on 28.05.2020 at 3.00 p.m in the Office of Vice President, SBIIMS, Koti, Hyderabad |
TENDER FORM

PROJECT: PROPOSED CONSTRUCTION OF RBO & BRANCH BUILDING AT SIDDIPET, TELANGANA

REF : ELECTRIFICATION WORKS

Dear Sirs,

I/We the undersigned have carefully gone through and clearly understood after visiting the site and the Tender drawings and tender documents comprising of the tender form, Notice to contractors, and conditions for building contract, Special Conditions, Specifications and Schedule of Probable quantities and Draft Agreement prepared by your Architects M/s MURTY & MANYAM, Architects & Engineers, Hyderabad.

I/We do hereby undertake to execute and complete the whole or part of the work (as desired by you) at the respective rates which/I/We have quoted for the respective items of the Probable Bill of Quantities and at which rate the items specified as in NIT.

I/We are depositing as Earnest Money a sum of Rs.27,000/- by demand draft/Bankers cheque in favour of Asst.General Manager (Premises & Estates), State Bank of India, LHO, Bank Street, Koti, Hyderabad, along with this tender for due execution of the work at my/our tendered rates together with any variations which shall be adjusted by the Architects at prices based on our tendered rates. I/We shall deposit further sum equivalent to 2% of tender amount, less EMD paid in the event of my/our tender being accepted, towards initial security deposit.

In the event of this Tender being accepted I/We agree to enter into an agreement as and when required and execute the contract according to your form of Agreement, within a month of receipt of work order, in default thereof, I/We do hereby bind my-self/ourselves to forfeit the aforesaid initial security deposit.

I/We further agree to complete the work covered in the said schedule of quantities within 120 days from the 15th day reckoned from the date of issue of the work order to commence the work or on which contractor is instructed to take possession of the site, whichever is later.

I/We agree not to employ Sub-contractors other than those that may be specifically approved by your Architects for this contract work.

I/We agree to pay the Government, General and Sales Tax (State and Central), Excise and Octroi duties, Insurance, labor cess and all other taxes including works contract tax and service tax etc., as the prevailing from time to time, on such items for which the same are livable, and to get the work, workers, employees (of contractor, Architect & Employer) engaged on the work at site and all materials at
EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

Site for execution of the work shall be insured comprehensive insurance including fire/accidents/ rain/ floods/riots/CAR policy (contractor's all risk insurance policy) and the insurance shall cover the period from date of start of work to date of actual completion of work plus 3 months. In case part work is taken over by the Employer before final completion of the whole work, such parts may not be covered by the insurance from the date of taking over that part of work by the Employer. Draft Insurance deed will be got vetted by the Architect, before obtaining the same. All the rates quoted by me/us are inclusive of the same in full and nothing extra shall be claimed anytime on account of any of these.

I/We agree to pay Income tax, to be deducted at source, at the rate prevailing from time to time on the Gross value of the work done, and the rates quoted by me/us are inclusive of same.

I/We agree to pay works contract tax, statutory fees to be deducted at source, at the rates prevailing from time to time as per Telangana Govt. Act, as amended and rates quoted by me/us are inclusive of the same.

Yours faithfully,

Contractor's Signature

Address: 

__________________________________

__________________________________

__________________________________

__________________________________

Date:

Signature of the contractor with seal
NOTICE TO CONTRACTOR

ADDRESS:

________________________________________
________________________________________
________________________________________

PROJECT: PROPOSED CONSTRUCTION OF RBO & BRANCH BUILDING AT SIDDIPET, TELANGANA

REF: ELECTRIFICATION WORKS

Dear Sirs,

1. On behalf of our clients, M/s State Bank of India, LHO, Koti, Hyderabad, we have pleasure in inviting you to tender for the aforesaid work.

2. The scope of work broadly as given below is for Proposed Construction of RBO & Branch Building at Siddipet, Telangana

3. Pre bid meeting on the date mentioned in the NIT in the office of Vice President, SBI Infra Solutions Pvt Ltd adjacent to Commercial Branch, LHO, Koti, Hyderabad

4. Sealed tenders in the prescribed form, in a sealed envelope should be addressed to Vice President, SBI Infra Solutions Pvt Ltd adjacent to Commercial Branch, LHO, Koti, Hyderabad

5. **Envelope No.1:** To contain contractor’s Technical and commercial assumptions and Terms and Conditions, if any, along with Demand Draft/Banker’s cheque for Rs.27,000/- as EMD.

6. The tenderer must obtain for himself, on his own responsibility and at his own expenses, all the information which may be necessary for the purpose of filling this tender and for entering into a contract for the execution of the same and must examine the drawings and inspect the site of the work and acquaint himself with all local conditions and matters pertaining thereto.

7. Each of the tender documents page is required to be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General conditions etc., as laid down. Any tender with any of the documents not so signed will be rejected.

8. The tender documents must be filled in English and all the entries must be made by hand and written in ink. If any of the documents are missing or unsigned, the tender shall be considered invalid.

Signature of the contractor with seal 6
9. Each and every one of all erasures and additions/alterations made, while filling the tender, must be attested by initials of the tenderer. Over-writing of figures must be attested by initials of the tenderer. Overwriting of figures is not permitted. Failure to comply with either of these conditions will render the tender void. After submission of the tender no advice or any change in rate or conditions will be entertained. All the rates should be quoted both in figures and words. In-case of any discrepancy in rates quoted in words/figures and the amounts, the rate quoted in words shall be taken as final and binding.

10. The tender shall be valid for a period of 90 days from the date of opening the Envelope No.1

11. TOTAL SECURITY DEPOSIT : shall comprise of:
   a. Earnest Money deposit
   b. Initial Security deposit
   c. Retention money

11.1 The intending tenderer shall deposit in Favor of “SBIIMS Pvt. Ltd, Hyderabad”, Payable at Hyderabad. Those who submitted one time EMD need not submitted again, by Demand Draft a sum of Rs.27,000/- as the Earnest Money, as a guarantee of good faith, which amount shall be forfeited as liquidated damages, in the event of any evasive/direct refusal or delay in starting the work and or signing the contract. The deposit of the unsuccessful tenderers will be returned, without interest, immediately after a decision is taken regarding the award of the contract. The Earnest money of the successful tenderer will be adjusted towards Security Deposit. A tender not accompanied by Earnest money deposit will not be considered. No concession will be made to Public sector companies from payment of earnest money deposit.

11.2 The successful tenderer will have to pay further sum equivalent to 2% of his contract value, less EMD already paid, as initial Security Deposit (ISD) by means of a D.D./Banker’s cheque in favour of Asst. General Manager,(Premises & Estates) State Bank of India, LHO Koti, Hyderabad within 14 days from the date of issue of work order to commence work. The EMD and Security deposit thus paid shall be held by the State Bank of India as Security deposit, for due execution and fulfillment of the contract, till the completion of the work and defect liability period in all respects and shall not bear any interest.

11.3 Together with the money paid under clause 11.1 & 11.2 above, further retention of 10% of the value of the work done will be deducted from every running bill, till total retention, including EMD and initial SD paid earlier, comes to 5% of the contract value, and same shall be held by the Bank as Total Security Deposit. On the Architect’s certifying the completion of work, 50% of the total security deposit shall be released to the contractor along with the final certificate of payment, and the balance amount will be retained in the manner stated elsewhere for a further period of twelve months after the completion date recorded in completion certificate, issued by the
Architects and agreed to by the Bank. Also refer condition 23(ii) on Page 7 of Volume 1.

12. Within one month of the receipt of intimation from the Architects of the acceptance of his/their tender, the successful tenderer shall be bound to sign an agreement, on a stamp paper in accordance with the Draft Agreement and conditions of contract attached herewith, but the work order or the written acceptance of a tender by the Employer will constitute a binding agreement between the Employer and the person tendering whether such formal contract is or not signed by the contractor.

13. All compensation or other sums of money payable by the contractors to the clients, under the terms of this contract, may be deducted from the Security Deposit or from any sum that may be or may become due to the contractor on any account whatsoever, and in the event of the Security deposit being reduced by reasons of any such deductions, the contractor shall within 15 days of being asked to do so make good in cash or cheque, any sum which have been deducted from his security deposit.

14. The contractor shall arrange for the procurement of all the materials at site as required and directed, and store them in their godown at the site of construction, and also bear all the expense incurred in connection therewith, including payment of taxes, octroi, storage, watch and ward etc.

15. The rates quoted by the Contractor shall include all eventualities, such as heavy rain, sudden floods, accidents, fire, riots etc., which may cause damage to the executed work or which may totally wash out the work. Until the completion certificate is issued to the Contractors, neither the Architect nor the clients will be responsible for such damage or wash out of the construction work.

16. Time is the essence of the contract. The work should be completed within 90 days, from the date of commencement. The date of commencement shall be
   a) The date of issue of work order.
   Or
   b) The day on which the contractor receives the possession of the site whichever is later.
   Or
   c) The contractor is asked in writing to take over the possession of the site.

The successful contractor will have to give a CPM/PERT chart of various activities of work to be done so that the work gets completed within the stipulated time. The chart shall be submitted within 15 days from the date of acceptance of the tender.

17. If the contractor fails to complete the work by the Scheduled date of completion or within any sanctioned extended time, he will have to pay liquidated damages at the rate of ½% of contract amount for each week of delay the work remains incomplete beyond the completion(Original/extended date), subject to maximum of 5% of the contract value (without extra items) as per clause 31 of the General conditions of contract.
18. The quantities contained in the Schedule are only indicative. The work as actually carried out and done will be measured up from time to time, for which payment will be made subject to the terms and conditions of contract.

19. The unit prices shall be deemed to be fixed prices. In case of extra items, a record of labour charges paid shall be maintained and shall be presented every month for extra/substituted items regularly to the Architects for checking. The settlement will be made based on figures arrived at jointly and taking into account unit prices of items of work mentioned in the contract assigned to the successful tenderers. In case, of extra items, where similar or comparable items are quoted in the tender, extra rates shall invariably be based on those tender rates to the extent reasonable.

20. Our clients, State Bank of India, do not bind themselves to accept the lowest or any tender and reserve to themselves the right to accept or reject any or all tenders, either in whole or in part, without assigning any reason whatsoever for doing so.

21. No employee of the bank is allowed to work as a contractor for a period of two years of his retirement from bank service, without the previous permission of the bank. This contract is liable to be cancelled, if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the bank as aforesaid before submission of the tender or engagement in the contractor’s service.

22. The tenderer, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (1) Electrical (2) Sanitary & Water Supply installations and (3) Horticulture (4) Airconditioning works (5) Fire fighting systems & (6) Interiors (fixed furniture), as the case maybe.

23. Release of security deposit:
   i) 50% of the total security deposit will be released along with the final certificate of payments as stipulated under para 9 on page 12 of Volume I, Appendix to General Conditions of contract,
   
   ii) Balance 50% of Retention money will also be released as noted under(i) above, subject to submission of a Bank Guarantee, to the satisfaction of SBI for an equivalent amount. This Bank Guarantee shall be valid upto completion of defects/removal liability period plus 3 months.

ARCHITECTS:

MURTY & MANYAM
Architects & Engineers
859, Banjara Avenue
6-3-597/A/12/A/6B
Hyderabad – 500 004.
Tel: 23318020, 23301138
E-mail : murtyandmanyam@gmail.com

Signature of the contractor with seal 9
ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the ______________ day of __________
2020 between
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entitled to disregard or over-rule any previous decision or approval or direction given or expressed by the Architect for the time being.

4. Tender documents containing work order Notice to the Contractor, Conditions of Contract, Appendix thereto, Special Conditions of Contract, Specifications and Schedule of Quantities with the rates entered therein, shall be read and studied as forming part of this agreement and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their part respectively in such conditions contained.

5. The contract is neither a fixed lump sum contract or a piece work contract, but is a contract to carry out work in respect of the entire works to be paid for according to actual measured quantities, including variations from BOQ at the rates contained in the Schedule of rates and Probable bill of quantities or as provided in the said conditions.

6. The Employer through the Architect, reserves to himself the right of altering the drawings and natures of the work, of adding/substitution to or omitting any items of work or having portions of the same carried out through alternate agencies without prejudice to this contract.

7. Time shall be considered a the essence of this agreement and the contractor hereby agrees to commence the work soon after the site is handed over to him but within 15 days reckoned from the date of issue of work order to execute the work, as provided for in the said conditions and complete the entire work in 90 days subject to nevertheless to the provisions for extension of time.

8. This agreement and contract shall be deemed to have been made in Hyderabad and any questions or dispute rising out of or in any way connected with this Agreement and Contract shall be deemed to have arisen in Hyderabad and only the courts in Hyderabad shall have jurisdiction to determine the same. The limitation period will be 90 days from the date of dispute having arisen.

AS WITNESS our hand this _______________ day of _______________ 2020
Signed by the said in the presence of:
WITNESS : SIGNATURE

NAME :
ADDRESS :

WITNESS : SIGNATURE

NAME :
ADDRESS :
APPENDIX TO GENERAL CONDITIONS OF CONTRACT

1. Earnest Money Deposit (EMD) : Rs. 27,000/-
2. Initial Security Deposit (ISD) including EMD. : 2% of contract value
3. Period of completion : 90 Days
4. Defects Liability period completion as recorded in the completion certificate. : 12 months after
5. Agreed Liquidated Damages week of delay subjected to a maximum of 5% of contract value. : ½% of contract amount per delay
6. Period of final measurement completion as recorded in the completion certificate. : Three months after
7. Minimum value of work to be executed for issue of interim Certificates for making payment : Minimum Rs. 8.00 Lakhs
8.a) Retention money from each bill interim : 10% of gross value of each bill, subject to 8(b) below.
8.b) Total retention money including Earnest money and initial security Deposit : 5% of the contract value.
9. Release of Security deposit after to be Virtual completion. : 50% of the total security Released along with final certificate of payment, but only after removing all his materials, equipment, labour, huts/force, temporary sheds/stores, all his installations, machinery etc., from the site. Balance payment to be released on submission of Bank Guarantee on any Scheduled Bank,
Other than SBI, and its associated banks in the prescribed manner and valid till the completion of defects liability period of 12 months plus 3 months.

10. Period for honoring certificate : 15 working days from date of Architects certificate of payment for interim bills and 45 working days for final certificate.

11. Price Variation Adjustment : NO PVA Clause

WITNESS :

DATE : SIGNATURE OF THE CONTRACTOR WITH DATE
INDEX TO GENERAL CONDITIONS OF CONTRACT

1. Interpretations
2. Scope of Contract
3. Drawings and Specifications
4. Schedule of Quantities
5. Sufficiency of Schedule of Quantities
6. Errors in schedule of Quantities
7. Contractor to provide everything necessary
8. Authorities, Notices, Patent rights and royalties
9. Seignior age Charges
10. Materials and workmanship to conform to description.
11. The setting out
12. Removal of all offensive matters
13. Opening up works
14. Contractor’s superintendence and representative on the work
15. Dismissal of workmen
16. Access to works
17. Employer’s representative/PMC
18. Assignment of sub-letting
19. Sub contractors
20. Variations not to vitiate contract
21. Measurement to works
22. Prices of Extras etc., Ascertainment of
23. Unfixed materials

Signature of the contractor with seal
24. Removal of improper work and materials
25. Defects after completion
26. Certificate of virtual completion
27. Other persons engaged by the Employer
28. Insurance in respect of damage to persons and property
29. Contractor’s All risk policy
30. Minimum amount of third party Insurance
31. Commencement and completion
32. Delay and extension of time
33. Damages for Non-completion
34. Failure by contractor to comply with Architect’s instructions
35. Architect’s delay in progress.
36. Supervision of works
37. Prime cost and provisional sums
38. Certificates and payments
39. Notices
40. Termination of contract by the Employer.
41. Termination of contract by the contractor.
42. Matters to be finally determined by the Architects
43. Settlement of dispute (Arbitration)
GENERAL CONDITIONS OF CONTRACT

1. **INTERPRETATIONS:**

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

a. “Employer” shall mean Asst. General Manager (Premises & Estates), State Bank of India, LHO, Koti, Hyderabad and shall include his/her heirs, legal representatives, assignees and successors.

b. “Contractor” shall mean __________________________________________
   ____________________________________________________________
   ____________________________________________________________
   and shall include his/her heirs, legal representatives, assignees and successors.

c. “Banks Engineer” shall mean any Engineer who is employed by State Bank of India or any other Engineer appointed from time to time by the Employer, and certified in writing to the Architect and the contractor, to act as Engineer for the purpose of the Contract in place of the said engineer.

d. “Employer’s Representative” shall mean Project Management Consultants employed by the Bank/ any assistant of the Engineer or any site engineer/ PMC appointed from time to time by the employer to perform the duties set forth in clause 17 hereof whose authority shall be notified in writing to the Architect and Contractor by the EMPLOYER.

e. “Architects” shall mean any Engineer/ representative appointed by M/s Murty & Manyam, Hyderabad.

f. “Works” shall mean the works to be executed in accordance with contract specifications, quantities etc.

g. “Contract” shall mean the Articles of Agreement, the General Conditions, Special Conditions, the Appendix, the Schedule of Quantities, Specifications and drawings, work order etc., attached hereto and duly signed.
h. “Contract Price” shall mean the sum named in the Tender, subject to such amount additions thereto or deductions therefrom as may be made under the provisions, hereinafter contained.

i. “Site” shall mean the lands and other places as shown on the site plan, on which the works are to be, provided, by the Employer or Architect for the purpose of the Contract.

j. “Drawings” shall mean the drawings referred to in the contract etc., and any modifications of such drawings approved in writing by the Architect and the Bank and such other drawings as may from time to time be furnished or approved in writing by the Architect and Employer.

k. “Notice in Writing” or written notice shall mean a notice in writing, typed or printed characters sent (unless delivered personally or otherwise provided to have been received) by registered post to the last known private or business address or registered office of the address and shall be deemed to have been received, when in the ordinary course of post, it would have been delivered.

l. “Act of Insolvency” shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any act amending such original.

m. “Net Prices” if in arriving at the Contract Amount, the contractor has added to or deducted from the total of the items of the Tender any sum, either as a percentage or otherwise, then the net price of any items, in the tender, shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender, as the price of that item, a similar percentage or proportionate sum. Provided always that in determining the percentage or proportion of the sum so added or deducted by the contractor, the total amount of any Prime cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression “net rates” or “net prices” when used with reference to the contract or account shall be held to mean rates or prices so arrived at.

n. “Virtual Completion” shall mean that the building is in the opinion of the Architect and Employer, sufficiently completed for occupation by the Employer, in relation to the scope of work of this contract.

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

2. **SCOPE OF CONTRACT:**
The contractor shall carry out and complete the said work in every respect in accordance with this contract with the directions of and to the satisfaction of the Architect and Employer. Architect, with the approval of the Employer, may issue further drawings and/or written instructions, details, directions and explanations, which are hereafter collectively referred to as “Architect’s Instructions” in regard to:

a. The variations or modifications of the designs, quality or quantity of works or the addition or omission or substitution of any work.

b. Any discrepancy in the drawings or between the Schedule of Quantities/ or drawings and/or specifications etc.

c. The removal and/or re-execution or any works executed by the contractor.

d. The removal from the site of any material brought there on by the contractor, and the substitution of any other material therefrom.

e. The dismissal from the works of any person employed thereupon.

f. The opening up for inspection of any work covered up.

g. The amending and making good of any defects under clause 24 "Removal of Improper works and Materials".

The contractor shall forthwith comply and fully execute any work comprised in such Architect’s instruction, provided always that instructions, directions and explanations given to the contractor or his representative upon the works by the Architect shall, if involving a variation, be confirmed in writing by the contractor or within 7 days, and if not dissented from in writing within further 7 days by the Architect, such shall be deemed to be the Architects instructions within the scope of contract.

If compliance with the Architect's instructions as aforesaid involved work and/or expense and/or loss beyond that contemplated by the contract, then unless the same were issued owing to some breach of this contract by the contractors, the employer shall pay to the Contractor on the Architect’s certificate, the price of the said work (as an extra to be valued as herein after provided) and/or expense and/or loss.

3. **DRAWINGS AND SPECIFICATIONS:**

The works shall be carried out to the entire satisfaction of the EMPLOYER and the Architect, in accordance with the signed contract document, drawings and specifications and such further drawings and details as may be provided by the Architect, and in accordance with such written instructions,
directions and explanations, as may from time to be given by the Architect and the bank, whose decision as to the sufficiency and quality of the work and materials shall be final and binding on the contractor. If the work shown on any such further drawings or work that may be necessary to comply with any such instructions, directions or explanations, be in the opinion of the contractor outside the scope of work or reasonably could not be inferred from the contract, he shall before proceeding with such work, give notice in writing to this effect to the Architect and the Bank, and in the event of the Architects and the Bank agreeing to the same in writing, the contractor shall be entitled to an allowance in respect of such extra work as an authorized extra. If the Architect and the contractor fail to agree, as to whether or not there is an extra, then, if the Architect decided that the contractor is to carry out the said work, the contractor shall do so, and the question whether or not there is any extra and if so, the amount thereof, shall failing agreement be settled by Arbitration as hereinafter provided, but such reference shall in no way delay the fulfillment of this contract.

No drawing shall be taken as in itself an order for variation, unless in addition to the Architect's signature, it bears express works stating that it is intended to be such an order or bears a remark “VALID FOR CONSTRUCTION”. No claim for payment for extra work shall be allowed, unless the said work shall have been executed under the provisions of clause 8 (Authorities, notices, patents, rights and royalties) or by the authorities, of directions in drawing of the Architect as herein mentioned.

One complete set of the signed drawings and a copy of contract document (specifications and schedule of quantities etc) shall be furnished by the Architect to the contractor. The Architect shall furnish within such time as he may consider reasonable, one copy of any additional drawings, which in his opinion may be necessary for the execution of any part of the work. Such copies shall be kept at the works, and the Architect or his representatives shall, at all reasonable times have access to the same and shall be returned to the Architect by the Contractor, before the issue of the final certificate. The original contract documents shall remain in the custody of employer.

Please refer clause 36 of Special conditions of contract.

4. SCHEDULE OF QUANTITIES:

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

Please refer Clause 5, 6 and 40 of Special conditions of contract.

5. SUFFICIENCY OF SCHEDULE OF QUANTITIES:
The contract shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the prices stated in the schedule of Quantities and/or the Schedule of Rates and Prices, which rates and prices shall cover all things necessary for the proper completion of the works.

Please refer clauses 5, 6 and 39 of Special Conditions of Contact.

6. **ERRORS IN SCHEDULE OF QUANTITIES:**

Should any error appear in the Schedule of Quantities, other than in the Contractor's prices and calculations, it shall be rectified and such rectification shall not vitiate the contract but shall constitute a variation of the contract and be dealt with as an authorised extra or deduction.

7. **CONTRACTOR TO PROVIDE EVERYTHING NECESSARY:**

The contractor shall provide everything necessary for the proper execution of works according to the true intent and meaning of the drawings, specifications and the Schedule of Quantities etc., taken together, whether the same may or may not be particularly shown or described there in, provided the same can be inferred therefrom. The several document forming the contract are to be taken as mutually explanatory to one another; detailed drawings and figured dimensions in preference to scale, and special conditions in preference to General conditions and particular specifications in preference to General specifications.

In case of discrepancy between the Schedule of Quantities, the specifications and/or the drawings, the following order of preference shall be observed:

i) Description of Schedule of Quantities.
ii) Particular specifications and special condition, if any.
iii) Drawings.
iv) C.P.W.D. specifications.
v) Indian Standard specifications of B.I.S.

If there are varying or conflicting provisions made in any document forming part of the contract, the Architect shall be the deciding authority, with regard to the intention of the document and his decision shall be final and binding on the contractor.

Any error in description, quantity or rate in schedule of quantities or any omission therefrom shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works expressed therein according to drawings and specifications or from any of his obligations under the contract.
The contractor shall make his own arrangements for providing water, for carrying out the work, at his own cost. If water from any source other than Municipal main is to be used for construction, the same shall be tested at the contractor's cost, and a report submitted to the Architect for his approval, before such water is used for the works. Temporary Electrical connections shall be obtained by the contractor to facilitate execution and completion of work at their cost and all the charges there of should be borne by them.

The contractor shall supply, fix and maintain at his cost, during the execution of any works, all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, hoarding, watching and lighting during nights as well as by day required not only for the proper execution and protection of the said works.

8. MATERIALS AND WORKMANSHIP TO CONFORM DESCRIPTION:

All materials and workmanship shall, so far as procurable be of the respective kinds specified in the Schedule of Quantities and/or specifications and in accordance with the Architect's instructions and the contractor shall on the request of the Architects furnish to them all invoices, accounts, receipts and the other vouchers to prove that the materials comply therewith. The contractor shall at his own cost arrange for and/or carry any test of any materials, which the Architect & Employer may require. The costs of materials used for testing, packing, transportation and testing shall be borne by the contractor and his quoted rates/amounts shall include all such expenses/contingencies.

10a. In case of non-availability of specified Make/brand of any material including steel and cement the alternate make/brand will be given by the Employer/Architect.

11. THE SETTING OUT:

The Contractor shall at his own expense, set out the works accurately in accordance with the plans and to the complete satisfaction of the Architect. The Contractor shall be solely responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time any error shall appear during the progress or on completion of any part of the work, the contractor shall at his cost rectify such error if called upon to the satisfaction of the Architects/Employer. The work shall from time to time be inspected by the Architect and/or his representatives, but such inspections shall not exonerate the contractor in any way from his obligation to remedy any defects, which may be found to exist at any stage of the work or after the same is completed, at his own cost.

12. REMOVAL OF ALL OFFENSIVE MATTERS:
All soil, filth or other matter of an offensive nature, taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface, but shall at once be carried out away by the contractor to some pits or place provided by them and shall be disposed off as per the rules and regulations of the Local authorities concerned.

13. **OPENING UP WORKS:**

The contractor shall notify the Architect in writing immediately, the trenches or excavation as shown on the drawings are get ready or as soon as any ground is cut into which, from unexpected causes, appears need for immediate attention. After notifying the Architect, he shall await instructions, which shall be given within ten days of receipt of such notice. If the contractor put in any parts of the foundations before he has so notified the Architect and received instructions, he shall be liable to reinstate all such work that may be subsequently, at any time, damaged on account of any defect or insufficiency of the foundations. The Contractor shall at the request of the Architect, within such time as the Architect so desires, open for inspection any work, and should the contractor refuse or neglect, to comply with such request, the employer, through the Architect may employ other workmen to open up the same. If the said work has been covered up in contravention of the Architect’s instructions, or if, on being opened up, it be found in accordance with the drawings and specifications, or the instructions of the Architect or otherwise, the expenses of such other workmen shall be borne by and recoverable from the contractor, or may be deducted from any money due or which may become due to the contractor. If the work has not been covered up in contravention of such instruction, and be found in accordance with the said drawings and specifications and instructions, then the expenses aforesaid shall be borne by the Employer and be added to the contract sum, provided always that in the case of foundations or of any other urgent work so opened up and requiring immediate attention, the Architect shall within seven days after receipt of the written notice from the contractor that the work has been opened, make or cause the inspection thereof to be made, and at the expiration of such time, if such inspection shall not have been made, the contractor may cover the same and shall not be required to open it up again, except at the expenses of Employer.

Refer clause 7 & 24 of special conditions of contract.

14. **CONTRACTOR’S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS:**

The contractor shall give all necessary personal superintendence during the execution of the works and so long thereafter as the Architect may consider it necessary until the expiration of the “Defects Liability Period” stated in clause 25. The Contractor shall meet the Architect or his representative, whenever required and so informed by the Architect.
The Contractor shall maintain and be represented at site at all times, while the work is in progress, by a responsible and efficient foreman, approved by the Architect and who must thoroughly understand all the trades entailed and be constantly in attendance while the men are at work. Any directions, explanations, instructions or notices given by the Architect & Employer to such foreman shall be deemed to have been given to the contractor and shall be binding as such on the contractor. The Foreman shall be thoroughly conversant with the English language and should be able to read, write and speak English.

15. **DISMISSAL OF WORKMEN:**

The contractor shall on the request of the Architect and Employer immediately dismiss from the works any person employed thereon who may, in the opinion of the Architect and Employer be unsuitable or incompetent or who may misconduct himself, and such person shall not again be employed or allowed on the works without the permission of the Architect & Employer.

16. **ACCESS TO WORKS:**

The Architect, the Employer and any person authorised by them shall at all reasonable times have free access to the works and to the workshops, factories or other places where materials are being prepared or constructed by the contract and also to any place where the materials are lying or from which they are being obtained. The Contractor shall give every facility to the Architect and the Employer and their representatives for inspection and examination and test of the materials and workmanship. No person, unless authorised by the Architect or the Employer, except the representatives of Public authorities, shall be allowed on the works at any time. If any work is to be done at a place other than the site of works, the contractor shall obtain the written permission of the Architect for doing so.

17. **EMPLOYER’S REPRESENTATIVE/PMC:**

The Employer may appoint an assistant to the Engineer, any Site Engineer or Project Management Consultant (PMC), who shall be the representative of the Employer. The duties of the Employer’s representatives are to watch and supervise the works and to test any materials to be used and of workmanship employed in connection with the works. He shall have no authority either to relieve the contractor of any of his duties or obligations under the contract, or except those expressly provided hereunder, to order any work involving delay or any extra payment by the Employer or any variation of or in the works.

The contractor shall afford the Employer’s representative every facility and assistance for examining the works and materials and checking and measuring item and materials. Neither the Employer’s representative nor any assistant to the Architect shall have power to revoke, alter, enlarge or relax the requirements of this contract, or to sanction any new-work,
additions, alterations, deviations or omissions unless such an authority may be specially conferred by a written order of the Architect and Employer.

The Employer's representative shall have to give notice to the Contractor or his representing about the non-approval of any work or materials and such works shall be suspended or the use of such materials should be discontinued until the decision of the Architect is obtained. The work will from time to time be examined by the Architect or the Employer's representative, but such examinations shall not in any way exonerate the contractor from the obligation to remedy any defects, which may be found to exist at any stage of the work or after the same is completed. Subject to the limitations of the clause, the contractor shall take instructions only from the Architect and Employer.

18. **ASSIGNMENT OF SUB-LETTING:**

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 thereof or interest therein without the written consent of the Architect and Employer, and no undertaking shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the works during their progress.

19. **SUB-CONTRACTORS:**

All specialists, merchants, tradesmen, and others, executing any work or supply and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities and/or specifications, who may be nominated or selected by the Architect and employer and hereby declared to be sub-contractors employed by the Contractor, are herein referred to as nominated sub-contractors. No nominated sub-contractors shall be employed on or in connection with the works, against whom the contractor shall make reasonable objection or (see where the Architect and contractor shall otherwise agree), who will not enter into a contract provided.

a. The nominated sub-contractors shall indemnify the contractor against the same obligations in respect of the sub-contract as the contractor is under, in respect of this contract.

b. The nominated sub-contractors shall indemnify the contractor against claims in respect of any negligence by the sub-contractor, his servants or agents or any misuse by him or them of any scaffolding or other plant, the property of the contractor or under any Workman’s Compensation Act in force.

c. Payment shall be made by the contractor to the nominated sub-contractor, within 14 days of receipt of the Architect’s certificate, provided that before any certificate is issued, the contractor shall upon

Signature of the contractor with seal  24
request furnish to the Architect proof that all nominated sub-contractor's account included in the previous certificates have been duly discharged; in default whereof the Employer may pay the same upon a certificate of the Architect and deduct the amount thereof from any sums due to the contractor. The exercise of this power shall not create any contract between Employer and Sub-contractor.

20. **VARIATIONS NOT TO VITIATE CONTRACT:**

The contractor shall when directed in writing by the Architect, omit from or vary works shown upon the drawings or described in the specifications or included in the priced schedule of quantities, but the contractor shall not make any alterations or additions to or omissions from the works or any deviations from the provisions of the Contract without such authorizations or direction in writing from the Architect and Employer. No claim for any extra item or deviations shall be allowed, unless it shall have been executed by the Authority of the Architect and Employer as herein mentioned. Any such extra item or deviation is hereinafter referred to as an authorised extra item or deviation. No variations i.e., additions, omissions or substitutions shall vitiate the contract.

The rate of items not included in the bill of quantities shall be settled by the Architect and Employer in accordance with the provisions of clause 21, hereof.

21. **MEASUREMENTS OF WORKS:**

The Architect/PMC may from time to time intimate the Contractor that he requires the works to be measured and the contractor shall forthwith attend or send a qualified agent to assist PMC/Architect's representative in taking measurements and calculations, and to furnish all particulars or give all assistance required by either of them.

Should the contractor no attend or neglect or omit to send such an agent, then the measurements and calculations, and to furnish all particulars or give all assistance required by either of them.

Should the contractor not attend or neglect or omit to send such an agent, then the measurements taken by the PMC/Architects representative approved by them shall be taken to be the correct measurements. The mode of measurements wherever not mentioned in contract documents be taken in accordance with the Indian Standard of Method of measurements of building works (I.S.1200 – 1958) and its revisions, if any. In case of any discrepancy between various contract documents on mode of measurements, the mode given in Bill of Quantities will take precedence over others.
The contractor or his agent may at the time of measurement take such notes and measurements as he may require.

All authorized extra works, omissions and all variations made without the Architect’s knowledge, if substantially sanctioned by him in writing shall be included in such measurements.

22. **PRICES FOR SUBSTITUTIONS/EXTRA ETC., ASCERTAINMENT OF:**

Should it be found after the completion of the works from measurements taken (in accordance with the previous paragraph) that any of the quantities or amounts specified for the works in the priced schedule of quantities of work thus ascertained are less or greater than the amounts and/or tender or that any variations, is made, and any substituted/ extra (new) items have been executed, the valuation of such quantities/items, amounts or variations, unless previously or otherwise agreed upon, shall be made in accordance with the following rules:

a. The net rates or prices in the original tender shall determine the valuation of the extra (additional quantities and or extra/substituted item of work), where that work is of a similar character and executed under similar conditions of the work priced therein. This applied to extra and substituted items of work to the extent, they are similar in nature to the items in the contract.

b. The net prices given in the original tender shall determine the value of the items omitted, provided if omissions vary the conditions under which any remaining items of work are carried out, the prices for the same shall be valued under thereof.

c. Where extra/substituted item of works are not of similar character (either partly & fully) and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items of works are carried out or if the amount of any omission or additions relative to the amount of the whole of the contract works or to be any part thereof shall be such that in the opinion of the Architects the net rate or price contained in the priced schedule of quantities or tender or for any item of the work involves less or more beyond that reasonably contemplated by the Contractor or is by reason of such omission or addition rendered unreasonable for in-applicable, the Architect shall fix in consultation with the Employer such other rates or prices as in the circumstances he shall think reasonable and proper, which shall be final and binding on the contractor. For extra and substituted items this will apply for portions of the items for which, items of similar nature are not available in the contract.

d. Where extra and or substituted items of work cannot be properly measured or valued, the contractor shall be allowed based on the net
local day work rates and wages for the district and prevalent market rates for materials etc., at the time of ordering that item; provided that in either case vouchers for wages paid specifying the daily time (and if required by the Architect, the workmen’s name) and materials employed at or before the end of the week following that in which the work has been executed.

The measurements and valuations in respect of the extra and substituted items of work shall be completed within the “Period of final measurement” or within 3 (three) months from the completion of the contract works as defined under clause No.26 (certificate of virtual completion).

See Special Conditions of Contract Clause 44.

23. **UNFIXED MATERIALS:**

When any materials intended for the works shall have been placed at site by the contractor, such materials shall not be removed therefrom (except for the purposes of being used on the works) without the written authority of the Architect and Employer and when the contractor shall have received payment in respect of any certificate in which the architect shall have stated that he has taken into account the value of such unfixed materials on the works such materials shall become the property of the Employer and the Contractor shall be liable for any loss or damage to any such materials.

24. **REMOVAL OF IMPROPER WORK AND MATERIALS:**

The Architect shall, during the progress of the works, have power to order in writing from time to time the removal from the works, within such reasonable times as may be specified in the order, of any materials which in the opinion of the Architect and Employer are not in accordance with the specifications or the instructions of the Architect and Employer; and the substitution with proper materials and the removal and proper re-execution of any work, which has been executed with materials or workmanship, not in accordance with the contract/drawings and specifications or instructions etc., the contractor shall forthwith carry out such orders at his own cost. In case of default on the part of the contractor to carry out such orders, the Employer shall have the power to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be borne by the Contractor, and shall be recoverable from the contractor by the Employer, or may be deducted by the Architect, from any money due or may become due to the contractor for this work or on any other account.

Instead of this procedure for work not done in accordance with the contract, the Architect and Employer may allow such work to remain, and in that case may make allowance for the difference in value together with such further allowance for damages to the Employer, as in his opinion may be reasonable. This allowance shall be recoverable from the contractor by the
Employer, or may be deducted by the Architect, from any money due or may become due to the contractor for this work or on any other accounts. The decision of Architects in these matters shall be final and binding on the contractor.

25. **DEFECTS AFTER COMPLETION:**

Any defect, shrinkage, settlement or other faults which may appear within the “Defects Liability Period” stated in the Appendix on Page 10 i.e. within 12 months after the virtual completion of the works arising in the opinion of the Architect and Employer and within such reasonable time as shall be specified therein, be rectified and made good by the Contractor at his own cost. In case of default, the Employer may employ any other person to amend and make good such defects, shrinkage, settlements or other faults. All damages, loss and expenses consequent therein or incidental thereto shall be made good and borne by the contractor and such damage, loss and expenses shall be recoverable from him by the employer or may be deducted by the Employer, the damages, loss and expenses from any sums that may be due to the contractor or amount retained under condition 38 (Certificate and payment) and in event of the amount retained being insufficient recover the balance from the amount held against EMD & Security deposit under clause 10.1 & 10.2 on Page 5 or any other amounts due or may become due later.

26. **CERTIFICATE OF VIRTUAL COMPLETION:**

The contractors shall intimate in writing to the Architects, as and when the works are complete in all respects in order to enable the Architect to intimate the Employer to take possession of the same. The works shall not be considered as virtually completed, until the Architect has certified in writing that the same have been “Virtually completed” and accepted by the employed. The defects liability period shall commence, only from the date of such virtual completion certificate.

27. **OTHER PERSONS ENGAGED BY THE EMPLOYER:**

The Employer reserves the right to use the premises and any portions of the site for the execution of any work not included in this contract which he may desire to carry out through other persons, and the contractor is to allow all reasonable facilities for the execution of such work, except by special arrangement with the Employer. Such work shall be carried out in such a manner as not to impede the progress of the works included in the contract, and the contractor shall not be responsible for any damage or delay which may happen to or be occasioned by such work.
28. **INSURANCE IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY:**

The contractor shall be responsible for all injury to persons, animals or things and for all structural and decorative damage to property, which may arise from operation or neglect of himself or any of his or sub-contractor’s employees, whether or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include, inter alia any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, caused to the buildings and works forming the subject of this contract by frost or other inclement weather. The contractor shall indemnify the employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of government or otherwise, and also in respect of any award of compensation or damages consequent upon such claim.

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

The contractor shall indemnify the Employer against all claims which may be made against the Employer, by any member of the Public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own cost, effect and maintain until one month after the works are taken over by the Employer or three months after the date of completion of the contract with an approved office, a policy of Insurance in the joint names of the Employer and the contractor against such risks and signing of the contract. The contract shall also indemnify the employer against all claims which may be made upon the Employer whether under the Workmen’s compensation act or any other statute in force during the currency of this contract or at common law in respect of any employees of the contractor or of any sub-contractor and shall at his own expense effect and maintain until one month beyond the virtual completion of the contract, with an approved office. A policy of Insurance in the joint names of the Employer and the Contractor against such risks and deposit such policy or policies with the Architects from time to time, during the currency of the contract. In default of the contractor insuring as provided above, the Architect on behalf of the Employer may so insure and may deduct the premiums paid from any money due or which may become due to the contractor.

The contractor shall be responsible for anything which may be excluded from the Insurance Policies above referred to and also for all other damages to any property arising out of and incidental to the negligent or defective carrying out of this contract however, such damage shall be caused.
The Contractor shall also indemnify the Employer in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any Award of or compensation of damages arising there from.

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

29. **CONTRACTOR’S ALL RISK POLICY:**

The contractor shall within 14 days from the date of commencement of the work insure the works at his cost and keep them insured until one month after the works are taken over by the Employer or three months after the date of completion whichever is earlier, against loss or damage by fire and usual risks other than fire against which insurers generally provide cover in a CONTRACTOR’S ALL RISK POLICY, with an insurer to be approved the Architects, in the joint names of the Employer and contractor (the name of the former being placed first in the policy), progressively for the full amount of the contract, in three stages, beginning with 1/3 of the contract value, and for any further sum as called upon to do so by the Architect, with the prior written consent of the Employer, the premium of such further sum being allowed to the contractor as an authorised extra. Such policy shall cover the property of the Employer only and Architects and surveyor’s fees for assessing the claim and in connection with his services generally in reinstatement and shall not cover any property of the contractor of any subcontractor or employee. The contractor shall deposit the policy and receipts for the premiums paid with the Architects, within twenty one days of the date of commencement of work, unless otherwise instructed, as provided above failing which the employer or the Architect on his behalf may insure and may deduct the premium paid from any money that may be due or that may become due to the contractor. The contractor shall as soon as the claim under the policy is settled, or the work reinstated by the insurers should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire or other such risk had not occurred and in all respects under the same conditions of contract.

The contractor in case of rebuilding or reinstatement after fire or other such usual risk shall be entitled to such extension of time for completion as recommended by the Architect.

Please refer Special Conditions of Contract, clauses.

30. **MINIMUM AMOUNT OF THIRD PARTY INSURANCE:**

Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required, produce to
the Architect/Consultant the policy or policies of insurance cover and receipts for payment of the current premium.

The minimum insurance cover for physical property, injury, and death is Rs.5.00 lakhs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

31. **COMMENCEMENT AND COMPLETION:**

The contractor shall be allowed admittance to the site on the “Date of Commencement” stated in the Appendix, and he shall thereupon and forthwith begin the works and shall regularly proceed with and complete the same (except such painting or other decorative work as the Architect may desire to delay) on or before the “Day of Completion” started in the Appendix subject nevertheless to the provisions for extension of time hereinafter contained.

Refer clause 9 & 36 of Special Conditions of Contract.

32. **DELAY AND EXTENSION OF TIME:**

If in the opinion of the Architect the works be delayed:

a. by force majeure, or

b. by reason of any exceptionally inclement weather, or

c. by reason of proceedings taken on threatened by or dispute with adjoining or neighbouring owners or public authorities arising otherwise, than through the contractor’s own default, or

d. by the works or delays of the contractors or tradesmen engaged or nominated by the Employer or Architect and not referred to in the Schedule of Quantities and/or specifications, or

e. by reason of civil, commotion, local combination of workmen or strike or lock-out affecting any of the buildings/traders, or

f. by reason of the Architect’s instructions as per clause 2, or

g. In consequence of the contractor not having in due time, necessary instructions from the Architect, for which he shall have specifically applied in writing ahead of time, giving reasonable time to prepare such instructions.
The Architect shall make a fair and reasonable assessment for extension of time, for completion of the contract works which may be approved by the Employer.

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

33. **DAMAGES FOR NON-COMPLETION:**

If the contractor fails to complete the works by the date stated in clause 31 (date of completion) or within any extended time certified under clause 32 (extension of time) and if the Architect shall certify in writing on or before the date of issue of the certificate for the last payment to which the contractor may become entitled hereunder that the works could have been reasonably completed by the said date or within the said extended time, then the contractor shall pay to the Employer or allow the employer to recover from dues to the contractor on any account the sum stated in clause 16 of “Notice to contractors” (Page 6) (liquidated damages and not by way of penalty), subject to a maximum amount of 5% as stated in Appendix of General Conditions of contract (page 10) and as stated in clause 16 of “Notice to contractors”(Page 6) and such damages may be deducted from any money due or which may become due to the contractor.

The deduction of such sums shall not, however, absolve the contractor of his responsibility and obligations to complete the work in its entirety.

Please refer clauses 9 & 36 of special conditions of contract.

34. **FAILURE BY CONTRACTOR TO COMPLY WITH ARCHITECT’S INSTRUCTIONS:**

If the contractor after receipt of written notice from the Architect requiring compliance with such further drawings and/or Architects instruction, fails within seven days to comply with the same, the Architect and Employer may employ and pay other persons to execute any such work whatsoever as may be necessary to give effect thereto and all costs incurred in connection therewith shall be recoverable from the contractors by the employer on a Certificate by the Architect as a debit or may be deducted by him from any money due or which may become due to the contractors.

35. **ARCHITECT’S DELAY IN PROGRESS:**

The Architect may delay the progress of the works in case of rains or otherwise, without vitiating the contract and grant such extension of time with the approval of the Employer for the completion of the contract as he may
think proper and sufficient in consequence of such delay, and the contractor shall not make any claim for compensation or damage in relation thereto.

36. **SUSPENSION OF WORKS:**

If the contractor, except on account of any legal restraint upon the employer preventing the continuance of the works, or on account of any of the causes mentioned in the clause “Extension of time” or in the case of certificate being withheld or not paid when due, shall suspend works or in the opinion of the Architects, shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default in the respects mentioned in clause 24 (removal of improper work and materials), the Employer through the Architect shall have the power to give notice in writing to the contractor required that the works be provided within a reasonable manner, and with reasonable despatch, such notice shall not be unreasonably given and must signify that it purports to be a notice under the provisions of this clause and must specify the acts or defaults on the part of the contractor upon which it is based. After such notice shall have been given, the contractor shall not be at liberty to remove from the site of works, or from any ground contiguous thereto, the site of works, or from any ground contiguous thereto, any plant or materials belonging to him which shall have been placed thereon for the purpose of work, and the Employer shall have lien upon such plants and materials to subsist from date of such notice being given until the notice shall has been complied with, provided always that such line shall not under any circumstances subsist after the expiration of 30 (thirty) day from the date of such notice given, unless the employer shall have entered upon and taken possession of the works and site, as hereinafter provided.

If the contractor shall fail for seven days after such notice has been given, to proceed with the works as therein prescribed, the Employer may enter upon and take possession of the works and site, and of all such plants, machinery and materials thereon intended to be used for the works, and the Employer shall retain and hold a lien upon all such plants, machinery and materials until the work shall have been completed, under powers hereinafter conferred upon him;

If the Employer shall exercise the above power, he may engage any other person to complete the works and exclude the contractor, his agents and servants from entry upon or access to the same, except that the contractor or any person appointed in writing may have access at all times during the progress of the works to inspect, survey and measure the works. Such written appointments or a copy thereof shall be delivered to the Architects before the person appointed comes on to the works and the Employer shall take such steps as in the opinion of the Architect may be reasonably necessary for completion the works, without undue delay or expenses using for that purpose the plant, machinery and materials above mentioned in so far as they as they are suitable and adopted to such use.
Upon the completion of the works, the Architects shall certify the amount of the expenses properly incurred consequent on and incidental to the default of the contractor as aforesaid and in completion the works by other persons.

Should the amount so certified as the expenses properly incurred be less than amount which should have been due to the contractor upon the completion of the works by him, the difference shall be paid to the contractor by the Employer, should the amount of the former exceed the later, the difference shall be paid by the contractor to the Employer. The Employer shall not be liable to make any further payments or compensations to the contractor for or on accounts of the proper use of the plant for the completion of the works under the provisions herein before mentioned other than such payments as is included in the contract.

After the works shall have been so completed by persons other than the contractor, under the provisions herein before contained, the Architect shall give notice to the contractor to remove his plan and all surplus materials as may not have been used in the completion of the works from the site.

If such plant and materials are not removed within a period of 14 days after the notice shall have been given, the Employer may remove and sell the same, holding the proceeds less the cost of the removal and sale, to the credit of the contractor. The Employer shall not be responsible for any loss sustained by the Contractor from the sale of the plant in the event of the Contractor not removing it after notice.

37. **PRIME COST AND PROVISIONAL SUMS:**

a. Where “Prime Cost” (P.C.) prices or provisional sums of money are considered for any goods or works in the specifications or Schedule of quantities or deviations hereof, the same are exclusive of any trade discounts, or allowances, discount for cash, or profit which the contractor may require and or carriage and fixing.

b. All goods or work, for which prime cost prices or provisional sums of money are considered may be selected or ordered from any manufacturer’s or firms, at the discretion of the Architect or the Employer. The Employer reserves to himself the right of paying directly for any such goods or work and the Architect may deduct the said prices or sums from the amount of the contract. Should any goods or works for which prime cost prices or provisional sums are considered or portions of same be not required, such prices or sums, together with the profits allowed for such additional amount as the Contractor may have allowed for carriage and fixing will be deducted in full from the amount of the Contract. Whether the goods be ordered by the Contractor or otherwise, the contractor shall at his own cost fix the same, if called upon to do so, and the contractor shall also receive and sign for such goods and be responsible for their safe custody as and from the date of their delivery upon the works.
c. In cases in which provisional quantities of items/materials are contained in the contract, the contractor shall provide such materials and or execute such items to such amounts or to greater or lesser amounts as the Architect shall direct in his schedule of quantities.

d. No prime cost sum or sums (or any portion thereof) shall be included in any certificate for payment to the contractor until the receipted accounts relating to them have been produced by the contractor to the Architect. Such accounts shall show all discounts and any sum or sums in respect of such discounts shall be treated as a trade discount. Provided always, that should the contractor in lieu of producing such receipted accounts, request the Architect in writing to issue a certificate to the Employer for such sum or sums, due either on account or in settlement to a sub-contractor direct, the Architect shall, upon satisfying himself that the sub-contractor is entitled to the same, so issue the certificate and such sum or sums be deducted from the amount of the contractor, at the settlement of accounts and any profit or sum to which the contractor is properly entitled, in respect of such sub-contract, and which is in conformity with the terms of contract as though the amount of such certificates to the sub-contractor has been included in a certificate drawn in favour of the contractor.

e. If the contractor neither produces the receipt nor gives authority to the Architect to issue a certificate in favour of such sub-contractor direct, the Architect may upon giving the contractor SEVEN DAYS NOTICE in writing of his intentions to do so, issue to the sub-contractor such certificate direct to the Employer and obtain a receipt from the sub-contractor, which receipt shall be deemed as a discharge for the amount of such certificates, as though given by the contractor. In such event, the contractor shall not be allowed any profit he may have added in the Schedule of Quantities upon such sub-contract.

f. The exercise of the option before referred to by the Contractor and the issue of certificates, as before described to sub-contractor direct of certificates by the Architect, shall not however, relieve the contractor from any of the liabilities in respect of insufficient, faulty or incomplete work of the sub-contractor for which he may be liable under the terms of the contract.

38. CERTIFICATES AND PAYMENTS:

The contractor shall be paid by the Employer after due checking and after making necessary correction from time to time, by instalments under Interim Certificates to be issued by the Architect on account of the works executed by the contractor based on the joint measurements taken by the PMC, the Architects representative and the contractors representative when in the opinion of the Architect, work to the approximate value named in the Appendix on Page 10 as “Value of work for Interim Certificates”, (or less at the reasonable discretion of the Architect & Employer) has been executed in accordance with the Contract, subject however, to a retention of the
percentage of such value named in the Appendix hereto mentioned as “Retention Percentage for Interim Certificates”, until the total amount retained shall reach the sum named in the appendix as Total Retention Money, after which time the instalments shall be up to the full value of the work subsequently so executed plus such amount as he may consider proper on account of materials delivered upon the site by the contractor for use in the work and available on the date of billing.

And when the works have been virtually completed and the Architect shall have certified in writing that they have been so completed, the contractor shall be paid by the Employer after satisfying himself in accordance with the certificate to be issued by the Architect, the sum of money named in the Appendix as ‘Instalment after Virtual Completion’ being a part of the said Total Retention Money.

The Contractor shall be entitled to the payment of the final balance (balance security deposit/retention money) in accordance with the final certificate to be issued in writing by the Architect at the expiration of the period referred to as ‘The Defects Liquidation Liability period’ in appendix on page 10 hereto, from the date of virtual completion or as soon after the expiration of such period as the work shall have been finally completed and all defects made good according to the true intent and meaning hereof, whichever shall happen, provided always that the issue by the Architect of any Certificate during the progress of the works or after the completion shall not relieve the contractor from his liabilities in cases of fraud, dishonesty or fraudulent concealment relating to the works or materials or any matter dealt within the certificate, and in case of all such defects and insufficiencies in the works or materials, which reasonable examination would have disclosed. No certificate of the Architect shall by itself be conclusive evidence that any works or materials to which it relates are in accordance with the contract.

The Architect shall have power to withhold any Certificate, if the works or any parts thereof are not being carried out to his and employers satisfaction. The Architect may by any certificate make any correction in any previous Certificate, which shall have been issued by him. Payment upon the Architect’s Certificates shall be made within the period named in the Appendix as ‘Period of Honoring of Certificates, after such certificates have been delivered to Employer.

Please refer clause 37 & 46 of Special conditions of agreement.

39. **NOTICES:**

Notices for the Employer, the Architect, or the Contractor may be served personally or by being left at or sent by registered post to the last known place of abode or business of the party to whom the same is to be given or in the case of the contractor by being left on the works. In case of a company or corporation, notices may be served at or sent by registered post to the Registered Offices of the Company or Corporation. Any notice sent by
registered post shall be deemed to be served at the time, when in the ordinary course of post it would be delivered.

40. **TERMINATION OF CONTRACT BY THE EMPLOYER:**

If the contractor being an individual or a firm, commit any act of insolvency, or shall be adjudged as Insolvent or being an incorporated Company shall have an order for compulsory winding up made against it or pass an effective resolution for winding up voluntarily or subject to the Supervision of the Court and of the Official Assignee of the Liquidator in such acts of insolvency or winding up, shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Architect that he is able to carry out and fulfill the contract, and to give security thereof, if so required by the Architect.

Or if the contractor (whether an individual, firm or incorporated Co.) shall suffer execution to be issued.

Or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the Architects/Employer first obtained.

Or shall charge or encumber this Contract or any payments due or which may be due to the Contract thereunder.

Or if the Architect shall certify in writing to the Employer that the contractor,

a. has abandoned the contract or

b. has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days, after receiving from the Architect written notice to proceed, or

c. has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or

d. has failed to remove materials from the site or to pull down and replace work for 7 days after receiving from the Architect written notice that the said materials or work were condemned and rejected by the Architect under these conditions, or

e. has neglected persistently to observe and perform all or any of the acts, matters or things by this contract to the observed and performed by the Contractors for 7 days after written notice shall have been given to the contractor requiring the contractor to observe or perform the same, or
f. has to the determent of good workmanship or in defiance of the Architect’s instructions to the contrary, sublet any part of the contract.

Then and in any of the said cases the Employer with written consent of the Architect, may notwithstanding any previous waiver, after giving 7 days notice in writing to the contractor, determine the contract, but without hereby affecting the powers of the Architect to continue in force as full as if the contract has not been so determined and as if the works subsequently executed has been executed by or on behalf of the contractor.

And further, the Employer under recommendations of the Architect, by his Agents, or servants may enter upon and take possession of the works and all plants, tools, scaffoldings, sheds, machinery, and other equipment and materials also laying upon the premises or the adjoining lands or roads, and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completion the works or by employing any other contractors or other persons to complete the works and the contractor shall not in any way interrupt or do not act, matter or thing to prevent or hinder such other contractor or other persons or person employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or soon thereafter as convenient, the Architect shall give a notice in writing to the contractor to remove his surplus materials and plant, and should the contractor fail to do so, within a period of 14 days, after receipt thereof by him, the Employer shall sell the same by publication and shall give credit to the contractor for the amount realised. The Architect shall thereafter ascertain and certify in writing under his hand when (if anything) what shall be due to or payable by the Employer for the value of the said plant and materials so taken possession of by the Employer, and the expense or loss, which the Employer shall have incurred due to the contractor, and the amount which shall be so certified shall thereupon be paid by the Employer to the contractor or by the contractor to the Employer, as the case may be.

41. **TERMINATION OF CONTRACT BY CONTRACTOR:**

If payment of the amount payable by the Employer under certificate of the Architect as provided for hereinafter shall be in arrears and unpaid for 30 (thirty) days after notice in writing requiring payment of the amount, as aforesaid shall have been given by the Contractor to the Employer, or if the Employer obstructs the issue of any such certificates, or if the employer commits any Act of insolvency, or if the Employer (being an incorporated company) shall have an order made against him or pass an effective.

Resolution for winding up, either compulsorily or subject to the supervision of the Court or voluntarily, or if the Official Liquidator or the Employer shall
repudiate the contract, or if the Official Liquidator in any such winding up shall be unable within 15 days notice to him requiring him to do so, to the reasonable satisfaction of the contractor that he is not able to carry out and fulfill the contract and to give security for the same (including Earnest money), or if the works be stopped for any payments due, and to become due thereunder and if required under the order of the Architects or the Employer or by an injunction or other order of any court of law, then in any of the said cases, the contractor shall be at liberty to determine the contract by notice in writing to the Employer/Architect, and he shall be entitled to recover from the Employer, payment for all works executed and for any losses he may sustain, upon any plant or materials supplied or purchased or prepared for the purpose of the contract.

In arriving at the amount of such payment, the net rates contained in the contract shall be followed, or where the same may not apply, valuation shall be made in accordance with clause 22 thereof.

42. Matters to be finally determined by the Architects and the Bank (Called excepted matters) – (refer 43(a) below), which shall be final, conclusive and binding on the following matters:

a) Instructions  
b) Transactions with local authorities  
c) Proof of quality of materials  
d) Assigning or underletting of the contract,  
e) Certificate as to the causes of delay on the part of the contractor and justifying extension of time or otherwise,  
f) Rectification of defects pointed out during the defects liability period.  
g) Notice to the contractor to the effect that he is not proceeding with due diligence.  
h) Certificate that the contractor has abandoned the contract.  
i) Notice for determination of the contract by the Employer.

43. ARBITRATION:

a. When the contractor is dissatisfied with the decision of the Architect/Employer, the contractor is required to give a notice to the Employer within 30 days of the receipt of such decision, for the appointment of the Arbitrator for the settlement of the outstanding disputes.

b. Dy General Manager & Chief Engineer shall be appointed to refer those disputes for adjudication to a sole arbitration.

c. It is also a term of the contract that if the contractor does not make any demand for Arbitrator in respect of any claims within 90 days of receiving the intimation from the Bank that the final bill is ready for payment, the claims if
any received after 90 days period shall be absolutely barred from reference to the Arbitrator.

d. All disputes or differences of any kind whatsoever, which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof this contract, or the rights touching or of this contract, effect thereof, or to the rights or liabilities of the parties arising out of or in relation thereto, whether during progress or after determination, foreclosure or breach of the contract (other than those in respect of which the decision expressed to be final and binding in cases listed out in condition 40 above), Architects shall, after written notice to either party to the contract and to the appointing Authority, who shall be appointed for this purpose by the employer refer those disputes for adjudication to a sole arbitrator, to be appointed as hereinafter provided.

e. For the purpose of appointing the sole arbitrator referred to above, the Appointing authority will send, within thirty days of receipt by him of the written notice aforesaid, to the contractor a panel of three names of persons, who shall be presently unconnected with the organization for which the work executed.

f. The contractor shall on receipt by him of the names as aforesaid, select any one of the persons named to be appointed as a sole arbitrator and communicate his name to be appointed as a sole arbitrator to the Appointing Authority, within thirty days of receipt of the names by him. The Appointing Authority shall thereupon without any delay appoint the said person as the sole arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority shall make the selection and appoint the selected person as the sole arbitrator.

g. If the Appointing Authority fails to send to the contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the appointing authority a panel of three names of persons, who shall be unconnected with either party. The Appointing Authority shall on receipt by him of the names as aforesaid select any one of the persons named and appoint his as the sole arbitrator. If the Appointing Authority fails to select the person and appoint him as the sole arbitrator within 30 days of receipt by him of the panel and inform the contractor accordingly, the contractor shall be entitled to appoint one of the persons from the panel as the sole arbitrator and communicate his name to the Appointing Authority.

h. If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reasons whatsoever, another sole arbitrator shall be appointed as aforesaid.

i. The work under the contract, shall however, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.
j. The arbitrator shall be deemed to have entered on the reference, on the date he issues notice to both the parties, fixing the date of first hearing.

k. The arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

l. The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be such a place, as may be fixed by the Arbitrator in his sole discretion.

The fees, if any, of the Arbitrator, if required to be paid before the award is made and published, shall be paid half and half by each of the parties. The costs of the reference and of the award including the fees, if any, of the Arbitrator, who may direct to any by whom and in what manner such costs or any part there of shall be paid and may fix or settle the amount of costs to be so paid.

m. The award of the Arbitrator shall be final and binding on both the parties.

n. Subject to aforesaid, the provisions of the Arbitration and Conciliation Act, 1996, or any statutory modifications or re-enactments thereof, and the rules made thereunder, and for time being in force, shall apply to the arbitration proceedings under this clause.

O. Labour Laws / Regulations:

The Contractor shall employ labour in sufficient numbers directly through sub-contractors to maintain throughout the period of the contract the rate of progress required according to the approved program of work and if quality to ensure proper workmanship in accordance with the specifications and drawings and the Consultant / Bank Instructions.

P. SAFETY CODE:

All precautions and safety measured as required by Indian Labour Act and Electricity Act shall be taken by the contractor.

SPECIAL CONDITIONS OF CONTRACT

1. INSPECTION OF DRAWINGS:
Before filling in the tender, the contractor will have to check up all drawings and Schedule of quantities, and will have to get immediate clarifications from the Architect on any point, that he feels is vague or uncertain. No claim/damages or compensation will be entertained on this account.

2. CONTRACTOR TO VISIT SITE:

Each tenderer must, before submitting his tender, visit the site of works, so as to ascertain the physical site conditions prices and availability and quality of materials according to specifications before submitting the quotations. No
excuse regarding non-availability of any materials or changes in the price will be entertained or extra allowed on that account.

The existing adjacent buildings belonging to Govt/private which are in close proximity of the proposed construction, hence the contractor shall cater for all arrangements to carry out the work without causing any disturbance to the occupants by providing screens with bamboo matting or other suitable material approved by Architects/Engineer. The contractor shall ensure that no dust or construction material falls near/around the existing buildings.

3. **EXECUTION OF WORK (PRICES TO INCLUDE):**

i) The whole of the work as described in the Contract (including the Schedule of Quantities, the specifications and all drawings pertaining thereto) and as advised by the Architect & employer from time to time is to be carried out and completed in all its parts to the entire satisfaction of the Architect & Employer. Any minor details of construction, which may not have been definitely referred to in this contract, but which are usual in sound building, road and all construction practice and essential to the work, are deemed to be included in this contract. Rates quoted in the Schedule shall be inclusive of all freights, taxes, such as octroi, Sales tax, Royalties, duties, excise, turnover tax, sales tax on works contract, etc., as well as transportation, so as to execute the contract as per the rules and regulations of Local Bodies, State Government and Government of India. Any increase in these taxes and rates, during pendency of contract, shall be borne by the contractor and no extra claim on this account will be entertained.

The rates quoted in the tender should also include all charges:

- 1. Carrying
- 2. Hauling
- 3. Labour
- 4. Fixing
- 5. Watering
- 6. Cleaning
- 7. Making good and
- 8. Maintenance etc.

The Schedule of quantities forms part of the contract, but the Employer reserves the right to modify the same or any part thereof as per variation clause stated herein below. The contractor shall not be allowed any compensation or damages for the work which is so omitted or cancelled or added or substituted by the Architect & Employer.

Please refer clause 4 of General Conditions of Contract.

6.a. **QUANTITIES LIABLE TO VARY:**
This clause applies for unlimited variations (+ or -) for items of foundations and those executed below plinth level. For all other items, only in case where + variations of any item exceeds 100% of Quantities of respective items given in the schedule of quantities of the contract, such additional quantities of those items shall be treated as extra items and valued as per clause 45 of special conditions of contract, considering of that rates for these items cannot be derived from the contracted items of work.

The quantities indicated in the bill of quantities are only approximate, and hence may vary on either side (+ or -) for accomplishing the works enunciated under the scope of works, in accordance with designs, drawings and specifications and or instructions of the Architect & Employer. Variations may also occur, consequent upon addition or deletion or substitution of particular items, change of designs or specifications during the course of execution. The contractor, in either case, is bound to carryout the modified quantities upto +100% (plus one hundred percent) variation, without any enhancement in rates and at the same rates as per accepted original tendered rates.

Please refer clause 4, 5 & 6 of General conditions of contract.

b. **FILLING OF TENDERS:**

The rates and amounts for each tendered item should filled in separate columns provided for in the Schedule of quantities and all the amounts should be totaled up in order to show the aggregate value of the entire tender. All rates shall be filled in both words and figures. These figures and words shall be preceded by ‘Rs’ and ‘Ps’ as the case may be, and while filling in words, must end with “Only”. Example:

i) Rs.15.25 (Rupees fifteen and paise twenty five only)
ii) Rs.20.00 (Rupees twenty only)

The rates quoted in figures should be clearly show the rates in full. While filling rates in words, each line should end in ‘-’, and if continued further, last line for the rate of each item shall end in “Only”. All corrections, by the contractor in the tender schedule shall be duly attested by the initials of the tenderer. Corrections which are not attested or overwritings in rates may entail the rejection of the tender.

In case the rate written in figures/words/amount differ, the following procedure shall be followed:

a) When there is a difference between the rates in figures and in words, the rates which correspond to the amounts worked out by the contractor will be taken as correct.

b) When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words,
then the rate quoted by the contractors in words shall be taken as correct.

c) When the rates quoted by the contractor in figures and in word tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.

7. **ACCESS OF INSPECTION:**

The contractor is to provide at all times, during the progress of the works and the maintenance period, means of access with ladders, gangways etc., and the necessary attendants to move and adopt the same as directed for the inspection or measurement of the work by the Architect and Employer or any other agency employed by the client.

Refer clause 7 of General Conditions of Contract.

8. **DIMENSIONS:**

In all cases figured dimensions are to be accepted in preference to scaled sizes. Large scale details shall take precedence over small scale details/drawings. In case of any discrepancy, the contractor shall ask for a clarification, before proceeding with the work. Accordingly, if any work is executed without prior clarification, it is liable to be rejected and shall not be paid for,

9. **PROGRAMME OF WORKS:**

The contractor on starting the work shall furnish to the Employer and Architect a PERT/CPM programme, for carrying out the work stage by stage in the stipulated time, for the approval of Architects and Employer, and follow strictly the approved time schedule by incorporating changes, if any, so authorised by the Architect and Employer, to ensure the completion of construction work in stipulated time. A graph or chart on individual item/group of items/trades of work shall be maintained, showing the progress both in terms of quantities and value, week by week. The contractor shall submit to the Employer and Architect a weekly progress report stating the number of skilled and unskilled labourers employed on the work, working hours done, quantity of cement, steel and other major items of materials (quantity and value wise) used and corresponding place, type and quantity of work done during the period.

The contractor must inform the Architects, 10 days in advance of requirement of respective drawings and details by him, from time to time. The contractor shall strictly adhere to the approved programme and arrange for the materials and labour etc., accordingly.
EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

Despite repeated instructions, if the contractor fails to show satisfactory progress of the work, the Employer/Architect may take suitable action as deemed fit, including levying of liquidated damages not exceeding ½% of contract price for delay of every week or part thereof, subject to a limit of total liquidated damages levied under this clause to 5% of contract price without prejudice to any terms and conditions of the contract.

Please refer clause 29 & 30 of General Conditions of contract.

10. **OFFICES, STORES, SHEDS ETC., ON THE SITE:**

a. The contractor shall erect and maintain entirely at his own expense properly lighted, ventilated waterproof and lockable aircooled offices for the Architect's/ Employers representatives and for his own staff respectively on such parts as the Architects shall indicate. Separate offices for Architects and Employers representatives shall be constructed having minimum area of 20 Sqm, as per the sketch plan and specifications, which will be given by the Architects before starting the work. Contractor shall also provide and maintain, at his own cost, adequate water supply, closets and sanitary accommodation for exclusive use of Architect & Employer's representatives at site. In case, these offices have been provided with AC/GI sheet roofing, the same shall have false ceiling as directed. These offices shall be provided by the contractor with adequate numbers of windows, tables, chairs, steel cupboards, fans, lights and attendants etc., as directed by the architects. Necessary permission from various authorities will be obtained by the contractor and necessary fees shall be paid by the contractor prior to constructing such offices, and as well for stores, huts for labourers or any other temporary structures required for the due execution of work. Any penalty levied by local authorities, for not following their bye-laws/regulations etc., in the matter, will be borne by the contractor. The contractor shall pay for the Electricity and Water charges consumed. All these offices shall be demolished and the materials shall be taken away from site and ground left in good and proper order on completion of work, as required and directed.

b. The contractor shall provide for all necessary storage on the site, in a specified area for all materials, in such a manner that all such materials, tools etc., shall be duly protected from damages by weather or any other cause. Stores for storage of cement shall have all weather proof floors, walls and roof and have proper locking arrangements and must be secure. All these must be maintained till the work is completed and so certified by the Architect. Necessary and adequate watch and ward for all such accommodations and stores shall be provided for by the contractor at his cost and same included in the rates/amounts quoted by him. All such stores shall be cleared away and the ground left in good and proper order on
completion of this contract unless otherwise expressly mentioned herein.

c. All materials which are stored on the site such as cement, brick, metal sand etc., shall be stacked in such a manner as to facilitate rapid and easy checking of quantities of such materials and prevent deterioration in quality due to water etc.

d. In addition to the offices provided to Architect’s Employer’s representative, contractor shall provide accommodation for Project Management Consultants as specified.

11. WATER AND ELECTRICITY:

Contractor shall make his own and adequate arrangements for water required for drinking and construction purposes and also for required electric supply at site for satisfactory execution and completion of the work, at his own cost. The contractor shall get the water used for construction purpose tested periodically as per relevant BIS codes at his cost, and shall get the same approved from Architect and clients before using such water for the work.

12. PROCUREMENT OF MATERIALS:

Contractor shall procure all the materials including cement and steel required for the work from the open market. Time is the essence of the contract. Acceptance of the completion date by the contractor shall mean that he has taken into consideration the availability of all materials of approved make and quality in sufficient quantities at respective markets/sources, to enable him to complete the entire work in the stipulated period.

Contractor will get samples of all materials approved by the Architect and employer, before placing order/purchase/procurement. They shall conform to relevant electric . codes and or tender specifications as applicable.

For all materials, the contractor shall quote for the best quality of the materials of best make/source or supply and they should be got approved by the architect and employer, before procurement.

In case sufficient quantities of approved quality materials from approved sources are not available in time, contractor may have to procure the same from neighbouring areas even with longer leads, as required and directed, at no extra cost. In case approved good quality sand is not available consistently throughout the duration of the contract period, best quality of sand locally available may have to be screened and washed, as directed by the Architect and Employer depending upon the use of sand in different items of work, at no extra cost. The materials will be, however as per relevant I.S.S. as and wherever applicable.
Please refer clause 9 of General Conditions of contract.

12.1 **SECURED ADVANCE FOR MATERIALS ON SITE:**

The contractor will be paid secured advance against the materials required and brought and stacked safely and securely at site for consumption within 45 days. The advance paid shall be limited to 75% of the cost (limited to costs of materials based on quoted and approved rate for relevant items of work) of the materials stacked at site, and the contractor shall produce necessary cash vouchers/documents in support of the cost of each of such materials for each consignment. In case of sanitary, Water supply and electrical materials, the advance will be restricted to 65% of the quoted rates for the relevant items in the tender and not exceeding 75% of the cost of those materials in the market. Whenever payment is made on stack measurement basis, necessary deductions for voids will be made, which shall be applicable both for advance and/or for final payment, wherever applicable. These materials shall be stacked on fairly level ground and at safe and secure places, as directed. No secured advance will be paid for materials brought prematurely to the site.

The materials against which advance is paid, shall be the property of the Employer and shall not be removed from the site, without written permission of the Architect & Employer. However, the security of these materials and preventing deterioration of quality of same shall be the sole responsibility of the contractor. The materials shall also be in conformity with the contract specifications and of approved quality/make/brand etc.

The secured advances shall be recovered in the next immediate interim bill.

These advances shall be made on the basis of the quantity of each of the materials lying at site, at the time of preparation of respective interim bill. For all such advances claimed/proposed, the Contractor shall sign an indemnity bond for each of such interim bills, in favour of the Bank, against any loss either due to theft or fire etc. The format shall be finalised in consultation with Architect/Engineer.

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**8.00 SPECIAL CONDITIONS OF CONTRACT AND SPECIFICATIONS FOR ELECTRICAL WORKS (LOW TENSION)**
EXTERIAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING
(UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

1. ELECTRICAL REGULATIONS:

The installation shall generally comply with the stipulations of the Indian Electricity Act, 1910 as amended from time to time and Indian Electricity Regulations and supplementary Regulations of State Electricity Board.

2. WORKMANSHIP:

2.1 All work shall conform to the best methods of modern practice and shall be executed by fully qualified and experienced electricians.

2.2 MARKING:

The proposed runs of cables / conduits and the position of DBs, cable boxes, fittings, switch boxes, and other accessories shall be marked in advance on walls etc., and after approval by the consultants or site engineers erected.

All cable and conduit runs shall fit-in with the architectural features of the building, due allowance being given for accessibility, inspection and maintenance. Adequate draw-in boxes should be provided for concealed conduit runs, to facilitate easy renewals.

2.3 MODIFICATIONS:

It will be necessary for the consultants / client's engineers to make modifications in the original scope or also designs based on site conditions. The unit rates quoted shall be valid for these changes.

Also attention required to correct defective workmanship, non-standard installation and non-compliance of statutory regulations shall be carried out free of cost.

3. ELECTRICAL TEST:

All electrical works shall be tested by the contractor in the presence of and to the satisfaction of the Consultants / client's engineers, including insulation resistance, earth continuity and any other tests as may be specified. The charges towards the same shall be borne by the contractor. For all major equipments such as H.T & L.T panels, transformer, D.G. set etc. shall be offered for routine tests at manufacturer's premises. The equipments shall be dispatched only after witness of these tests.

MANDATORY TESTS FOR ELECTRICAL WORKS
General: The following tests shall be conducted in the presence of the clients Engineer / Consultant. Test results to be tabulated and submitted to the Bank

S. No.1 a) TESTING OF WIRES / CONDUITS:
All the sample wires / conduits from every lot as and when required by the owner / consultants shall be got tested at a laboratory specified by the owner / consultant

b) Wiring installation
   a. Insulation Resistance
   b. Earth continuity
   c. polarity of single pole switches

S.No.2 U.G. Cables
Manufacturers test report shall be submitted for tests on cables in accordance with Indian Standards specifications.
Cables shall be tested after installation before commissioning by using 1000 Volts Meggar and the following readings shall be obtained and tabulated.
- Continuity on all conductors
- Insulation Resistance
a) Between Conductors
b) All conductors and ground

S.No. H.T. & L.T Panel Boards
Tests: The panel Board shall be inspected as per relevant standards in presence of the Site Engineer / Consultant and shall include.

a) High Voltage Test
b) Insulation Test
c) Constructional and safety features

S. No. 4 Earth Resistance
The Earth resistance of earth electrodes should be tested by earth resistance megger. The earth resistance of each earth electrode should be less than 2 ohms.

NOTE: The above tests shall have to be facilitated by the tenderer or his principles at their works and no facilities shall be made available at the consumer’s site. Unless the above test condition is full filled satisfactorily the payment conditions will not get effected. Under no circumstances this condition shall be waived or modified.

9. SAFETY CODE
1. These shall be maintained in a readily accessible place. First-Aid appliance including adequate supply of sterilized dressings and cotton wool.

2. The injured person shall be taken to a public hospital without loss of time, in cases where the injury necessitates hospitalization.

3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from ground.

4. No portable single ladder shall be over 8 metres in length. The width between the side fails shall not be less than 30 cm (clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding the ladder.

5. The excavated materials shall not be placed within 1.5 metres of the edge of the trench or half of the depth of trench whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.

6. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one metre.

7. No floor, roof or other part of the structure shall be so over loaded with debris or materials as to render it unsafe.

8. Workers employed on mixing and handling materials such as asphalt, cement, mortar or concrete and lime mortar shall be provided with protective footwear and rubber hand-gloves.

9. Those engaged in welding works shall be provided with welder’s protective eye-shields and gloves.

10. i) No paint containing lead or lead products shall be used exception the form of paste or readymade paint.

    ii) Suitable face masks should be supplied for use by the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scraped.

11. Overalls shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

12. Hoisting machines and tackle used in the work, including their attachments, anchorage and supports shall be in perfect condition.

13. The ropes used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from defects.
CHAPTER 1

HIGH VOLTAGE PANEL 11 KV

1. SCOPE

These specifications cover the detailed requirements for Supply, Installation, testing and commissioning of High Voltage Panels 11 KV.

1.1 H.V.PANEL

The Panel board shall be of outdoor type having the incoming sectionalisation and outgoing switchgears as per IS 13118 -1991 of VCB for breakers and IS 3427 for Panels.

Rating: All panels assembled to form a board shall be suitable for the nominal operation voltage and rupturing capacity as specified. They should be rated as specified with a minimum of 630 A and suitable for operation on 33 kv, 3 Phase 50 Hz system. Type test certificate for the breaking capacity of the panel shall be supplied.

Type: The HV Panel board shall be metal clad, indoor floor mounting free standing type. It shall be totally enclosed dust, damp and vermin proof.

CONSTRUCTION - The Switch Gear Panel shall be compartmentalised designed with cubicles fabricated out of High Quality Sheet Steel and the panels shall be weatherproof and with degree of protection IP 66 as per IS 3427 -1997.

BUS BAR SECTION

General Requirement: The switch board shall be single bus bar pattern with air insulated encapsulated busbars housed in a separate compartment segregated from other compartments.

Material: The busbars shall be of high conductivity electrolytic copper rated as specified with a minimum rated current of 800 A. The busbars shall be sized for carrying the rated and short circuit current without over heating. Maximum busbar temperature shall not exceed 95 degree C.
I. SUBSTATION EQUIPMENT


1.1 Quantity : As per schedule

1.2 Installation : Indoor

1.3 Nominal system voltage : 11 KV, 3 phase

1.4 Highest system voltage : 26.1 KV, 3 phase

1.5 System frequency : 50 Hz +/- 5%

1.6 Details of neutral earthing : Solidly earthed

1.7 Rated current : 800 Amps (Incomer)/630 A (outgoing)

1.8 Rated insulation level : 75 KV

1.9 Rated symmetrical short circuit breaking capacity : 350 MVA

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 : LBS / VCB

2. Power Transformers

A) 200 KVA TRANSFORMER

2.1 Quantity : As per schedule

2.2 Number of phases : Three phase

2.3 Frequency : 50 Hz +/- 5%

2.4 Type of cooling medium : Mineral oil as per IS: 335

2.5 Rated MVA irrespective : 200 KVA ON AN
2.6 Highest system voltage : 28 KV

2.7 Method of system : Solidly earthed Neutral earthing

2.8 Insulation level : 11 KV side - 28 KV

5.9 Rated voltages : HV winding - 11 KV
                   LV winding - 0.433 KV

5.10 Tapping : HV side + 5% to -5% each step of +/- 1.25%

5.11 Type of tap changer : On load tap changer

5.12 Connection : Delta/star

5.13 Vector group : Dyn11.

5.14 Neutral terminal : Solidly earthed on LV side. Neutral CT to be supplied for Restricted earth fault protection.

5.15 Insulation to : Uniform earth of winding

5.16 Impedance : As per IS 2026 and latest version

5.17 Type of cooling : ONAN

5.18 Installation : Outdoor

5.19 Temp. rise : 37 deg. C for oil and 47 deg C for winding over ambient of 40 deg. C. (As per IS 2026 and latest)

5.20 Termination : HV side - cable end box suitable for 1 run of 11 KV 120 sq.mm XLPE cable.
                   LV side - cable box

5.21 Supply variation : The transformer shall be suitable for continuous working at a voltage variation of +/- 15% of rated voltage with frequency variation of +/- 3% both not occurring simultaneously. The combined variation shall be considered as 15%.
5.22  Max. efficiency output: To preferably occur at 40-45% of the rated output. Losses will be capitalised.

5.23  Protections
alarm provided sides and be supplied for use

i) Bucholtz's relay with double floats, one for alarm and one for trip. Bucholtz's relay shall be with isolating valves on both flanged connection piece shall when bucholtz's relay is not in use.

ii) Dial type thermometer with alarm and trip contacts for oil temp. monitoring.

iii) Dial type thermometer type winding temperature indicator with alarm and trip contacts.

iv) Magnetic type oil level detector with alarm & trip contacts for main conservator.

v) Plain oil level indicator for OLTC conservator.

5.24  Fittings


Marshalling box complete with wiring etc. It shall also be provided with illumination lamp & glands & Lugs. Lifting lugs for & for other Components disconnection chamber on 11KV and cable box on 433V side.

Manufacturer's name plate Base channel with towing holes/ Lugs. Skid arrangement Flexible copper links for earth continuity.

5.25  Finish

shade 631: To be painted with suitable gray. Paint as per shade of IS-5.

5.26  General

i) The transformer shall be copper wound.
ii) The transformer shall be supplied with first filling of oil.

iii) 11 KV winding bushings shall be suitable for 28 KV impulse strength.

iv) 5% extra quantity of oil to be supplied in non returnable drums.

6. **Battery**

6.1 **Battery**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>As per Schedule</td>
</tr>
<tr>
<td>Type of cell</td>
<td>Lead acid SMF Batteries</td>
</tr>
<tr>
<td>No. of battery cells</td>
<td>2 nos 12V</td>
</tr>
<tr>
<td>Rating</td>
<td>24 V, 100 AH</td>
</tr>
<tr>
<td>Duty</td>
<td>Substation duty</td>
</tr>
<tr>
<td>Accessories</td>
<td>The battery set shall be Complete with Copper inter-cell connectors, floats, nuts &amp; bolts, inter row connectors, strain insulators and mounting Stand.</td>
</tr>
<tr>
<td>Reference standard</td>
<td>IS-1651 &amp; 1652</td>
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</tbody>
</table>

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 (ISOLATOR)**

**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.
EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

c) Routing of control wiring and power cables, their termination etc.

d) Verification of test certificates for boughtout 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

Routine Tests

a) Measurement of resistance of main circuit.

b) Operation tests including measurement of closing & opening time on oscilloscope.

   a) One minute power frequency voltage dry withstand test on circuit breaker.

   b) 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

Visual Inspection

a) Dimensional check and general arrangement.

b) Terminal marking.

c) Name plate details.

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. POTENTIAL TRANSFORMERS

Visual Inspection:

a) For general and mounting arrangements as per approved drawings
   Dimension check
   and general arrangement

b) Terminal marking

c) Name plate details.

Routine Tests:

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

b) Verification of terminal marking and polarity.

C) High voltage power frequency test on primary and secondary windings.

Routine tests shall be carried out as per IS: 3156 (part - I) - latest revision.

4. RELAYS

Visual Inspection:

a) For layout components, bus mounting, compartment - allocation etc. as approved drawings.

b) For checking of dimensions, electrical clearances, phase marking, tightness of joints etc.

c) General workmanship, finish identification labels, routing and termination of control and power wires / cables etc.

d) Verification of test certificates for boughtout components.

Running Tests:

a) High voltage power frequency withstand test
b) Insulation resistance test

c) Functional test including simulation test on relay.

5. **POWER TRANSFORMER**

**Visual Inspection :**

a) For general and mounting arrangements as per approved drawings.

b) For dimensional check of tank, roller distances, flanges /cable boxes etc.

c) General workmanship, finish and painting and provision of accessories as specified.

d) Tank, cooler, attachment, valves, etc. tests for leakage.

**Routine Tests**

Measurement of windings resistance.

Ratio, polarity and phase relationship for vector group verification.

Measurement of No-load losses and No-load current

Measurement of load losses.

Impedance voltage test

Insulation Resistance test

Induced over voltage withstand test

Operation of OLTC, WTI and OTI etc.

Separate source voltage withstand.

03 Type Tests  (Certificates to be furnished for the same type capacity transformer)

a) Temperature rise test

b) Impulse voltage withstand test

c) Zero sequence impedance measurement. p73
Routine & type tests mentioned above shall be carried out as per IS:2026 - latest revision.

6. BATTERY

6.1 Batteries

Visual Inspection:

Dimensional check:

1 Visual Inspection

   a) General arrangements, layout of components, cleanliness, compartmentalization and dimension etc.

   b) General workmanship finish identification labels, taps, caution plates, routing and termination of power and control cables etc.

   c) Verification of test certificates for bought out components.

Routine Tests:

   a) Scheme and functional check

   b) Voltage regulation check

   c) High voltage withstand test

   d) Insulation resistance test.

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, 4 wire 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 beaker 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 beaker, 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 2.5mm 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 1mm dia 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 2mm thick sheet steel. Sheet steel shrouds and partitions shall be of minimum 1.6mm 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 centres 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 centres 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 fastners to prevent unauthorised 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 bus bars 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 tappings shall be provided with colour 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 as given in the schedule of work and comply with the
requirements of relevant IS with latest amendments and shall have the following:

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

b) A short circuit making capacity of 105 KA.

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

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

e) 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 independant of speed of manual operation. Electrically shall be independant 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. The protection release must be electronic/ Microprocessor based, true rms sensing compatible to EMC and with a provision of malfunctioning indications.

Following setting must be available on the relay:

i) over current setting (Ir) 70% to 100% of In
ii) short circuit setting (Id) 1.25 to 10n of Ir

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) Inadvertant with drawl 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 flabe 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 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.

6.0 Indicating / Integrating Metres:

All indicating instruments shall be of flush mounted industrial pattern conforming to the relevant latest amended IS. The instrument shall have non-reflecting bazels, 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.

7.0 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.

8.0 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.

9.0 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.

10.0 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.

11.0 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.

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.

12.0 Terminal blocks and labels:

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 label inscriptions.

Labels shall be made of anodised aluminium, 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.

Tests:

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.

Each power control centre and components shall be subjected to standard routine tests as per applicable clauses of relevant standards.

All current carrying parts and wiring of power control centre shall be subjected to power frequency voltage withstand test.

14.0 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.

iii) Single line diagram of power control centre showing Protection, Metering etc.
iv) Cubicle wiring diagram.
iv) List of Firments with Ratings & makes / Models

15.0 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-i-charge.

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

CHAPTER 4

POWER CAPACITORS & CAPACITOR CONTROL PANEL:

1. General

a) The capacitor banks shall be complete with all parts that are necessary or essential for efficient operation. Such parts shall be deemed to be within the scope of supply whether specifically mentioned or not.

b) The capacitor bank shall be complete with the required capacitors along with the supporting post insulators, steel rack assembly, copper connecting strips, foundation channels, fuses, fuse clips, etc. The steel rack assembly shall be hot dip gavalnised.

c) The capacitor bank may comprise of suitable number of single phase units in series-parallel combination. However, the number of parallel units in each series of the series racks shall be such that failure of one unit shall not create an over voltage on the units in parallel with it, which will result in the failure of the parallel units.

d) i. The assembly of the banks shall be such that it provides sufficient ventilation for each unit.
   ii. Each capacitor case and the cubicle shall be earthed to earth bus.

e) Each capacitor unit/bank shall be fitted with directly connected continuously rated, low loss discharge device to
discharge the capacitors to reduce the voltage to 50Volts within one minute in accordance with the provisions of the latest edition of IS:2834.

f) Capacitors shall be of Mixed Dielectric of polypropylene and paper with internal element fuses completely impregnated type non PCB oil.

g) Each unit shall satisfactorily operate at 135% of rated KVAR including factors of over voltage, harmonic currents and manufacturing tolerance. The units shall be capable of continuously withstanding satisfactorily any over voltage upto a maximum of 10% above the rated voltage, excluding transients.

h) Capacitors shall have built in surge suppression coils.

i) The Capacitor Banks shall be suitable for Operation with Automatic relays.

ij) The capacitors shall be rated for 500V and connected in Delta.

2. Unit Protection:

Each capacitor unit shall be individually protected by a HRC fuse suitably rated for load current and interrupting capacity, so that a faulty capacitor unit shall be disconnected by the fuse without causing the bank to be disconnected. Thus, the fuse shall disconnect only the faulty unit and shall leave the rest of the units undisturbed. An operated fuse shall give visual indication so that it may be detected during periodic inspection. The fuse breaking time shall co-ordinate with the pressure built up within the unit to avoid explosion. Mounting of the individual fuse may be internal or external to the capacitor case.

CHAPTER 5
LAYING OF CABLES HT

1.0 Scope :

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

2.0 Standards :
The HT 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 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 shall be provided at the following locations.

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.

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 250 Mtrs. The materials of the tag shall be of either 12 SWG GI sheet or plastic. In case of plastic, the details have to be engraved and incase 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 markers 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 anti-corrosive 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 0.6 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 125.
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.

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.

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, able lugs, insulation tapes etc. shall be of best quality and as approved by the Engineer-in-Charge.

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.

4.0 Testing

Once cable is laid, following tests shall be conducted in the presence of Engineer-in-Charge, before energising 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 6

STREET & AREA LIGHTING

1.0 Scope:

This Specification is intended to cover the requirements of Street light Poles and Light fixtures.

2.0 Standards:

The Street Light poles and Light fixtures & its fixing accessories shall comply with the latest relevant Indian Standards and National Electrical Code.

3.0 Street Light Poles:

3.1 Stepped and Swaged poles:

The Street Light poles shall be of stepped and swaged type with a total length of 11mtrs and shall have the cross sections as given below.

5600mm length with Cross section of 139.7mm

2700mm length with Cross section of 114.3mm

2700mm length with Cross section of 88.9mm

The planting depth of Street light poles shall be 1800mm below Ground level. The poles shall have base plate and a Single or Double bracket made out of 1500mm length 40mm dia GI pipe as shown in the Drawing. After the erection at site, the poles shall be coated with 2coats of Aluminium paint. The Poles shall also be provided with a Junction box in the coping, housing the suitable rating MCB to control the Light fixtures and a terminal block of minimum 100A capacity to terminate 4core 25sq.mm cable. 2nos conduit sleeves of minimum size 80mm dia Class C GI pipes shall be provided to take the cables upto the Junction box. The Junction box shall be made out of 14SWG MS Sheet of size suitable for providing Terminal connector and MCB and coated with coats of Zinc chromate primer and 2 coats of Aluminium paint. For poles with Double brackets, two numbers MCBs shall be provided in the Junction box. From Junction box to the Street light fixture, 3runs of 2.5sq.mm multi strand copper conductor wires shall be run inside the pole itself.
For the Street light poles provided along the Perimeter of the Campus, Overhead line shall be run on the poles itself by providing suitable cross arms & LT Pin type Insulators. The Junction boxes also shall be provided and the Armoured cable of size 2core 4sq.mm shall be run from OH line upto the Junction box so that every light can be controlled independently. All the Street light poles shall be fed from Three phase UG cable or OH line and every pole shall be connected on One phase so that the load is balanced on all three phases.

The Street light poles shall be erected on the berms of the Roads with an approximate minimum spacing of 40mtrs to obtain an illumination of 10-15Lux with 250W HPSV Pot optics light fixtures.

The poles shall be provided with a pedestal up to a minimum height of 300mm above Ground and shall be sturdily erected.

Some of the existing poles which are available at site shall be removed after disconnecting the OH line & Light fixtures and permanently erected as per the Drawings enclosed. After removing the poles, the same shall be applied with a coat of Aluminium paint.
1.00 WIRING INSTALLATION:

1.1 Scope:

The scope under this section covers wiring installation comprising of

a) Lighting / Fan / Exhaust Fan / Circuit bell points
b) Power circuits and Air Condition Circuits
c) Circuit wiring

1.2 Standards:

The following IS standards are applicable:

b) IS: 1646 - 1961 Code of practice for Fire Safety of buildings (General Electrical Installation)
c) IS: 3646 - Part - I Code of practice principles Part - II and Part - III for good lighting and aspects of design, schedule for values of illumination and glare level and calculation of coefficient of utilization.
d) IS: 4347 Code of practice for hospital lighting
e) N E C - 1985 National Electrical Code
f) IS: 9537-Part-II-1981 Specifications for Mild Steel conduit pipes
g) IS: 3480 Flexible steel conduits for electrical wiring
h) IS: 2667 Fittings for rigid steel conduits for electrical wiring
i) IS: 3837 Accessories for rigid steel conduits for electrical wiring.
k) IS: 694 - 1977 Specifications for PVC insulated cable for working voltage upto and including 1100 volts
1.3 **Recessed Conduit Wiring System with rigid Steel Conduits:**

a) **Type and Size of Conduit:**

All conduit pipes shall be finished with PVC 1.6mm thick surface/recessed. All conduit accessories shall be of pin grip type or clamp type accessories be used. The conduit less than 20mm diameter shall be used. The number of insulated conductors that can be drawn into rigid steel conduits are given in separate enclosure.

b) **Bunching of Cables:**

Unless otherwise specified, insulated conductors of AC supply shall be bunched in separate conduits. For lighting and small power outlet circuits phase segregation in separate conduits is recommended.

c) **Conduit Joints:**

Conduits shall be joined by means of screwed/pin type couplers and screwed accessories only. In long distance straight rooms of conduit, inspection type couplers at reasonable intervals shall be provided. Cut ends of conduit pipes shall have no sharp edges nor any burs left to avoid damage to the insulation of conductors while pulling them through such conduits.

d) Inspection type conduits fittings such as inspection boxes, draw boxes, bends, elbows and tees shall be so installed that they remain accessible for such purposes as withdrawal of existing cables or installation of additional cables.

e) All switch board boxes shall be 1.2 mm thick steel receptacles, zinc passivated with earth stud provision. The boxes have to be original modular range switch manufacturer's factory made ones. No local fabrication of switch boards is permitted.
The switch board shall be covered by suitable module plates manufactured by fire proof, heat retardent moulded parts with glassy surface.

Modular range switches shall be fabricated from fire proof, heat retardent moulded parts with glassy surface.

The switches should have bimetal contacts for reduced power losses and arcing (i.e) silver plated high grade brass and copper parts for super conductivity, pure silver load bearing contacts, specially designed arc suppressing chambers, fully shrouded terminals, positive rocker action etc.

f) The chase in the wall shall be neatly made and be of ample dimensions to permit the conduit to be fixed in manner desired. In the case of building under construction chases shall be provided in the walls, ceiling etc., at the time of their construction and shall be filled up neatly after erection of conduit and brought to original finish of the walls.

g) The conduits shall be fixed in chases by means of staples or saddles not more than 60 cms apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in of conductors. All threaded joints of rigid steel conduit shall be treated with some approved preservative compound to secure protection against rust.

h) Suitable inspection boxes shall be provided to permit periodical inspection and to facilitate removal of wires if necessary. Minimum size of inspection boxes shall be 75 x 75mm. The junction boxes shall have earth stud arrangement.

i) The steel switch board receptacle junction boxes etc., should be efficiently earthed with conduit by a suitable means of earth attachment.

j) When crossing through expansion joints in Buildings, the conduit section across the joint may be through flexible conduits of same size as the rigid conduit.

k) **Wires:** Wires shall comply with following features.

   - Annealed copper conductor, multistrand, PVC insulated, 1100 Volts grade cables.

   - Colour Code:

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Signature of the contractor with seal
l) On each lighting / Ceiling Fan / Exhaust Fan circuit not more than 10 points or 800 - 1000 watts load should be connected. If in one of the switch boards there are only 4 switches to control 4 lights, other switch board another 3 switches to control lights etc. while arriving at the circuit length the shortest distance from circuit breaker in the MCB distribution board to the nearest switch board shall be considered. Inter connections between such switch boards shall be allowed by providing same wires as are used for light points and no measurement in circuit wiring is allowed for such inter connections. A separate conduit pipe has to be provided for running circuit mains and the conduits for light points shall never be used. Strands of wiring shall not be cut for connecting the wires to terminals. For 5 Amps 3 pin on separate location the circuit measurement to first nearest 5 Amps 3 pin socket is considered. No measurement will be separately considered for looping of switch boards in circuit wiring.

m) The mounting height of switch boards (bottom of MS box) shall be 1300mm from finished floor level.

The 5 Amps 16 Amps 3 pin sockets with shutter protection shall be at skirting level.

T.V., Telephone outlets at 650mm height from finished floor level.

Wiring for power circuits (i.e.,) 16 Amps 3 pin and AC points shall be provided in separate conduit pipes.

n) Conduit pipes to be fixed to steel switch board receptacles MCB distribution boards etc., by providing double check nut arrangement. Before drawing of PVC insulated cables inside the conduits, ebonite / nylon bushes to be provided at conduit ends in order to avoid damage to cable during drawing.

o) Any loose holes on MS switch board boxes and distribution boards shall be properly closed, so as to prevent entry of lizards etc

p) Whenever cables of size 4.0 Sq.mm and above are connected inside switch, socket or MCB, metallic plug point etc., proper type and size of lugs to be crimped to cable leads before making the permanent connection in switches etc.

q) Telephone / Intercom cable shall not be laid in the same conduit where electric lighting / power cables are drawn. Separate conduit pipes to be used for drawing of telephone / intercom cables.

r) Loose joints with PVC insulation shall be avoided. Wherever possible joints of cables shall be avoided. If found necessary proper type and size of connectors shall be used.
s) The drop of voltage between the main switch / dist. Terminals and the farthest current consuming apparatus shall not exceed 2% with all devices switched on.

t) No two circuit mains should be drawn in one switch board. If the number of points in earth switch board exceed 8 or 10. Separate switch boards to be provided with individual circuit connection.

1.4 Testing:

The entire installation shall be tested for

a) Insulation Resistance
b) Earth continuity
c) Polarity of single pole switches.

Tests shall be conducted in the presence of Site Engineer Test results shall be tabulated and submitted to the Site Engineer.

2.0 MCB DISTRIBUTION BOARDS, MCBs ELCBs:

2.1 Scope:

The scope under this section covers insulation comprising

a) Low voltage distribution boards

2.2 Standards:

The following IS standards are applicable

a) IS: 8623 - Factory built assemblies
b) IS: 2147-IP42 - Protection against ingress
c) IS: 8828-BS-3871 - Specification for miniature circuit breakers
d) IS: 20 - Protection category
e) IS: 12640-1988 - Residual current operated circuit breakers

2.3 Details:

a) Breaking capacity of MCBs shall be 10 KA
b) The Distribution Boards shall have, vermin, dust, rust proof painting done by powder coating process.
c) The cables entering the D. Board should be properly bunched and dressed before making connection in MCBs.

d) Glands to be provided wherever armoured cables are connected. If found necessary adopter boxes to be provided in either side of DBs.

e) Cable leads shall be provided with proper type and size of lugs crimped to leads before making permanent connection inside MCBs, RCCBs etc.

f) Permanent circuit identification shall be provided on the distribution boards.

g) The mounting height of MCB distribution boards etc. (bottom line) shall be 6’-6” from finished floor level

3.0 CABLES:

3.1 The scope under this section covers

a) L.V Power cables

3.2 Standards:

a) IS: 8130 Specification for conductors for insulated electric cables.

b) IS: 1554-Part-I Specifications for Armoured / unarmoured power cables

c) IS: 3961 Recommended current ratings for cables

d) IS 5831 - 1984 Specifications for PVC insulation and sheeting of electric cables.

3.3 General Requirements for Cables:

a) Cables should be stranded aluminium conductors for 6mm and above.

b) L.V. cables shall be 1100 volts grade

c) Cables shall have colour code insulation
d) PVC inner and outer sheathing shall be applied by extrusion

e) Steel armouring shall be between inner and outer sheathing

f) The PVC insulation and sheathing shall conform to IS:5831-1984

g) The armouring for cables up to 16mm shall be of round steel wire and that above 16mm shall be of galvanized steel strips.

3.4 Laying of Cables:

a) Cables if laid underground shall be at a depth of not less than 60 cms in a trench. Sand filling shall be provided at the bottom of trench before laying the cables. Bricks shall be provided on either side of the laid cable. Sand filling shall be done to cover the cable laid. Bricks shall be provided on the top. Earth filling shall be done.

M.S Cable identification tags to be provided at every 10 metre length of cable laid.

b) Hume pipe, trenches / tunnels with proper precast slabs to withstand wear and tear of vehicular traffic shall be provided at road crossings.

c) Cables if laid in the air shall be laid on cable trays and shall be properly clamped to the trays by plated MS saddles at proper intervals. Cables shall be properly dressed before fixing on the cable trays.

d) Extra cable loops of minimum 500mm shall be provided at each end of cables laid.

e) Cables shall be bend to a radius of 20 times of diameter of the cable with a minimum of 10 diameter at restricted space.

f) Control / Telephone cables shall be laid away from power cables on separate cable trays.

3.4 Testing:

Manufacturers test report shall be submitted for test on cable in accordance with Indian Standards specifications.

Cables shall be tested after installation before commissioning by using 1000 Volts Megger and the following readings shall be obtained and tabulated.

- Continuity on all conductors
- Insulation Resistance
The tests shall be conducted in the presence of Site Engineer and results submitted

4. **CABLE TRAYS:**

4.1 **HD/PVC Pipes**

2.5mm thick heavy duty HD/PVC shall be laid on walls, flooring etc. wherever required. When runs inside walls, flooring they shall be fixed in a chase made in the wall flooring and secured by saddles at not more than 600mm apart. As far as possible horizontally laid conduits shall be bent with a long radius to permit easy withdrawal of cables. The depth of embedded conduits shall be such that 10mm minimum plaster thickness in available.

Only CI junction boxes shall be used in flooring wherever found necessary.

4.2 **Under floor Trunking:**

Material: Pregalvanized sheet  
Thickness 1.6mm  
Size of under floor trunking: 300 x 40mm x 1.25 mtrs long  
The under floor ducting shall consist of

a) Duct body with sleeve coupler  
b) Cover with cover coupler  
c) Partition plates - 2 Nos.  
d) No. of compartments 3 Nos.

4.3 **Under floor trunking junction Box**

Material: Hot rolled plain sheet of tested quality  
Thickness 2 mm  
Size of junction box: 300 x 300mm  
The junction box shall consist

a) Junction box body  
b) Fly over  
c) Cover  
d) Entry blocking with knockout

**Finish:** Hot dip galvanized as per I.S. specifications i.e 0.9 Kg/Sq.m
5.0 **Cable Termination:**

Cable gland body shall be made of brass castings and machined to final size. The general construction of the glands should be as per standard manufacturers drawings. It mainly consists.

a) Compression Nut - Brass - 1 No.
b) Gland body with Hexagonal head - Brass - 1 No.
c) Rubber Ring - Rubber - 1 No.
d) Brass washers - Brass - 3 Nos.
e) Check nuts - Brass - 1 No.

Metal parts of the glad shall be free from blow holes and surface shall be machined smoothly.

All edges shall be deburred and then nickel plated wherever necessary. The cable glands shall be of single compression type.

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**11 – SCHEDULE OF ITEMS**

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<th>Sn</th>
<th>Item name</th>
<th>Makes</th>
</tr>
</thead>
<tbody>
<tr>
<td>**</td>
<td>Power transformer</td>
<td>Voltamp/kirloskar/Crompton greaves/ABB/Schinder</td>
</tr>
<tr>
<td>1</td>
<td>MV Panels (PCCs)</td>
<td>Manufacturers with CPRI Test Certificate.</td>
</tr>
<tr>
<td>2</td>
<td>Rising Mains</td>
<td>Tricolite / L&amp;T / Zeta / C &amp; S/Legrand India</td>
</tr>
<tr>
<td>3</td>
<td>DISTRIBUTION BOARDS</td>
<td>ABB/Siemens/ Legrand / Schneider /L&amp;T/ Havells</td>
</tr>
<tr>
<td>4</td>
<td>METAL CLAD SOCKETS</td>
<td>Legrand /L&amp;T /ABB/SIEMENS/</td>
</tr>
<tr>
<td></td>
<td>External Electrical Works for RBO &amp; Branch Building (Under Construction) at Siddipet, Telangana</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>AIR CIRCUIT BREAKERS Schneider/Siemens/L&amp;T/Schneider/ABB</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>MCCB/MCB ABB/Siemens/Legrand/Schneider/L&amp;T/Havells</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CONTACTORS( POWER/ AUX) SCHNEIDER/L&amp;T/ABB/SIEMENS</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Protection Relays L&amp;T/Areva/ABB/Siemens</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Fuse Disconnector Switch/ SFU/Fuse L&amp;T/Siemens/ABB</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>CABLES Havells/polycab/Finoex/Universal</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>COPPER CONDUCTOR WIRES Havells/polycab/Finoex/Universal</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>CABLE LUGS Dowells/Jainsons/3D</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>CABLE GLANDS HMI/Comet/Cosmos/Dowells(Biller India)/Hax Brass</td>
<td></td>
</tr>
</tbody>
</table>
| 14 | PVC conduits, Casing, Capping & Accessories (ISI MEDIUM) Precision/Sudhakar/Avonplast/
|  | FINOLEX |
| 15 | Steel Conduit BEC/AGK/PRECISION/ATUL |
| 16 | M.S. Cable Tray Stelco/Steelways/Slotco/Pilco/Patny |
| 17 | SWITCH & SOCKET/STEP TYPE REGULATOR Legrand–Mosaic/ MK-wrap around/Anchor-Woods/SchneiderClipsal/ Crabtree(Havell’s)/PANASONIC/PHILIPS |
| 18 | Capacitor Bank Epcos/Neptune/Tibcon |
| 19 | Measuring Instruments (VOLT METER, AMMETER, FREQUENCY METER, PF, LOAD MANAGER, KWH, ETC) Conzerv/CMS/Elmeasure/IME/L&T/Nippen/Schneider/Electric/Enercon/ AE/IMP/BHEL/SIMCO/India Meter/HPL |
| 20 | Selector Switches: Vaishno/Salzer/Kaycee |
| 21 | Indication Lamps LED L&T/Siemens/Technique/ESBEE/Schneider/Vaishno/Binay |
| 22 | Resign cast CTs KALPA/KAPPA/Automatic Electric |
| 23 | CT SHORT CIRCUITING TERMINALS ELMEX or equivalent |
| 24 | Telephone Wires Lapp/Delton/Polycab/Finoex/SKYTONE/HAVELLS |
| 25 | LAN Cables D LINK, Finoex, Ploycab, Legrand/SKYTONE/HAVELLS |
| 26 | Light Fixtures (LED) Philips/Havells/CG |
| 27 | LED COVE/ROPE Lighting Strip Philips/GE/Havells/CG/Wipro/Jaguar |
| 28 | Ceiling Fans, Wall mounted fans & Exhaust Fans Havells/Bajaj/CG/Orient/USHA/Almonard |
## EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING
### (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

<table>
<thead>
<tr>
<th>SN</th>
<th>MATERIAL</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>UPS</td>
<td>Schneider/ Numeric/ APC</td>
</tr>
<tr>
<td>30</td>
<td>BATTERY</td>
<td>EXIDE/ PANASONIC / AMARON QUANTA</td>
</tr>
<tr>
<td>31</td>
<td>Poles</td>
<td>Reputed (As per IS and subject to approval from Bank</td>
</tr>
<tr>
<td>32</td>
<td>Pipes</td>
<td>Jindal Hissar / Tata / BST</td>
</tr>
<tr>
<td>33</td>
<td>Occupancy sensors</td>
<td>Schneider/ Legrand/ Phiips/ Havells</td>
</tr>
<tr>
<td>34</td>
<td>GI pipes / MS pipe</td>
<td>Jindal / GST / Tata / Zenith</td>
</tr>
<tr>
<td>35</td>
<td>HOOTER</td>
<td>VPRO or equivalent</td>
</tr>
<tr>
<td>36</td>
<td>GSS sheet</td>
<td>Jindal / Sail / Tata/ Equivalent</td>
</tr>
<tr>
<td>37</td>
<td>Grilles/ Fire dampers/Diffusers/ VCD</td>
<td>Caryaire/Premier/ Dynacraft / Ravistar/ Equivalent</td>
</tr>
<tr>
<td>38</td>
<td>Expanded Polystyrene</td>
<td>Thermolloyd/ Beardsell/ Astha polymer/ Equivalent</td>
</tr>
<tr>
<td>39</td>
<td>GI sheet</td>
<td>Jindal / Sail / Tata/ Equivalent</td>
</tr>
<tr>
<td>40</td>
<td>Valves</td>
<td>Advance/C&amp;R/ Audco/ Leader/ Equivalent</td>
</tr>
<tr>
<td>41</td>
<td>Strainer</td>
<td>Sant/ DS engineering/ Equivalent</td>
</tr>
<tr>
<td>42</td>
<td>3/2Way mixing valves</td>
<td>3/2Way mixing valves</td>
</tr>
<tr>
<td>43</td>
<td>LAN SWITCHES/ I/O PORTS</td>
<td>Kramer/Extron/Crestron/ CISCO</td>
</tr>
<tr>
<td>44</td>
<td>CAT 6 / LAN cables/ OFC</td>
<td>DLink/DigiLink/Aten</td>
</tr>
<tr>
<td>45</td>
<td>AV Audio Rack Floor Mounted</td>
<td>VALRACK/NETRACK/EMERSON</td>
</tr>
<tr>
<td>46</td>
<td>EPABX SYSTEM - PC BASED OPERATOR CONSOLE</td>
<td>SIEMENS / MATRIX / PANASONIC / NEC UNIVERGE</td>
</tr>
<tr>
<td>47</td>
<td>ANALOG PHONE</td>
<td>SIEMENS/ PANASONIC/ NORTEL / BEETEL</td>
</tr>
<tr>
<td>48</td>
<td>BATTERIES</td>
<td>EXIDE/ PANASONIC / AMARON QUANTA</td>
</tr>
<tr>
<td>49</td>
<td>MDF/IDF, TAG BLOCKs</td>
<td>KRONE or equivalent</td>
</tr>
<tr>
<td>50</td>
<td>push buttons</td>
<td>ESSBEE/BCH/VAISHNO/C&amp;S</td>
</tr>
<tr>
<td>51</td>
<td>CURRENT TRANSFORMERS</td>
<td>KAPPA/ALTRAN</td>
</tr>
</tbody>
</table>

Note: All Items Materials Used on site shall be ISI Mark only

Important: Please Tick (/) the make of materials considered in the Tender. Any other material not specified above should be used after approval of the same by the consultant/SBIIMS.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cable XLPE</td>
</tr>
<tr>
<td>2.</td>
<td>Underground L.T.Cable</td>
</tr>
<tr>
<td>3.</td>
<td>Copper Cables</td>
</tr>
<tr>
<td>4.</td>
<td>Conduits</td>
</tr>
<tr>
<td>5.</td>
<td>Modular range switches 15/5 Amps sockets, T.V. sockets, Telephone sockets</td>
</tr>
<tr>
<td>6.</td>
<td>Ceiling roses</td>
</tr>
<tr>
<td>9.</td>
<td>ELCB</td>
</tr>
<tr>
<td>10.</td>
<td>Switch fuse units</td>
</tr>
<tr>
<td>11.</td>
<td>Telephone Cable</td>
</tr>
<tr>
<td>12.</td>
<td>Cable glands</td>
</tr>
<tr>
<td>13.</td>
<td>Automatic power factor correction panel</td>
</tr>
<tr>
<td>14.</td>
<td>L.T. current Trans- former</td>
</tr>
<tr>
<td>15.</td>
<td>Sector switch</td>
</tr>
<tr>
<td>16.</td>
<td>Relays</td>
</tr>
<tr>
<td>17.</td>
<td>Auxiliary relays</td>
</tr>
<tr>
<td>18.</td>
<td>Ammeter / voltmeter PF meters KWHR meter</td>
</tr>
<tr>
<td>19.</td>
<td>Indicating Lamps</td>
</tr>
<tr>
<td>20.</td>
<td>Change over switch ‘on load’</td>
</tr>
<tr>
<td>21.</td>
<td>Lugs</td>
</tr>
</tbody>
</table>

Signature of the contractor with seal 88
<table>
<thead>
<tr>
<th></th>
<th>Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

**PRICE BID:**

Signature of the contractor with seal
EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING
(UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

"1) Arrangements of temporary power, Lighting, UPS wiring etc without effecting the operation of the branch working hours. Coordination with the supply authorities and other Government bodies for enhancement of power load is within the scope of the contractor.
2) Ferruling for all cables/wires including phase, neutral, earth etc are required.
3) Cable tags for AL/CU armoured cables are required.
4) Crimp the suitable lugs for all multi strand cables
5) Labeling for AL/CU armoured cables/DB/Switch Board/ MCB are required (radium illuminated labels).
6) All wires/ cables to be used at site should be FRLS
7) All PVC pipes to be used at site should be FRLS
8) Control supply, neutral and earth has to be run separately from individual DB to load on respective DB for smooth functioning of RCCB. In case of tripping of RCCB during liability period, Contractor has to rectify the fault with his cost.
9) Terminations other than double compression glands will not be counted for bill.
10) Contractor has to maintain minimum 10 feet distance from earth pit to earth pit.
11) We advise not to use PVC flexible pipes for branches/offices. Use metal flexible hose for light point droppings, other than light points, for usage of flexible metal hose, contractor has to take prior approval from engineer incharge.
12) Contractor has to visit the site before quoting. Only ISI marked material has to be used. During inspection Contractor has to furnish catalogues, Warranty certificates of all the items used.
13) The No of primary light/fan wiring (Qty) mentioned in the BOQ should not be increased, if so it will be treated as secondary points only
15) If the independent sockets, insatllled in the Switch Board, then it will be treated as on board socket only."

<table>
<thead>
<tr>
<th>Sno</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Supply and laying concealed conduit pipe in slab/wall with 2mm thick 25mm dia medium gauge pvc approved ISI brand of any approved make with necessary specials such as normal bends, joints, junction boxes and deep junction boxing complete with fish wire continuity. as directed by Bank / Architect.</td>
<td>Rmt</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Barricade around Transformer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### External Electrical Works for RBO & Branch Building

#### (Under Construction) AT Siddipet, Telangana

<table>
<thead>
<tr>
<th>a</th>
<th>Providing and fixing Chain Link fencing with MS angle 50 x 50 x 6 mm supports and chain link fencing at an interval of 1500 mm with necessary foundation and CC works, refilling soil with necessary excavation of foundations, including providing basement with CRS masonry of height 600mm of 380/450mm width, painting for MS support with two coats of enamel paint with one coat of primary and full wall two coats of external paint with primary and also laying of fine river sand of thickness 50 mm and spreading of 40 mm metal of thickness 100 mm including supply and spreading of sand and 40 mm metal. (8m (L) x 5m (w) x 1.8m (H)) with provision of one no MS gate with locking arrangement as shown in drawing.</th>
<th>SQ.Mtr</th>
<th>47</th>
</tr>
</thead>
</table>

#### Sub-Station Works

<p>| a | Supply and installation of box pole of 9.1 mtr height made of 2 numbers of 175x180 mm ISMB welded throughout the length painting with two coats of red oxide and two coats of aluminium paint | each | 1 |
| b | 1.07 M Channel for Cross Arm | each | 1 |
| c | Top Clamp with cleat | each | 1 |
| d | Back Clamp | |
| e | 11 KV Pin Insulator with Pin | each | 3 |
| f | Disc/Strain Insulator with metal parts | each | 3 |
| g | supply, Erection and commissioning of 1SET of 11kv 200A AB Switch on already existing channel. | Each | 1 |</p>
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>Supply, erection and commissioning of 1 set of 11KV HG fuse sets on already existing channel.</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td>j</td>
<td>Supply, erection and commissioning of 1 set (3 nos) of 9KV, 10kA metal oxide lightning arrester with necessary materials on existing channels</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td>k</td>
<td>Supply, erection and commissioning of 7/3.15AAAC/rabbit conductor for jumpering with strining, binding and suitable size of clamps for OH line, AB switch, HG fuse and LAS.</td>
<td>Meter</td>
<td>600</td>
</tr>
<tr>
<td>4</td>
<td>Supply, installation and commissioning of Trivector LT/HT Meter box by providing 16 SWG CRCA sheet metal box of suitable size enclosure IP - 42 protection with all necessary accessories as per the requirement of site conditions and as directed by TSSPDCL Engineer/CEIG including cost and conveyance of all materials labour and taxes etc complete excluding civil works. (This item shall be executed if TSSPDCL does not supply).</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>11KV H.T Switch Gear Panel (OUTDOOR TYPE)</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 No. of LBS Incomer and Outgoing LBS feeder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA**

<table>
<thead>
<tr>
<th>CONSTRUCTION - The Switch Gear Panel shall be compartmentalised Design with cubicles fabricated out of High Quality Sheet Steel and the panels shall be dust and vermin proof and with degree of protection IP 55 as per IS 2147. The panels shall be designed having the Following Segregations separately.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) LBS compartment</td>
</tr>
<tr>
<td>b) Busbar compartment</td>
</tr>
<tr>
<td>c) Cable and CT compartment</td>
</tr>
<tr>
<td>d) Instrument and Relay Compartment</td>
</tr>
</tbody>
</table>

The clearances between phase to phase and phase to earth shall be provided in accordance with the relevant standards. The bus bars shall be supported by bus support insulators placed at regular intervals.

The panels shall be powder coated with epoxy base paint to give an aesthetically pleasing appearance. The paint shade shall be as per the requirement.

**SAFETY FEATURES:**

| a) Door safety Interlock |
| b) Earthing through a draw-out earthing truck with solid links on the bus bar and feeder side to be provided. |
| c) Integral earthing switch, slow closing type or with making capacity to be provided. |

**OUTGOING LBS FEEDERS. (1 No) Each Consisting of**
### 11KV, 630A, 13.1KA, 30A fuse unit
Horizontal Draw out type LOAD BREAK SWITCH UNIT Manually Operated With 4No+4Nc, Mechanical ON and OFF indicator and Push button, Mechanical operation counters with all other accessories as per the requirement.

### INDICATION LAMPS:
1) ON, OFF and Trip Indication Lamps for RYB. - (1 set)

### CONTROL SWITCHES/PUSH BUTTON
Bus Bar with 800 Amps Aluminium (Electrical Grade). - (1 set)

### 6 CABLE & Terminations

**a** HT CABLE

Supply, Laying, Testing and commissioning of 11 kv earthed HT cable of size 3 c x 50 sqmm XLPE insulated alluminium round armoured conductor cable including excavation in all type soil & rock and back filling upto a depth of 900 mm including supply and Laying of fine river sand at bottom upto a depth of 100 mm and on top 100 mm thickness and including supply of shabad stones of size 1" x 1" as per IS 7098 - Part 2 - 1983

Rmt 50

**b** HT Termination Kit of size 3 c x 50 Sqmm outdoor each 4

**c** HT Termination Kit of size 3 c x 50 Sqmm Indoor each 2
7. Supply, loading, unloading at site as well as installation, testing and commissioning of 11 KV / 415 V, step down, DYN11, 250 KVA, 3 phase 50 Hz, OUTDOOR ONAN type transformer with OFF LOAD TAP CHANGER, copper double wound transformer, connected delta on HT side and star on LT side with additional neutral brought out of load side, voltage rating 11000 /433 volts with HV tapping + 5% to - 5% in steps of 2.5% temperature rise not exceeding 50º C in top oil and 55º C in winding at ambient temp. 50º C at continuous run of full load and complete with the standard mountings approved equivalent make including cost and conveyance of material, labour and taxes as applicable.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Thermometer pocket</td>
<td>1</td>
</tr>
<tr>
<td>2) Lifting arrangements</td>
<td>1</td>
</tr>
<tr>
<td>3) Two earthing terminals</td>
<td>1</td>
</tr>
<tr>
<td>4) Diagram and rating plate</td>
<td>1</td>
</tr>
<tr>
<td>5) base frame</td>
<td>1</td>
</tr>
<tr>
<td>6) Air vent</td>
<td>1</td>
</tr>
<tr>
<td>7) Conservator oil filling hole with cap</td>
<td>1</td>
</tr>
<tr>
<td>8) Oil level indicator with min marking</td>
<td>1</td>
</tr>
<tr>
<td>9) Dehydrating silica gel breather</td>
<td>1</td>
</tr>
<tr>
<td>10) Conservator with drain plugs</td>
<td>1</td>
</tr>
<tr>
<td>11) OIL release valve</td>
<td>1</td>
</tr>
<tr>
<td>12) Explosion vent with diaphragm</td>
<td>1</td>
</tr>
<tr>
<td>13) Uni-directional flat rollers</td>
<td>1</td>
</tr>
<tr>
<td>14) Deta cable radiators</td>
<td>1</td>
</tr>
</tbody>
</table>

Signature of the contractor with seal 95
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Construction and doing civil works like plinth / pedestal and as required by TSSPDCL for Transformer, cable chambers LT Distribution Kiosk etc., CUM 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Supply, loading, unloading at site as well as installation, testing and commissioning of 630A 4P 50KA MCCB LT kiosk outdoor panel fabricated out of 16 SWG CRCA sheet including indication lamps, suitable bus bar extension to sit 2 no's of 300sqmm AR AL cable, cable entry box, cutting, bending, drilling, welding and riveting complete and cleaning with 7-tank process and painting (shade RAL 7032 Siemens Grey) with powder coating, on pedestal mounting including providing all accessories complete as per standard IS Specifications and installation directed by EIC and conveyance of all materials labour and taxes etc complete with approved make. Each 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design, Manufacturing, Supply, Receiving, Unloading, Shifting, Installation, Testing & commissioning of Main LT Panel. The panel will be fully compartmentalized, totally enclosed type with, free standing, floor mounted, indoor duty, dust & vermin proof, front operated, electrical panel fabricated from 2 mm thick M.S. Sheet as per specifications & drawing laid in this document and will be complete with the main and auxiliary bus bars, ammeter, ammeter selector switch, voltmeter, voltmeter selector switch, indication lamps, CT's, protection MCB, interconnection wiring, earth bus and will be powder coated finish with 70 micron thickness. All the busbar joint shall be protected by clip on type sleeve. The Panel shall use all breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system as per the drawing and specification.

Each Incoming MCCB shall have thermal release and variable current setting from front, overcurrent & short circuit protection and Outgoing MCCB shall have thermal magnetic release front extended lockable handle, pad lockable in off position, indication light for ON, shrouding on incomer side, termination shall be suitable for aluminium bus bars / cables.

<table>
<thead>
<tr>
<th>a</th>
<th>INCOMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 No. 630 Amp 4P 50ka Moulded Case Circuit Breaker.</td>
<td></td>
</tr>
<tr>
<td>1 No. 0 to 500 Volt digital voltmeter with selector switch.</td>
<td></td>
</tr>
</tbody>
</table>
1 No.0 to 630 Amp digital Ammeter with selector switch and CT’s.

1 Set of phase indicating lamps with MCB

1 Set of ON/OFF indicating lamps with MCB

1 No. Digital KWH Meter.

b BUSBAR

600 Amp TPN aluminium busbar with coloured heat shrinkable sleeve.

c OUTGOING

i 1 Nos. 250 Amp 3P 35 KA Moulded Case Circuit Breaker.

ii 4 Nos. 100 Amp 3P 25 KA Moulded Case Circuit Breaker.

iii 6 Nos. 63 Amp 3P 25 KA Moulded Case Circuit Breaker.

iv 4 Nos. 63 Amp 4P 10 KA Miniature Circuit Breaker.

v 1 Nos. 100A TP MCB.

Panel described as above

| 11 Supply 1100 V grade, PVC / XLPE insulated Aluminium / Copper conductor steel wire armoured power L.T cables. The cables shall be clamped at regular intervals using clamps and fasteners for proper laying. (Refer SLD & also All cable lengths to be confirmed) The cable quantities given are approximate and to cover various sizes. The contractor shall measure the cables required and procurement order shall be placed accordingly. The quantities shall be confirmed before start of work. |

| No.0 to 630 Amp digital Ammeter with selector switch and CT's. |  |
| 1 Set of phase indicating lamps with MCB |  |
| 1 Set of ON/OFF indicating lamps with MCB |  |
| 1 No. Digital KWH Meter. |  |
| b BUSBAR |  |
| 600 Amp TPN aluminium busbar with coloured heat shrinkable sleeve. |  |
| c OUTGOING |  |
| i 1 Nos. 250 Amp 3P 35 KA Moulded Case Circuit Breaker. |  |
| ii 4 Nos. 100 Amp 3P 25 KA Moulded Case Circuit Breaker. |  |
| iii 6 Nos. 63 Amp 3P 25 KA Moulded Case Circuit Breaker. |  |
| iv 4 Nos. 63 Amp 4P 10 KA Miniature Circuit Breaker. |  |
| v 1 Nos. 100A TP MCB. |  |
| Panel described as above | Set 1 |
The below mentioned cables are XLPE insulated Aluminium armoured cable

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>3.5C x 300 sq.mm</td>
<td>Meter</td>
</tr>
<tr>
<td>b)</td>
<td>3.5C x 50 sq.mm</td>
<td>Meter</td>
</tr>
<tr>
<td>c)</td>
<td>3.5C x 70 sq.mm</td>
<td>Meter</td>
</tr>
</tbody>
</table>

**L.T.CONTROL CABLES**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a)</td>
<td>3. c x 2.5 Sqmm YWY</td>
<td>MTR</td>
</tr>
<tr>
<td>b)</td>
<td>7 c x 2.5 Sqmm YWY</td>
<td>MTR</td>
</tr>
</tbody>
</table>

Termination of the following cables with single compression cable glands and also with suitable size Copper lugs including supply and fixing of Lugs.

<p>| | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>3. c x 2.5 Sqmm YWY</td>
<td>NOS</td>
</tr>
<tr>
<td>ii)</td>
<td>7 c x 2.5 Sqmm YWY</td>
<td>NOS</td>
</tr>
</tbody>
</table>

Supplying and making MV cable end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / xlpe aluminium conductor cable of 1.1 KV grade as required.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a)</td>
<td>3.5C x 300 sq.mm</td>
<td>Each</td>
</tr>
<tr>
<td>b)</td>
<td>3.5C x 50 sq.mm</td>
<td>Each</td>
</tr>
<tr>
<td>c)</td>
<td>3.5C x 70 sq.mm</td>
<td>Each</td>
</tr>
</tbody>
</table>
### 14. Laying of one number additional PVC insulated and PVC sheathed/XLPE power L.V cable of 1.1 KV grade of size exceeding 95 sq.mm but not exceeding 400 sq.mm direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.

| Meter | 100 |

### 15. Earthing with 75mm dia 2.5mtr long CI pipe including accessories, and providing masonry enclosure with cover plate having locking arrangement etc. with charcoal/coke and salt as required as per IS 3049

| Set | 10 |

### 16. Supplying and laying of following size G.I./Cu strip at 0.50 meter below ground as strip earth electrode, including soldering etc. as required.

- **a)** 50x5mm
- **b)** 25x5mm
- **c)** 50x5mm Cu

| Meter | 25 | 100 | 15 |

### 17. Providing and fixing 25 mm X 5 mm G.I./Cu. strip on surface or in recess for connections etc. as required.

- **a)** 50x5mm
- **b)** 25x5mm
- **c)** 50x5mm Cu

| Meter | 25 | 75 | 15 |

### 18. SAFETY ITEMS
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Supplying of non-skid rubber mat 20mm thick and 900mm width as required including cutting to required lengths of approved make with test certificates for 440V L.T switchgears.</td>
<td>Meter</td>
<td>2</td>
</tr>
<tr>
<td>b</td>
<td>Supplying and fixing MV danger chart written in English and Hindi duly framed in glass as required.</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td>c</td>
<td>Providing and fixing MV danger plate of 200 mmx150 mm made of mild steel at least 2mm thick and vitreous enameled white on both sides and with inspection in single red colour on front side as required.</td>
<td>Each</td>
<td>2</td>
</tr>
<tr>
<td>d</td>
<td>Supplying of first aid box as approved complete with standard kit as prescribed by Indian Red Cross.</td>
<td>Each</td>
<td>1</td>
</tr>
<tr>
<td>e</td>
<td>11KV gloves</td>
<td>Each</td>
<td>2</td>
</tr>
<tr>
<td>f</td>
<td>Sand Bucket with stand 2 Nos of buckets on top</td>
<td>Each</td>
<td>2</td>
</tr>
<tr>
<td>a</td>
<td>Street lighting Pole of height 7 mtr MS sweaged pole (5mtrs from FGL) dully painted with two coats of red oxide and two coats of spray paint of aluminum paint.. Each pole consists of control box with MCB, 1 mtr length arm to fix lamp &amp; 8SWG GI coil earthing</td>
<td>each</td>
<td>20</td>
</tr>
</tbody>
</table>

- **Street lighting**: 19
## EXTERNAL ELECTRICAL WORKS FOR RBO & BRANCH BUILDING (UNDER CONSTRUCTION) AT SIDDIPET, TELANGANA

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>Supply installation and testing of 32 watts LED light fixers cat no. BRP409</td>
<td>each</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>LED CW 033, NR PC S1PSU GR of philips make or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Supply installation of street light control panel with 24 hours timer and relay</td>
<td>each</td>
<td>1</td>
</tr>
<tr>
<td>d</td>
<td>Supply and laying of 4 core x 16 sq mm aluminum armored cable</td>
<td>RM</td>
<td>560</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Preparation of 6sets of drawings &amp; documentation and applying to TSSPDCL/CEIG</td>
<td>LS</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>on be-half off bank and obtaining the required clearances from the respective authorities and releasing of power from TSSPDCL as required by bank. <strong>However all regulatory payments to the respective authorities shall be paid by bank separately.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grand Total**