SBI INFRA MANAGEMENT SOLUTIONS PVT. LTD.

(A Wholly Owned Subsidiary of SBI)
CIRCLE OFFICE LUCKNOW
Local Head Office Lucknow M.G. Marg Lucknow

Part–I
(Technical Bid)

Electrical Work at SBI BANI Branch, A.O. ALLAHABAD (PRAYAGRAJ) under Administrative Control of Administrative Office, Allahabad

THROUGH E-TENDER
Tender ID: **LUC201906068**

Vendor/Contractor should possess valid "A" Electrical License.

TENDER SUBMITTED BY**:**

NAME : _____

ADDRESS : _____

_____

GSTIN NO: _____

DATE: _____

ISSUED BY:

VICE PRESIDENT,
CIRCLE OFFICE LUCKNOW,
SBIIMS
C/o STATE BANK OF INDIA,
LOCAL HEAD OFFICE
LUCKNOW

SBI Infra Management Solutions Pvt. Ltd., Circle Office Lucknow on behalf of State Bank of India Invites E-Tenders for Electrical works, at SBI BANI Branch, A.O. ALLAHABAD (PRAYAGRAJ). Only Approved Bank empanelled Contractors for Electrical work can participate in the tender.

1.	**Name of Work :**	Electrical Works at **SBI BANI Branch, A.O. ALLAHABAD (PRAYAGRAJ), under Administrative Control of Administrative Office Allahabad. TENDER ID: LUC201906068**
2.	**Date and Time for downloading tender documents**	Tender document is available for download from Date. 14.06.2019 **to Date. 24.06.2019** at Bank's website www.sbi.co.in under "procurement News" section and also available on https://etender.sbi/.
3.	**Cost of Tender Documents**	**Rs.1000/-** (Non-Refundable) amount to paid through SBI collect payment portal available at SBI site **https://www.onlinesbi.com, The print of the receipt should be submitted with the technical bid.** Process flow for tender fee payment. ➢ **Open website www.onlinesbi.com> select "SB Collect">Proceed will lead to next page > select "All India" >Select "Commercial services">Select "SBI Infra Management Solutions**">select Tender Application fees" > Enter "Tender ID"> Next page will be ready for making payments.
4.	**Earnest Money Deposit (EMD)**	NIL
5.	**Initial Security Deposit (ISD)**	2% of awarded value of work
6.	**Retention Money**	5 % (Including ISD)
7.	**Last date, time and Mode of submission of Technical Bid document along with Authorization Letter, Tender fees and EMD.**	The signed and stamped copy of **Technical bid along with following documents** in sealed envelope should reach to us for our reference on or before Dt. **24.06.2019** up to 03:00 PM. 1) Signed and stamped copies of complete Tender Document (technical bid). 2) EMD 3) Tender Fees (copy of SBI collect receipt) 4) Authorization letter mentioning the name of the representative having Digital Certificate Signature (DSC) valid for 3 months for participation in e-tender. TECHNICAL Bid should be submitted online on aforesaid dated with above supporting documents on https://etender.sbi/.
8.	**Address at which the**	The sealed envelope comprising all documents as stated

	Hard copy of Technical bid are to be submitted	above in Sr. No. 7 to be submitted to the following address and it should reach us on or before 24.06.2019 **up to 03:00 PM.** The Vice President(SBIIMS), SBI Infra Management Solutions Pvt. Ltd. Circle Office Lucknow, Sixth Floor, Local Head Office M. G. Marg, Hazratganj Lucknow. Tenders received without any one or more documentmentioned above shall be rejected and such bidders shall not have allowed to participate in online bidding note.
9.	**Last date, time and Mode of submission of Price Bid (Part-2)**	**Upto 3:00 PM on Dt.** 24.06.**2019, Online submission** Website Details: https://etender.sbi/ **The Price Bid to be submitted online through E-tendering Process. The bidder should have valid digital signature for this e-tender.** E-Tender Agency: M/s e-Procurement Technologies Ltd. Ahmedabad. **CONTACT NO.** 079 – 681368 40/ 31 / 35 / 63 / 29 / 57 / 53 / 43 / 52 / 20 / 59 / 22 Mobile: +91 9904407997 / 9081000427.
10.	**Date, Time and Place of opening of Online Price Bid.**	**a) Price Bid through Online E-tendering Process through** E-Tender Agency **at our Office: At 3:30 PM on Dt.** 24.06.**2019.** SBI Infra Management Solutions Pvt. Ltd**.** Circle Office Lucknow, Sixth Floor, Local Head Office M. G. Marg, Hazratganj Lucknow. The online price bid of those bidder shall be opened, who are qualified in Technical bid (Part-1).
11.	**Completion period**	4 weeks
12.	**Validity for Offer**	3 (Three) Months from The Date of Opening of Price-Bid
13.	**Commencement of Work**	Within a week after receiving of Work Order
14.	**Defects Liability Period**	12 Months (Twelve months)
15.	**Payments terms**	No advance payment shall be made.
16.	**Period of Honoring Payment Certificate Insurance**	15 Days from the date of receipt of bill.
17.	**Insurance**	As per Insurance clause of the Tender Document.
18.	**Working Schedule for Commercial Buildings**	In Co-ordination with all the other agencies without disturbing the functioning of the Bank.
19.	**Liquidated Damages for Delay**	The liquidated damages shall be 0.50% per week subject to a maximum of 5% of contract value.

- In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

- The bidder, who is the authorized representative and participating on behalf of company/ Dealer/vendor, should have a valid digital signature certificate (DSC) for this e-tender. The validity of the DSC should be at least 3 months.

- The signed copies of technical Bid documents, tender fees, authorization Letter, Technical Specification sheet and EMD should be submitted in sealed envelope, failing which tender summarily rejected.

- The price bid (Part-2) to be submitted only online.

- Payments towards the above work shall be made by SBI.

- SBIIMS reserves the right to increase or decrease the quantum of services, manpower to be provided and also reserves the right to reject, cancel or revise or accept any or all the tenders or part of tenders without giving any reasons thereto.

- SBIIMS reserves the right to increase or decrease the quantum of services, manpower to be provided and also reserves the right to reject, cancel or revise or accept any or all the tenders or part of tenders without giving any reasons thereto.

- SBIIMS reserves its rights to accept/reject any/all tender without assigning any reasons whatsoever and to increase or decrease the quantities of any item and contractor has to execute the same at the rate quoted and no correspondence shall be entertained in this regard.

- Conditional tenders are liable for rejection.

  - **BIDDERS ARE ADVISED TO PLAN SITE VISIT WELL BEFORE DATE OF PRICE BIDDING BEFORE QUOTING THEIR RATES.**

VICE PRESIDENT (CIVIL)
SBIIMS, LUCKNOW

SECTION – 1

INSTRUCTIONS TO THE TENDERERS

1.0 Scope of work

Sealed Tenders are invited M/s. SBIIMS**,** on behalf of **SBI BANI Branch, A.O. ALLAHABAD (PRAYAGRAJ) under administrative control of Administrative Office Allahabad.**

1.1 Site and its location

The proposed work is to be carried out **at SBI BANI Branch, A.O. ALLAHABAD (PRAYAGRAJ) under administrative control of Administrative Office Allahabad.**

2.0 Tender documents:

2.1 The work has to be carried out strictly according to the conditions stipulated in the tender consisting of the following documents and the most workmen like manner.

Instructions to tenderers, General conditions of Contract, Special conditions of Contract Priced bid

2.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below; a) Price Bid

b) Technical specifications

c) Special conditions of contract

d) General conditions of contract

e) Instructions to Tenderers 2.3 Complete set of tender documents including relative drawings can be downloaded from the website www.sbi.co.in

2.4 The tender documents are not transferable.

3.0 Site Visit

3.1 The tenderer must obtain himself on his own responsibility and his own expenses all information and data that may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The tenderer is requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law and order situation, climatic conditions local authorities requirement, traffic regulations etc;

The tenderer will be fully responsible for considering the financial effect of any or all the factors while submitting his tender.

4.0 Earnest Money: Nil

5.0 Initial/ Security Deposit:

The successful tenderer will have to submit a sum equivalent to 2% of accepted tender value by means of DD drawn in favour of **SBI Infra Management Solutions Pvt. Ltd. and payable at Lucknow** within a period of 15 days of acceptance of tender.

6.0 Security Deposit

6.1 Total security deposit shall be 5% of contract value. Out of this 2% of contract value is in the form of Initial Security Deposit (ISD). Balance 3% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bill i.e., deduction from each running bill account will be @10% till Total Security Deposit (TSD) including ISD reaches to 5% of contract value. The 50% of the Total Security Deposit shall be paid to the contract on the basis of architect's certifying the virtual completion. The balance 50% would be paid to the contractors after the defects liability period as specified in the contract.

7.0 Signing of contract Documents

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 15 days from the receipt of intimation of acceptance of the tender by the Bank. However, the written acceptance of the tenders by the Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

8.0 Completion Period

Time is essence of the contract. The work should be completed in all respect accordance with the terms of contract within a period of 4 weeks days from the date of award of work.

9.0 Validity of tender

Tenders shall remain valid and open for acceptance for a period of 90 days from the date of opening price bid. If the tenderer withdraws his/her offer during the value period or makes modifications in his/her original offer which are not acceptable to Bank without prejudice to any other right or remedy the Bank shall be at liberty forfeit the EMD.

10.0 **Liquidated Damages**

The liquidated damages shall be 0.50% per week subject to a maximum of 5% of contract value.

11.0 **Rate and prices:**

11.1 **In case of item rate tender**

11.1.1 The tenderers shall quote their rates for individual items both in words and figure. In case of discrepancy between the rate quoted in words and figures, the unit rate quantity in words will prevail. If no rate is quoted for a particular item the contractor shall not be paid for that item when it is executed.

The amount of each item shall be calculated and the requisite total is given. In case of discrepancy between the unit rate and the total amount calculated from multiplication of unit rate and the quantity the unit rate quoted will govern and the amount will be corrected.

11.1.2 The tenderers need not quote their rates for which no quantities have been given. In case the tenderers quote their rates for such items those rates will be ignored and will not be considered during execution.

11.1.3 The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly.

The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed he should immediately bring to the knowledge of the Architect/ SBIIMS Pvt. Ltd.

11.1.4 Each page of the BOQ shall be signed by the authorized person and cutting or overwriting shall be duly attested by him.

11.1.5 Each page shall be totalled and the grand total shall be given.

11.1.6 The rate quoted shall be firm and shall include all costs, allowances, taxes, levies. except GST which shall be paid separately as per prevailing rates.

11.1.7 The SBIIMS Pvt. Ltd. reserve their rights to accept any tenders, either in whole or in part or may entrust the work in phases or may drop the part scope of work at any stage of the project within its sole discretion without assigning any reason(s) for doing so and no claim / correspondence shall be entertained in this regard.

11.1.8 In case it is decided by the SBIIMS Pvt. Ltd. to drop one or more buildings from the scope of work at any stage of the project, the contractor shall not be entitled to raise any claim/compensation for such deleted scope of work. Also, the SBIIMS Pvt. Ltd. may consider issuing work order for various buildings in phases but within a reasonable time interval and the contractor shall be bound to execute the same within the stipulated time period and as per rates quoted by them in this tender without any claim for price escalation.

SIGNATURE OF THE CONTRACTOR
WITH SEAL

GENERAL CONDITIONS OF CONTRACT

1.0 Definitions

"Contract"means the documents forming the tender and the acceptance thereof and the formal agreement executed between SBIIMS and the contractor, together with the documents referred therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Architects/SBIIMSI and all these, documents taken together shall be deemed to form one contract and shall be, complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 **'SBI'** shall mean State Bank of India (client) a body Corporate created under SBI Act 1955, having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai 400021 and **SBI Infra Management Solutions Pvt. Ltd**. (SBIIMS), its wholly owned subsidiary having Head Office at Raheja Chambers, Free press Journal Marg, Nariman Point Mumbai 21 and includes the client's representatives, successors and assigns.

1.1.2 'Architects/Consultants' shall mean **M/s. SBIIMS**

1.1.3 **'Site Engineer'** shall mean an Engineer appointed by the Bank as their representative to give instructions to the contractors.

1.1.4 **'The Contractor'** shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal personal representative of such individual or the composing the firm or company and the permitted assignees of such individual or firms of company.

1.1.5 The expression '**works**' or 'work' shall mean the permanent or temporary work described in the 'Scope of Work" and/or to be executed in accordance with the contract and includes materials, apparatus, equipment, temporary supports, fittings and things of all kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.6 **'Engineer'** shall mean the representative of the SBIIMS/Architect/consultant.

1.1.7 **'Drawings'** shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer from time to time 'Contract value shall mean the value of the entire work as stipulated in the letter of acceptance of tender subject to such additions thereto or deductions there from as may be made under the provision herein after contained.

1.1.8 **'Specifications'** shall mean the specifications referred to in the tender and any modifications thereof as may time to time be furnished or approved by the architect/ consultant "Month" means calendar month.

1.1.9 **"Week"** means seven consecutive days.

1.1.10 **"Day"** means a calendar day beginning and ending at 00 Hrs and 24 hrs respectively.

CLAUSES:

1.0 Total Security Deposit
Total Security deposit comprise of:
• Earnest Money Deposit
• Initial Security Deposit
• Retention Money

a) Earnest Money Deposit: Nil

b) Initial Security Deposit (ISD):

The amount of ISD shall be 2% of accepted value of tender, to be submitted in the form of D/D drawn on any scheduled Bank and shall be deposited within 15 days from the date of letter of acceptance of tender.

SECURITY DEPOSIT:

Total security deposit shall be 5% of the final value of the work. Out of this 2% of tender value (i.e. tender amount) is in the form of initial security deposit(ISD) which includes the EMD. Balance security deposit (i.e. 5% of final value of work less 2% of tender value already deposited as ISD) towards the work shall be deducted from the final bill of the work as Retention money. 5% of the retention money shall be paid after the defects liability period of 1 Year as specified in the contract. 50% of the total security i.e.2.5% of the final value of work shall be paid to the contractors on the basis of Project engineer-in-charge certifying the virtual completion and its approval by SBIIMS. The balance 50% i.e. 2.5% of final value of work would be returned to the contractors after the defects liability period as specified in the contract. The retention money will be interest free.

c) Retention Money
Total security deposit shall be 5% of the final value of the work. Out of this 2% of tender value (i.e. tender amount) is in the form of initial security deposit(ISD) which includes the EMD. Balance security deposit (i.e. 5% of final value of work less 2% of tender value already deposited as ISD) towards the work shall be deducted from the running account bill of the work as Retention money at the rate of 10% of the respective running account bill i.e. deduction from each running bill account will be 10% till total 5% of final value of work as per final bill is reached. 50% of the total security i.e.2.5% of the final value of work shall be paid to the contractors on the basis of Project Engineer-in-Charge certifying the virtual completion and its approval by SBIIMS. The balance 50% i.e. 2.5% of final value of work would be paid to the contractors after the defects liability period as specified in the contract and after satisfactory completion of CVC Audit. In case CVC Audit is not conducted, 1.25%

of final value of work will be retained for a maximum period of further one year (w.e.f. completion of defect liability period).

2.0 Language Errors, Omissions and Discrepancies

In case of errors, omissions and/or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc, the following order shall apply.

i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.
ii) Between the written or shown description or dimensions in the drawings and the corresponding one in the specification the former shall be taken as correct.
iii) Between written description of the item in the specifications and descriptions in bills of quantities of the same item, the latter shall be adopted.
iv) In case of difference between rates written in figures and words, the rate in words shall prevail.
v) Between the duplicate/subsequent copies of the tender, the original tender shall be taken as correct.

3.0 Scope of Work

The contractor shall carry out, complete and maintain the said work in every respect strictly in accordance with this contract and with the directions of and to the satisfaction of the SBIIMS /architect/consultant. The SBIIMS/ architect/consultant at the directions of the Bank from time to time issue further drawings and/or written instructions, details directions and explanations which are hereafter collectively referred to as SBIIMS/Architect's/Consultant's instructions in regard to : the variation or modification of the design, quality or quantity of work or the addition or omission or substitution of any work, any discrepancy in the drawings or between the BOQ and/or drawings and/or specifications, the removal from the site of any material brought thereon by the contractor and the substitution of any other materials thereof, the demolition, removal and/or re-execution of any work executed by him, the dismissal from the work of any person employed/engaged thereupon.

4.0 (i) Letter of Acceptance:

Within the validity period of the tender the SBIIMS shall issue a letter of acceptance either directly or through the architect by registered post/e-mail/speed post or otherwise depositing at the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the SBIIMS and the contractor.

ii) Contract Agreement

On receipt of intimation of the acceptance of tender from the SBIIMS/Architect the successful tenderer shall be bound to implement the contract and within fifteen days thereof ,he shall sign an agreement in a non-judicial stamp paper of appropriate value(as per the Article of Agreement format earlier given in this document) with SBIIMS.

5.0 Ownership of drawings

All drawings, specifications and copies thereof furnished by the SBIIMS, through its architect/ consultants are the properties of the SBIIMS. They are not to be used on other work.

6.0 Detailed drawings and instructions

The SBIIMS through its architects/consultants shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable there from. The work shall be executed in conformity therewith and the contractor shall prepare a detailed programme schedule (i.e. BAR/PERT Chart) indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBIIMS through the Architect/Consultant.

7.0 Copies of Agreement:
Out of Six copies, two copies of agreement/tender document duly signed by both the parties with the drawings shall be handed over to the contractors, two copies to SBI and one copy each shall be for the use of SBIIMS and Architect.

8.0 Liquidated Damages:
If the contractor fails to maintain the required progress in terms of clause 29 of GCC or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damages at the rate of 0.5% of the final value of work per week subject to a maximum of 5% of the final value of work.

9.0 Materials, Appliances and Employees

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be best quality. The contractor shall at all times enforce strict discipline and good order among his employees/workers and shall not employ on the work any unfit person/worker or anyone not skilled in the work assigned to him. Workman whose work or behaviour is found to be unsatisfactory by the SBIIMS /Architect, he shall be removed from the site immediately.

10.0 Permits, Laws and Regulations

Permits and licences required for the execution of the work shall be obtained by the contractor at his own expenses. The contractor shall give notices and comply with the

regulations, laws/ labour laws, and ordinances rules, applicable to the contractor. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBIIMS in writing under intimation of the Architect/Consultant. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBIIMS any legal actions arising there from.

11.0 Setting out Work

The contractor shall set out the work and shall be 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 and get it approved by the architect/consultant before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the architect/consultant the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the SBIIMS.

12.0 Protection of works and property

The contractor shall continuously maintain adequate protection, of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss due to his fault or negligence except which are due to causes beyond his control. He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Government and local bodies' safety laws and relevant building codes to prevent accidents, or injuries to persons or property of about or adjacent to his place of work. The contractor shall take insurance covers as per clause 25.0 at his own cost. The policy may be taken in joint names of the contractors and the SBIIMS and the original policy may be lodged with the SBIIMS.

13.0 Inspection of Work

SBIIMS/SBI/Architect/Consultant or their representatives shall at all reasonable time have free access to the work site and/or to the workshop, factories or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the SBIIMS /SBI/Architect/Consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the SBIIMS /SBI/Architect/Consultant except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its construction stage or its completion can also be inspected by the Chief Technical Examiner's organization a wing of Central Vigilance Commission.

14.0 Assignment and subletting

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer assign or underlet the contract or any

part or share thereof or interest therein without the written consent of the SBIIMS /SBI through the architect and no undertaking shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

15.0 Quality of Materials, Workmanship & Test

All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with SBIIMS/Architect's instructions and shall be subject from time to time to such tests as the SBIIMS /Architect may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory.
The contractor shall provide such assistance, instruments, machinery, labour and materials.
Contractor to made arrangement of laboratory on site, where weight of various materials like aluminium extrusions etc. can be done, Contractor should also make available a 3.00 meter, 15.00 meters & a 50.00 meters tape, a Vernier Calliper & Micrometre so any measurements/ tests can be taken on sites itself.

(ii) Samples

All samples of adequate numbers, size, shades & pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site detailed literature/test certificate of the same shall be provided to the satisfaction of the SBIIMS/Architect. Before submitting the sample/literature the contractor shall satisfy himself that the material/equipment for which he is submitting the samples/literature meet with the requirement of tender specification. Only when the samples are approved in writing by the SBIIMS /Architect the contractor shall proceed with the procurement and installation of the particular material/equipment.

The approved samples shall be signed by the SBIIMS. /Architect for identification and shall be kept on record at site office until the completion of the work for inspection/comparison at any time. The SBIIMS/Architect shall take reasonable time to approve the sample. Any delay that might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials/equipment etc. shall be to the account of the contractor.

(iii) Cost of tests

a) The cost of making any test shall be borne by the contractor if such test is intended by or provided for in the specifications or BOQ.

(iv) Cost of test not provided for

If any test is ordered by the SBIIMS/Architect which is either:
(a) If so intended by or provided for or (in the cases above mentioned) is not so particularized or through so intended or provided for but ordered by the SBIIMS/ Architect which is either to be carried out by an independent person at any place other than the site or

the place of manufacture or fabrication of the materials tested or any Government/approved laboratory, then the cost of such test shall be borne by the contractor.

16.0 Obtaining Information related to execution of work

No claim by the contractor for additional payment shall be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the work nor any misunderstanding or the obtaining incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfilment of contract.

17.0 Contractor's superintendence

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the SBIIMS/Architect may consider necessary until the expiry of the defects liability period, stated hereto.

18.0 Quantities

i) The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under Clause 20 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

ii) Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 21(e) hereof.

19.0 Works to be measured:

The SBIIMS /SBI/Architect may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the SBIIMS. /SBI/Architect in taking such measurements and calculation and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the SBIIMS/SBI/ Architect shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book.

The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the measurement book. Should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the SBIIMS/SBI/ Architect shall be final. All authorized extra work, omissions and all variations made shall be included in such measurements.

20.0 Variations:

No alteration, omission or variation ordered in writing by the SBIIMS /SBI/Architect shall vitiate the contract. In case the SBIIMS /SBI/Architect thinks proper at any time during the progress of works to make any alteration in, or additions to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the Architect/Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice but the contractor shall not do any work extra to or make any alteration or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect/Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect/Consultant and the same shall be added to or deducted from the contract value, as the case may be.

21.0 Valuation of Variations

No claim for an extra shall be allowed unless it shall have been executed under the authority of the SBIIMS/Architect with the concurrence of the SBI as herein mentioned. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.

ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.

b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub clause (c) hereunder.

c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the SBIIMS/Architect of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the SBIIMS/Architect shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the market rate.

d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the SBIIMS /SBI/Architect) the workman's name and materials employed be delivered for verifications to the

Architect/Consultant at or before the end of the week following that in which the work has been executed.

e) It is further clarified that for all such authorized extra items where rates cannot be derived from the tender, the contractor shall submit rates duly supported by rate analysis worked on the "market rate basis" for material, labour, hire/running charges of equipment and wastages etc. plus 15% towards establishment charges, contractor's overheads and profit. Such items shall not be eligible for escalation.

22.0 Final Measurement:

The measurement and valuation in respect of the contract shall be completed within **one month** of the virtual completion of the work.

23.0 Virtual Completion Certificate (VCC)

On successful completion of entire works covered by the contract to the full satisfaction of the SBIIMS/SBI, the contractor shall ensure that the following works have been completed to the satisfaction of the SBIIMS /SBI

a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.

b) Demolish, dismantle and remove the contractor's site office, temporary works, structures including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI and not incorporated in the permanent works.

c) Remove all rubbish, debris etc from the site and the land allotted to the contractor by the SBI and shall clear, level and dress, compact the site as required by the SBI.

d) Shall put the SBIIMS /SBI in undisputed custody and possession of the site and all land allotted by the SBI.

e) Shall hand over the work in a peaceful manner to the SBIIMS /SBI.

f) All defects/imperfections have been attended and rectified as pointed out by the SBIIMS /SBI to the full satisfaction of SBIIMS /SBI. Upon the satisfactory fulfilment by the contractor as stated above, the contractor shall be entitled to apply to the Architect / Consultant for the certificate. If the SBIIMS/Architect/Consultant is satisfied of the completion of the work, relative to which the completion certificate has been sought, the SBIIMS/Architect/Consultant shall within fourteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied. This issuance of a VCC shall be without prejudice to the SBIIMS /SBI's rights and contractor's liabilities under the contract including the contractor's liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the SBIIMS against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

24.0 Work by other agencies

The SBIIMS /SBI/Architect reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also

extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBIIMS /SBI. Such work shall be carried out in such manners not to impede the progress of the works included in the contract.

25.0 Insurance of Works

25.1 Without limiting his obligations and responsibilities under the contract the contractor shall ensure in the joint names of the SBIIMS and the contractor against all loss or damages from whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the SBIIMS and contractor are covered for the period stipulated in clause 27 & 28 of GCC and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by
the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under clause.
a) The works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.

b) The constructional plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.

c) Such insurance shall be affected with an insurer and in terms approved by the SBIIMS which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the SBIIMS/Architect the policy of insurance and the receipts for payment of the current premiums.

25.2 Damage to persons and property

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBIIMS against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to :

a) The permanent use or occupation of land by or any part thereof.

b) The right of SBIIMS /SBI to execute the works or any part thereof, on, over, under,in or through any lands.

c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract.

d) Injuries or damage to persons or property resulting from any act or neglect of the SBIIMS /SBI, their agents, employees or other contractors not being employed by the contractor or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the

contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBIIMS /SBI, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

25.3 Contractor to indemnify SBIIMS /SBI

The contractor shall indemnify the SBIIMS /SBI against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision subclause 25.2 of this clause.

25.4 Contractor's superintendence

The contractor shall fully indemnify and keep indemnified the SBIIMS/SBI against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against SBIIMS /SBI in respect of such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the SBIIMS /SBI if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the SBIIMS/SBI/Architect in this behalf.

25.5 Third Party Insurance

25.5.1 Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under clause 25 of GCC shall insure against his liability for any material or physical damage, loss, or injury which may occur to any property including that of SBI, or to any person, including any employee of the SBIIMS/SBI, by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision to clause 25 thereof.

25.5.2 Minimum Amount of Third Party Insurance

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

The minimum insurance cover for physical property, injury, and death is Rs.5.0 lacs 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.

25.7 Accident or Injury to Workmen

25.7.1 The SBIIMS/SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or

other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBIIMS/SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBIIMS/SBI against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that SBIIMS/SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the SBIIMS /SBI/Architect when required such policy of insurance and the receipt for the payment of the current premium.

25.7.2 Insurance against accidents etc to workmen

The contractor shall insure against such liability with an insurer approved by the SBIIMS /SBI during the whole of the time any person employed by him on the works and shall, when required, produce to the architect/consultant such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that SBIIMS/SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the SBIIMS /SBI/Architect when required such policy of insurance and the receipt for the payment of the current premium.

Remedy on Contractor's failure to insure

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case the SBI may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SBI as aforesaid and also deduct 15% of contract value from any amount due or which may become due to the contractor, or recover the same as debt from the contractor. Without prejudice to the other rights of the SBIIMS/SBI against contractors, in respect of such default, the SBI shall be entitled to deduct from any sums payable to the contractor the amount of any damages costs, charges, and other expenses paid by the SBI and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

26.0 Commencement of Works

The date of commencement of the work will be reckoned as the recorded from the date of receipt of Letter of Acceptance from SBIIMS.

27.0 Time for completion

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **1 calendar month from the date of commencement.** If required in the contract or as directed by the SBIIMS/Architect, the contractor shall complete certain portions of work before completion of the entire work. However, the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract.

28.0 Extension of Time

If, in the opinion of the Architect/Consultant, the work be delayed for reasons beyond the control of the contractor, the Architect/Consultant may submit a recommendation to the SBIIMS to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the SBIIMS through the Architect/Consultant in writing at least 15 days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reasons in detail and his justification if any, for the delays. The architect/consultant shall submit their recommendations to the SBIIMS in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed the period extended time which will qualify for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the SBIIMS the provision of liquidated damages as stated under clause 8 of GCC shall become applicable. Further contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

29.0 Rate of progress:

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the SBIIMS/SBI/Architect. Should the rate of progress of the work or any part thereof be at any time be in the opinion of the SBIIMS /SBI/Architect too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the SBIIMS /SBI/Architect shall thereupon take such steps as considered necessary to expedite progress so as to complete the woks by the prescribed time or extended time. Such communications from the SBIIMS /SBI/Architect neither shall relieve the contractor from fulfilling obligations under the contract nor he shall be entitled to raise any claims arising out of such directions.

30.0 Work during nights and holidays

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the SBIIMS/SBI/Architect, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the SBIIMS/SBI/Architect. However the provision of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required and continued with the prior approval of the SBIIMS /SBI/Architect at no extra cost to the SBIIMS/SBI.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance so as to avoid disputes with the neighbours.

31.0 No compensation for restrictions of work

If at any time after acceptance of the tender SBIIMS shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not require the whole or any part of the work to be carried out, the SBIIMS Architect shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work fully but which he did not derive in consequence of the foreclosure of the whole or part of the work. Provided that the contractor shall be paid the charges on the cartage only of materials actually and bona fide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the SBIIMS /SBI/Architect shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less. In case of such stores having been issued from SBIIMS /SBI stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of SBIIMS /SBI/Architect shall be final.

32.0 Suspension of work

i) The contractor shall, on receipt of the order in writing of the SBIIMS/SBI/Architect (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as SBIIMS /SBI/Architect may consider necessary so as not cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons. a) On account of any default on the part of the contractor, or
b) For proper execution of the works or part thereof for reasons other than the default of the contractor, or

c) For safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the SBIIMS /SBI/Architect.

ii) If the suspension is ordered for reasons (b) and (c) in sub-Para (i) above :

The contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

33.0 Action when the whole security deposit is forfeited

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the Architect/Consultant shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBIIMS /SBI.

a) To rescind the contract (of which rescission notice in writing to the contractor by the Architect/Consultant shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of SBIIMS.

b) To employ labour paid by the SBI and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and materials(the cost of such labour and materials as worked out by the SBIIMS/Architect shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of Architect/Consultant as to the value of work done shall be final and conclusive against the contractor.

c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the Architects/ Consultant shall be final and conclusive) shall be borne by original contractor and may be deducted from any money due to him by SBI under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof.

In the event of any of above courses being adopted by the SBIIMS the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the performance of the contract and in case the contract shall be rescinded under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the Architect/Consultant/SBIIMS will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

34.0 Owner's Right to Terminate the Contract

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Government 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 to do so, to show to the reasonable satisfaction of the SBIIMS /Architect that he is able to carry out and fulfil the contract, and to give security therefore if so required by the SBI.
Or if the contractor (whether an individual firm or incorporated Company) 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 SBIIMS through the Architect/Consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor there under. 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
SBIIMS through the Architect/Consultant written notice to proceed, or
c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBIIMS /SBI through the Architect/ Consultant that the said materials were condemned and rejected by the Architect/ Consultant under these conditions;
or has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or in defiance of the SBIIMS /SBI's or Architect's/Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBIIMS /SBI and or the Architect/Consultant, may not withstanding any previous waiver, after giving seven days' notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect/Consultant or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the SBIIMS. /SBI through the Architect/Consultant, their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads, use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work and the contractor shall not in any was interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter as convenient to the SBIIMS /SBI or the Architect/Consultant shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the SBIIMS. /SBI sell the same by public auction after due publication and shall adjust the amount realized by such auction. The contractor shall have no right to question any of the act of the SBIIMS /SBI incidental to the sale of the materials etc.

35.0 Certificate of Payment

Payment will be made as per terms mentioned in the NIT.

• The prices in the Price Schedule shall be exclusive of GST or any other applicable taxes as may be levied by the Government from time-to-time and the same shall be charged in addition to the applicable rate.

• The SBIIMS/SBI shall make all endeavours to make payments within 20-30 days from the date of the receipt of the invoice, to the Contractor.

• All payments shall be made in Indian Currency by means of an Account Payee Cheques/ RTGS/ NEFT only.

• SBIIMS/SBI shall be entitled to deduct in accordance with Applicable Law, Income Tax or withholding tax or other deductions (as the case may be), from any payments made to the Contractor, and the amount so deducted shall be deemed to be a payment made to the Contractor. SBIIMS/SBI shall provide a certificate certifying the deduction so made.

• No payment shall be made in advance nor will any loan from any bank or financial institution be recommended on the basis of the order of award of work.

• Payment will be made as per the actual work done at site based on final measurement. The measurement will be taken in presence of representatives from both SBI/SBIIMS and contractor.

36.0 Settlement of Disputes and Arbitration

Except where otherwise provided in the contract all questions and disputes to the meaning of the specifications, design, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question , claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings specifications, estimates, instructions orders or these conditions or otherwise concerning the work or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

i) If the Contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the authorized person of SBI/SBIIMS or in case the Contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the Contractor shall forthwith give notice in writing of his claim, or dispute to the respective Circle/Vice President, SBIIMS , of respective Circle Office, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the Vendor shall not be entitled to raise any claim nor shall the SBI/SBIIMS be in any way liable in respect of any claim by the Contractor unless notice of such claim shall have been given by the Contractor to the V.P of respective Circle, SBIIMS, of respective Circle Office, in the manner and within the time as aforesaid. The Vendor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the respective Circle/Vice President, SBIIMS, of respective Circle Office, in writing in the manner and within the time aforesaid.

ii) The Circle/Vice President, SBIIMS, of respective Circle Office, shall give his decision in writing on the claims notified by the Contractor. The Contractor may within 30 days of the receipt of the decision of the Circle/Vice President, SBIIMS of respective Circle Office, submit his claims to the conciliating authority namely the Circle Development Officer of

respective Circle /C.O.O. SBIIMS, Head Office, Raheja Chambers, Free Press Journal Marg, Mumbai. for conciliation along with all details and copies of correspondence exchanged between him and the SBIIMS.

iii) If the conciliation proceedings are terminated without settlement of the disputes, the Contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Chief General Manager/M.D. & C.E.O. of the SBIIMS for appointment of an arbitrator to adjudicate the notified claims falling which the claims of the Contractor shall be deemed to have been considered absolutely barred and waived.

iv) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the Contractor as aforesaid and all claims of the SBI/SBIIMS shall be referred for adjudication through arbitration to the Sole Arbitrator appointed by the Chief General Manager/ M.D. & C.E.O. and who will be an officer not less than the rank of Deputy General Manager of SBI/SBIIMS. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the said Chief General Manager /M.D. & C.E.O. of the SBIIMS Such person shall be entitled to proceed with the reference from the stage at which it was let by his predecessor.
It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator.
It is also a term of this contract that no person other than a person appointed by such Chief General Manager/M.D. & C.E.O. of the SBIIMS as aforesaid should act as arbitrator.
The conciliation and arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act 1996 or any or any accordance modification or re-enactment thereof and the rules made there under.
It is also a term of the contract that the Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The Cost of the reference and of the award shall be in the discretion of the arbitrator who may direct to any by whom and din what manner, such costs or any part thereof, shall be paid and fix or settle the amount of costs to be so paid

37.0 Water Supply (Not Applicable)

38.0 Power supply

The contractor shall make his own arrangements for power and supply/distribution system for driving plant or machinery for the work and for lighting purpose at his own cost. The cost of running and maintenance of the plants are to be included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approvals from the appropriate authorities, if required.

39.0 Treasure Trove etc.

Any treasure trove, coin or object antique which may be found on the site shall be the property of SBI and shall be handed over to the SBIIMS immediately.

40.0 Method of Measurement

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date. Rules laid down by the Bureau of Indian Standards. In the event any dispute/disagreement the decision of the Architect/Consultant shall be final and binding on the contractor.

41.0 Maintenance of Registers

The contractor shall maintain the following registers as per the enclosed format at site of work and should produce the same for inspection of SBIIMS./ SBI/Architect/Consultant whenever desired by them. The contractor shall also maintain the records/registers as required by the local authorities/Government from time to time.

42.0 Force Majeure

42.1 Neither contractor nor SBIIMS shall be considered in default in performance of their obligations if such performance is prevented or delayed by events such as war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However, a notice is required to be given within 30 days from the happening of the event with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.

42.2 As soon as the cause of force majeure has been removed the party whose ability to perform its obligations has been affected, shall notify the other of such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.

42.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.

42.4 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall mutually decide regarding the future execution of this agreement.

43.0 Local Laws, Acts, Regulations

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. The contractor shall

comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.
i) Minimum Wages Act, 1948 (Amended) ii) Payment of Wages Act 1936 (Amended) iii) Workmen's Compensation Act 1923 (Amended)
iv) Contract Labour Regulation and Abolition Act 1970 and Central Rules 1971(Amended) v) Apprentice Act 1961 (Amended) vi) Industrial Employment (Standing Order) Act 1946 (Amended)
vii) Personal Injuries (Compensation Insurance) Act 1963 and any other modifications

viii) Employees' Provident Fund and Miscellaneous Provisions Act 1952 and amendment thereof

ix) Shop and Establishment Act ix) Any other Act or enactment relating thereto and rules framed there under from time to time.

44.0 SAFETY CODE:

Safety as per annexure given should be followed.

45.0 Accidents

The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the Architect/Consultant. The contractor shall also report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

46.0 BIDDERS ARE ADVISED TO PLAN SITE VISIT WELL BEFORE DATE OF PRICE BIDDING BEFORE QUOTING THEIR RATES.

SPECIAL CONDITION OF CONTRACT

The required shutdown for executing the above works shall be obtained from the CDC in charge and all precautionary measures have to be taken to avoid shutdowns and mishaps as the panels are very critical and live. Further in view of the criticality of the CDC power, shutdown may be given only in the nights and holidays and the contractor shall plan and mobilize the men and material accordingly for smooth execution of the work in coordination with the other agencies.

LETTER OF DECLARATION

To,
The Vice President,
Circle Head Office,
SBI Infra Management Solutions Pvt. Ltd.,
Sixth Floor, Local Head Office,
M.G. MARG
Lucknow 226001
Dear Sir,

Electrical works, at SBI BANI TOWN Branch, A.O. ALLAHABAD (PRAYAGRAJ) under Administrative Control of Administrative Office Allahabad.

Having examined the terms & conditions, drawings, specifications, design relating to the works specified in the memorandum hereinafter set out and having visited and examined the site of the works specified in the said memorandum and having acquired the requisite information relating thereto and affecting the quotation, I/We hereby offer to execute the works specified in the said memorandum within the time specified in the said memorandum on the item rate basis mentioned in the attached schedule and in accordance in all respect with the specifications, design, drawings and instructions in writing referred to in conditions of Tender, the articles of agreement, conditions of contract and with such conditions so far as they may be applicable.

MEMORANDUM

(a)	Description of work	**Electrical works, at SBI SBI BANI A.O. ALLAHABAD (PRAYAGRAJ) under Administrative control of Administrative Office Allahabad**
(b)	Earnest Money	NIL
(c)	Time allowed for completion of work from the date of issue of work order.	As **per NIT** from the date of commencement as per tender.

SAFETY CODE SAFETY MEASURES AT SITE:

1. All personnel at site should be provided with Helmets and Safety Boots with some Identification Mark. Visitors also should be provided with Helmets. It should be ensured that these are used properly.

2. First Aid Box should be kept at site with all requisite materials.

3. No one should be allowed to inspect / work at a height without Safety Belt.

4. Suitable scaffolds should be provided for workmen for all Works that cannot safely be done from the ground, or from solid construction except such short period Work as can be done safely from ladders. When a ladder is used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (¼ horizontal and 1 vertical).

5. Scaffolding or staging more than 3.5 meters above the ground or floors, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 Meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

6. Working platforms, Gangways, and Stairways should be so constructed that they do not sag unduly or unequally, and if the height of the platform or the Gangway or the Stairway is more than 3-5 Meters above ground level or floor level they should be closely boarded, should have adequate width and should be suitably fenced, as described.

7. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 Meter.

8. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 Meters in length while the width between side rails in rung ladder shall in no case be less than 30cms for ladder upto and including Meters in length. For longer ladders this width should be increased at least 6mm for each additional 30 cms. Uniform step spacing shall not exceed 30 cms.

9. Adequate precautions shall be taken to prevent danger from electrical equipment. For electrical on line works gloves, rubber mats, and rubber shoes shall be used.

10. All trenches 1.2 Meters or more in depth shall at all times be supplied with at least one ladder for each 30 Meters length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 Meter above the surface of the ground. The sides of the trenches, which are 1.5 Meters or more in depth shall be stepped back to give suitable slope, or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 Meters of the edge of the trench or half of the depth of the trench whichever is more cuttings shall be done from top to bottom. Under no circumstances undermining or under cutting shall be done.

11. Before any demolition work is commenced and also during the process of the work:-

a) All roads and open areas adjacent to the Work Site shall either be closed or suitably protected;

b) No electrical cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

c) All practical steps shall be taken to prevent danger to persons employed from risk or fire or explosion or flooding. No floor, roof or other part of the building shall be so over-loaded with debris or materials as to render it unsafe.

d) All necessary personal safety equipment as considered adequate by the Site Engineer should be kept available for the use of the persons employed on the Site and maintained in a condition suitable for immediate use; and the Contractor should take adequate steps to ensure proper use of equipment by those concerned.

e) Workers employed on mixing Asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

f) Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes shall be provided with protective goggles.

g) Those engaged in welding works shall be provided with Welder's protective eye-shields.

h) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

i) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals and boards to prevent accident to the Public.

12. Use of hoisting machines and tackle including their attachments, anchorage and support shall conform to the following standard or conditions:-
a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repairs and in good working order.

b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffold, winch or give signals to the operator.

d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension the safe working load shall be ascertained by adequate means.

e) Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

f) Motor, Gearing, Transmission, Electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced.

g) When workers are employed on electrical installation, which are already energized, insulating mats, wearing apparel such as gloves, rubber footwear etc.

Address: _____

Signature of Tenderer:

Date:

FIRE SAFETY:

i. Cutting / drilling machine and other electrically operated equipment used at site shall be plugged into correctly rated electrical outlets.

ii. Only ISI marked 3 pin plug and other appliances and equipment shall be used.

iii. Electrical power cables/wires used shall not have any joints and shall be properly rated.

iv. All electrical appliances i.e. welding, drilling, cutting machine etc. shall be safely and securely earthed to prevent leakage current while in operation.

v. Before commencing the welding work, fire section shall be informed and required precautions should be taken.

vi. Two buckets of water, sand and a fire cloth of suitable size shall be kept in an easily accessible area on the site.

vii. Fire extinguishers recommended by fire officers shall be kept on the site.

viii. Used paint drums shall be stored in specified store only after closing them properly.

ix. Personal protective equipment such as safety shoes, hand gloves, welder's mask, ear plug etc. depending upon the requirement of the work shall be provided by the contractor to the workmen to prevent occupational health hazards.

x. The safety belt shall be provided by the contractor and used by the workmen while working from height for more than 10' from Ground level.

xi. None of the passages near lift lobby and staircases shall be used for stacking / dumping any kind of materials/waste.

xii. Any debris/ waste generated from the work shall be collected on daily basis, removed from site and stored at the designated place in proper manner.

xiii. Battery operated emergency light/torches shall be provided by the contractor to the workmen while working beyond office hours.

Place:

Date: SIGNATURE AND SEAL OF THE CONTRACTOR

TECHNICAL SPECIFICATIONS

ELECTRICAL WIRING / PANELS / SWITCH GEAR

1. GENERAL REQUIREMENTS

The installation shall generally be carried out in conforming with the requirements of the Indian Electricity Act 1910 as amended up to date and the Indian Electricity Rules, 1956 framed there under, the relevant regulation of the Electric Supply Authority concerned and also with the specifications laid down in the Indian Standard I.S. 732 – 1963 Code of Practice (revised) for Electrical Wiring installations (system voltage not exceeding 650 volts) and I.S. 2309 – 1969 Code of Practice for the protection of Buildings and Allied Structure against Lighting and IS 3043 – Indian code of Practice for Earthing. The wiring shall also be according to the I.S. specifications, NEC, Local Government Body.

Only the contractor having valid 'A' class Electrical Contractor License for Uttar Pradesh shall be eligible to execute the same. The contractor shall be responsible for renewal of the same at the appropriate time.

2. MATERIALS

All materials, fittings, appliances, used in electrical installations, shall conform to Indian Standard Specifications wherever these exist. A list of approved materials is attached afterwards. Materials not included in the list shall be got approved by the Engineer-in-Charge/Owner prior to actual use.

3. MAIN SWITCH GEAR

Iron clad switch fuse and isolator units should conform to relevant I.S. Standard. The quick make and break mechanism shall be self interlocked with the cover. In "Off" position there must be two breaks per pole.

Main switch gear shall be properly earthed with two numbers conductor if M.V. and one number of L.V.

4. BUSBAR CHAMBER (B.B.C.)

This shall be totally enclosed, metal clad type fabricated from rust proofed 16 SWG sheet steel on angle iron frame and provided with sheet steel or cast iron detachable front cover and undrilled detachable end plates, suitable for mounting on wall or angle iron floor stand and painted with high quality enamel pain. G.I. bolts and nuts shall be used for assembly with suitable packing materials to ensure dust proof finish. Meters shall be provided on suitable sheet steel boxes. Switch shall be provided with cable end boxes as required.

The depth of B.B.C. shall be 250 mm (minimum). Minimum clearance of phase bars to earth shall be 25 mm and between bus bars shall be minimum 32 mm.

H.C. (High conductivity) copper busbars properly tinned are to be rated at 1000 Amps. Per sq. in and Aluminum bus bars (wrought aluminum alloy strip) conforming to relevant I.S. specification at 800 Amps per sq. in.

Neutral Busbars are to be rated to carry 100% of phase current up to 200A and 60% for higher. These shall be mounted on DMC/SMC supports of proper diselectric and mechanical strength and shall be appropriately color coded for identification of Phase with PVC sleeves of 1.1 KV grade throughout the length.

Lettering shall be done for identification of switches as directed. The contractor shall submit fully dimensioned drawing of the board with the physical position of the switches and other components to the owner for their approval before the same is fabricated.

There shall be two nos. of Earth Terminals. Suitable Danger Board shall be provided.

5. INTERCONNECTION IN B.B.C., SWITCH FUSE, METERS

For rating above 150 Amps these shall consist of insulated copper strips of adequate section considering current density as specified in Clause 4 above. For rating below 150 Amps PVC copper cable tails of appropriate size, terminating in tinned copper sockets may be used considering 1.5 Amp/sq. mm for copper & 1.0 Amp/sq. mm for aluminum. The above are to be enclosed either in sheet metal trunking or conduits so that no part is exposed.

6. DISTRIBUTION BOARDS

These totally enclosed metal clad type Distribution Boards with hinged lids shall be in accordance with I.S. 2147 – 1952 and 2675 – 1966 and B.S. 214 and shall be of welded construction and fabricated from rust proofed sheet steel and finished with anticorrosive stove enamel paint and have provision for fixing on wall and have earthing terminal/terminals.

Power Distribution Boards (400 volts TPN) shall be constructed from 16 SWG sheet steel and Branch Distribution Boards (230 volts SPN from 18 SWG sheet steel).

The MCB shall be mounted on Din rails supports of proper dielectric & mechanical strength. If fuses/fuse banks are used these shall e mounted on moulded DMC/SMC or ebonite supports of proper dielectric and mechanical strength. TPN units should have phase separation barriers. Cables shall be connected to a terminal by crimped lugs. Where two or more B.D.B's feeding low voltage circuits are fed from different phases of a medium voltage supply, these B.D.B's shall be installed at least two meters apart or otherwise in a different direction to prevent access to the both DBs at a time.

All three phase power distribution boards shall be properly earthed with two numbers 10 S.W.G. galvanized iron wires and provided with suitable Danger Board. All SPN B.D.B's shall be properly earthed with one number 10 SWG galvanized iron wire each or with insulated copper PVC wire of adequate ratings in case of concealed wiring as per the specifications.

7. SWITCHES

All switches for lights, fans and plug points shall be piano type switches, unless specified otherwise.

8. CABLES AND CONDUCTORS

All cables shall conform to I.S-692, IS-7098, IS-1554 (Part-I) 1964 and IS 694-1990 or latest. Conductors of all cables except for flexible cables shall be of aluminum, unless specified otherwise.

9. FLEXIBLE CABLES

Conductors of flexible cables shall be of copper. The minimum size of core acceptable to 1.50 sq. mm.

10. INSTALLATION OF MAIN SWITCH BOARD, BDB'S MAINS, SUBMAINS, DISTRIBUTION WIRING TO INDIVISUAL POINTS

The exact positions of all main switch board, BDB's and all runs of mains and sub mains, and distribution wiring to individual points including the exact position of all light fittings and switch boards shall be first marked on the buildings and shall be approved by the Engineer-in-Charge before actual commencement of the work.

The D.B's shall generally be installed at a height of 2.13 m (7 ft.) from floor level.

11. INSTALLATION OF SWITCH BOARDS

These shall be installed at a height of 1.3 mtrs (4'-3') and above the floor level.

12. INSTALLATION OF CEILING FANS

Unless otherwise specified all ceiling fans shall be hung not less than 2.75 M (9 ft) above floor. The suspension and clamp shall be painted with approved paint without involving extra cost.

13. INSTALLATION OF FLUORESCENT LIGHT FITTINGS:

Where these are suspended form ceiling by two down rods, or fixed to ceiling/beam directly, at least one fixing to the ceiling/beam shall be made with Mechanical/Metal fasteners. Electrical drill only shall be used while making holes for the fasteners which shall be capable of sustaining at least 15 kg of dead weight.

The down rods and accessories shall be painted with approved paint without involving extra cost.

Unless otherwise specified these should be suspended 2.60 M (8'-6") above the floor or as per direction of Owner to match interiors.

14. INSTALLATION OF EXHAUST FANS

Exhaust Fans shall be fitted by means of rag bolts embedded or on suitable size block board (12 mm thick) in the wall/window panels. The required holes in the wall shall be made and finished neatly with cement plaster and brought to the original finish of the wall. In case of block board mounting all fixing, cutting shall be made by the electrical contractor in coordination with civil/interior decoration contractor without extra cost.

15. INSTALLATION OF SOCKET OUTLETS

No socket outlet shall be provided in the bath room at the height less than 130 cms (4'-3") from the floor.

No switches shall be provided inside the bath rooms, unless approved by the Engineer-in-Charge.

Socket outlet at locations other than bath rooms shall be either 25 cms (10") or 130 cms (4'-3") form the floor.

16. INSTALLATION OF ELECTRIC MOTORS

Electric Motors shall be earthed either with 2 numbers SWG 6 G.I. wires, if M.V. and 1 number if L.V. or insulated copper PVC wires of adequate sizes as approved by Owner without any extra cost to the Owner.

17. ELECTRICAL PANELS

a) Before fabrication, drawings of electrical panels will have to be got approved by the Architects.

b) Panels will be inspected at works and approved by Architect's/Bank's representative, prior to dispatch.

c) Panel fabricator should be ISO certified or having test certificates from CPRI for panels built in their works.

d) Panels should be tested for insulation resistance and HV withstand test. Factory test certificates should be provided.

18. TESTING OF INSTALLATION

Before a completed installation or an addition to an existing installation is put into service, the following tests shall be carried out by the contractor in presence of the Engineer-in-Charge/Owner's/Architect's representative.

a) Polarity of switches

It must be ensured by test that all single pole switches have been fitted on the live side of the circuits they control.

b) Insulation Test:

i. By applying a 500 volt megger between earth and the whole system of conductors or any section thereof, with all fuses in place and all switches closed, all lamps in position or both poles of installation otherwise electrically connected together::- The result in meghom shall not be less than 50 divided by the number of points on the circuit, and should not be less than 1 meghom.

ii. Between all conductors connected to one phase and all such conductors connected to the neutral or to the other phase conductors of the supply after removing all metallic connection between the two poles of the installation and switching on all switches. The insulation resistance shall be as in (i) above.

c) Earth continuity Test

The earth continuity conductor including metal conduits and metal sheaths of cables in all cases shall be tested for electrical continuity. Electrical resistance of the above along with the earthing lead but excluding any resistance of earth leakage circuit breaker, measured form the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

d) Earth Resistance Test

To ensure effectiveness of installation earth, the value of earth resistance shall be within 5 ohm for installation capacity upto 5 KW and one ohm for installation of higher capacity.

19. The completed work will be taken over only if the results obtained in above tests are within the limits mentioned above, and in accordance with I.E. Rules. On completion of the installation work, a certificate shall be furnished by the contractor, countersigned by the certified supervisor under whose direct supervision the installation was carried out. This certificate shall be in a prescribed from as required by the local Electric Supply Authority. The installation shall not be considered as complete unless the installation is got inspected and passed by the Directorate of Electrical Safety, of the local state Govt/Authority. The contractor shall have to take

all initiatives and follow up the matter at his own cost for early approval of the installation for permanent energisation of the installation from the Directorate of Electrical Safety, of the local State Govt/Authority. No extra amount will be paid on this account. However statutory fees, if any, will be reimbursed to the contractor on production of documentary evidence/official money receipts.

20. SPECIAL SPECIFICATIONS

a) Before fixing all switches, fittings etc. these should be produced before Engineer-in-Charge and get approved.

b) All metal switch boards and switch/regulator boxes to be used in work shall be painted with two coats of anti rust primer (red oxide paint) prior to erection. After erection these shall be again painted with two coats of enamel paint of approved quality and shade.

c) Before execution of any portion of conduit work for wiring a neat proper layout should be made out by the contractor and got approved from the Engineer-in-Charge. For this purpose contractor is advised to get acquainted with the layout drawings of the Consultant/Interior Decoration Contractor.

d) While laying the conduits for concealed wiring in the ceilings/beams/columns/walls/partitions/modular furniture etc, the contractor must ensure that all the inlets and both ends of the conduits are plugged to stop entry of foreign materials so that no difficulty arises during drawing of wires later.

e) Damage to any fitting during erection and before handing over the installation by contractor shall be set right or replaced by the contractor at his own cost.

f) Caution Board of proper size wherever required, shall be provided, as per I.E.E. regulations for which no extra payment will be admissible.

g) Any repairs done to wall etc. should match with the surrounding surface otherwise same will be got done through Building Contractor at the cost of the Electrical Contractor.

h) Earthing Installation shall be done in the presence of Engineer-in-Charge or his representative.

i) The installation should not be energized without adequate earthing.

j) The I.C. switches and Distribution Fuse Boards shall be provided with neat lettering in block letters with paint for identification of the I.C. switches and for the points connected to each fuse way of the D.B's for which no extra payment will be admissible.

k) Completion Drawings

The contractor shall be required to submit along with Final bill; the under noted drawings in the form CD, along with three copies of Ammonia print each.

1. Plan (as structural drawing) of each floor (not less than I:I00 metric scale) showing:-Location of Main Switch Board, Distribution boards (with the circuit numbers controlled by them).The runs of mains and submains. Location of lights, fans, will sockets, other power consuming devices together with type of fittings and fixtures including circuit numbers. Position of Lightning Conductors and route of running conductor. Position of Earthing Stations for light and power and Lightning Conductor Installation. Following information are to be given on all the drawings:

   Name of work with job no. Accepted Tender No.
   Date of completion
   Name of Place
   Name and Signature of Contractor
   Scale of Drawings

2. Schematic lines layout diagram of each floor showing (i) Layout and connections of Main and Sub-board, B.D.B. having descriptions of the size, capacity, type and their numbers, the system and the source of supply , (ii) Location, Size, Type, length of main and sub main cables (iii) Loading of each B.D.B. indication of phases, Departmental mark on each B.D.B. and switchgear.
   The drawings shall be very neatly drawn and submitted properly without folding them.

3. Cable route should be marked on site plan with measurements from permanent structures.

CONDUIT WIRING SYSTEM

1. **TYPE AND SIZE OF CONDUIT**

   All conduit pipe shall be screwed type, solid drawn or welded and with black stove enameled surface or galvanized and of thickness conforming to IS: 9537 Pat II of 1981 (or latest revision) in all respects. The conduits are to be free from burrs and External roughness. No conduits less than 20 mm in dia shall be used, unless specified.

2. **ACCESSORIES**

   Only screwed type of accessories are to be used.

3. **CONDUIT JOINTS**

The conduit shall be properly earthed. In long distance straight runs of conduit inspection type screwed couplers are to be provided at reasonable intervals on running threads with couplers and jam nuts. Threads on conduit pipes in all cases shall be between 13 mm to 27 mm long sufficient to accommodate pipes to full threaded portion of couplers or accessories. Cut end of conduit pipes shall have no sharp edges or any burrs left to avoid damage to insulation of conductor while pulling them through such pipes.

4. PROTECTION AGAINST DAMPNESS AND RUST

In order to minimize condensation and sweating inside the tube, all outlets of pipes system shall be properly drained and ventilated, but in such a manner as to prevent entry to insects inside the conduit.

To protect against rust the outer surface of the conduit and accessories shall be painted and the bare thread portion is to be painted with anti-corrosive preservative.

5. **FIXING OF CONDUITS**

Conduit pipes shall be fixed by heavy gauge saddles and h.w. or metal bars, secured to wall/ceiling by screws driven into wood plugs or rawl plugs or phil plugs at an interval of not more than 76 cm apart for vertical run and 60 cm apart for horizontal run. But on either side of couplers or bend of similar fittings-saddle shall be fixed at a distance of 30 cm from the centre of such fittings. The minimum thickness for saddles shall be 24 SWG for conduits up to 25 mm dia, and 20 SWG for larger sizes.

6. **BENDS IN CONDUITS**

All necessary bends in the system including diversion shall be done by bending the pipes, or by inserting suitable inspection type bends, elbows or similar fittings, or by fixing cast iron inspection boxes whichever is most suitable.

7. OUTLETS

All outlets for fittings, switches etc. shall be fixed on boxes of suitable metal for either surface mounting system or flush mounting system. In case of cast iron boxes the wall thickness shall be at least 3 mm and in case of welded mild steel sheet box the wall thickness shall not be less than 16 gauges. Except where otherwise stated 3 mm thick insulated laminated sheets shall be fixed on the front with screws. Where conduits are terminated special care shall be taken in employing double jam nuts, for securely fixing conduits to outlets so as to prevent any possibility of damages to cables when drawn.

8. CABLES TO BE USED

Unless stated otherwise only single core PVC insulated cables of approved manufactures shall be used for wiring in conduit system. The number of single core cables drawn in one conduit shall not be greater than maximum set out in Table II of Indian Standard (I.S. 732-1963) Code of Practice (revised) for electrical wiring installation (system voltage not exceeding 650 volts).

9. LOOPING IN SYSTEM

Distribution wiring in conduit to light, fan plug points etc. shall be done in looping system. In this system no joints or connection shall be made anywhere of the system except at terminating points such as at terminals of switches, ceiling roses, etc and in case of socket outlets at the socket terminals.

10. EARTHING CONTINUTY WIRES

All three pin 6 Amps plug points and metallic fan regulator cover should be provided with earthing attachment by NO. 14 SWG G.I. wires for surface wiring and 1 no. 1.5 Sq. mm PVC insulated copper wire for concealed wiring, unless specified otherwise.

Three pin 16 Amps power plug point should be provided with earthing attachment by No. 14 SWG G.I. wire for surface wiring and 1 No. 2.5 sq.m PVC insulated copper wire for concealed wiring, unless specified otherwise.

Conduits and accessories for surface distribution wiring should be provided with earthing attachment by 14 SWG G.I. wire, unless specified otherwise.

For looping earthing G.I. wire shall be run on conduits being fixed with saddles. This wire shall not be normally visible after installation when run with the conduit. Where the wire has to be taken without the conduits this will be fixed with ‘U’ nails at 2’ feet intervals.

11. PAINTING

Conduit and all conduit fittings and accessories shall be painted with two coats matt paint. Painting of conduits shall be done to harmonize with color of bearing surface, i.e. wall, joists, trusses etc. after installation and as approved by the Engineer-in-Charge.

CONCEALED CONDUIT WIRING SYSTEM

1. Concealed conduit wiring system shall comply with all requirements for surface conduit wiring system as specified above and in addition conform to the requirements specified below:

2. MAKING OF CHASE

The chase in the wall shall be neatly made and be of ample dimensions to permit the conduit to be fixed in the manner desired.

3. FIXING OF CONDUIT IN CHASE

The conduit shall be fixed by means of staples, J-Hooks or by means of saddles not more than 60 cm apart. Fixing of standard bends or elbows shall be avoided as far as possible with a long radius bend which will permit easy drawing in of conductors. All threaded joints of metallic conduits shall be treated with some approved preservative to secure protection against rust.

4. INSPECTION BOXES

Suitable inspection boxes shall be provided when necessary to permit periodical inspection and to facilitate removal of wires. These shall be mounted flush with wall.

For longer runs of conduit involving more than one bend, one inspection box/draw-in box shall be used after one bend.

5. TYPE OF ACCESSORIES TO BE USED

All outlets such as switches, socket outlets, shall be flush mounting type with cast iron or MS boxes with a cover of approved insulating material. The switches and other outlets shall be mounted on such boxes as would be approved. The metal box shall be efficiently earthed with conduit by means of earthing attachment with suitable size of PVC insulated copper wires, running inside the conduit.

6. CONDUITS

i. Steel-Black enameled screw type M.S. conduits with thickness conforming to IS 9537 Part II of 1981 (or latest revision).

ii. PVC/Polythene – Medium gauge pipes of reputed make having 3 mm wall thickness shall be used.
For roof slabs – These shall be prelaid during casting of floor/roof slab. No. of wires drawn through the same shall not exceed the number of specified I.S. Code.
For vertical drops in wall to switch boards – Minimum size shall be 20 mm.

iii. Maximum capacity of conduits for drawing in of PVC insulated cables shall be as follows:

Maximum number of PVC insulated 650/ 1100V grade aluminium/ copper conductor cable are as CPWD General Specification of Electrical Works Part-I (External), page 41, 1994.

TABLE-I

Maximum number of PVC insulated 650/1100V grade aluminum/copper Conductor cable conforming to IS 694-1990

Nominal Cross Sectional Area of Conductor in sq.mm	20 mm		25 mm		32 mm		38 mm		51 mm		64 mm	
	S	B	S	B	S	B	S	B	S	B	S	B
1.50	5	4	10	8	18	12	-	-	-	-	-	
2.50	5	3	8	6	12	10	-	-	-	-	-	
4	3	2	6	5	10	8	-	-	-	-	-	
6	2	-	T5	4	8	7	-	-	-	-	-	
10	2	-	4	3	6	5	8	6	-	-	-	
16	-	-	2	2	3	3	6	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	6	9	7
35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4

Note:

1) The above table shows the maximum capacity of conduits for a simultaneous drawing in of cables.

2) The columns headed ‘S’ apply to runs of conduits which have distance not exceeding 4.25 m between draw in boxes and which do not deflect from the straight by an angle of more than 15 degrees. The columns headed ‘B’ apply to runs of conduit which deflect from the straight by an angle of more than 15 degrees.

3) Conduit sizes are the nominal external diameters

7. FISH WIRE

18 S.W.G. G.I. wire shall be used and it shall protrude the conduit ends by 9 inches.

8. CONDUIT LAYING IN FLOOR/ROOF SLABS BEFORE CASTING

PVC/ G.I. conduit shall be laid straight as far as practicable and properly placed including binding with the steel reinforcement rods with 22 SWG G.I. wire so that proper positions of conduits are maintained.

While laying the conduits for concealed wiring in the ceiling or in the beams and columns and before casting, the contractor shall ensure that both ends of the conduit are plugged by means of dead-end socket or otherwise so that any foreign matter can not enter the conduit and choke them.

All precaution must be taken while laying the conduits on the slabs, R.C., walls, columns etc. and the contractor shall rectify at his own cost if any defects are found during process of drawing cables through the concealed prelaid conduits. Each PVC/Polythene conduit shall be provided with protruding length of not less than 9 inches on free end of the conduits.

All ceiling outlets shall be terminated in a round CI/GI circular box/deep box to suit standard size ceiling rose or/and rectangular C.I./M.S. junction box or Fan Hook Box as the case may be.

It will be mandatory for the contractor to get the layouts approved by the Engineer-in-Charge when the conduits are laid and bound to steel reinforcement rods, before he can release the work for casting of floor/roof.

9. CONDUCTOR BOXES, DRAW-IN-BOXES: JUNCTION BOXES:

These shall be constructed from 16 SWG M.S. sheet and have M.S. cover. Minimum size for connector boxes is 6" x 4"nd for Draw-in-Boxes4"x4".

10. FAN HOOK BOXES

These shall be 100 mm (4") dia x 75 m (3") deep, constructed from 16 SWG M.S. sheet, and provided with one 12 mm dia M.S. rod 300 mm (12" long).

11. PAINTING

Outside of wall switch boards, connector boxes & draw-in-boxes and other C.I./M.S. accessories shall be painted with two coats of anti-rust paint in addition to other painting instruction given elsewhere.

CABLE INSTALLATIONS

1. **GENERAL**

All HV Cables (up to 33 KV earthed system) shall be either paper insulated SL type or XLPE insulated aluminium conductor cable conforming to I.S. 692 and I.S. 7098 respectively.

All Medium Voltage and Low Voltage PVC insulated and armoured / unarmoured cables shall conform to IS 1554 Part-I-1964 and of 1,100 volt grade.

Old and used cable s must not be used for installation. Only one make of cable shall be used. All cables brought to site must be tested and got approved by the Engineer-In-Charge before these can be laid. The cables shall be dispatched to site on

wooden drums with ends sealed. Exact lengths shall be determined by the Contractor after measurement at site.

The underground installation of cables shall be generally conforming to I.S. 1255-1967, Code of Practice for installation and maintenance of underground cables (up to including 33 KV).

2. **LAYING OF CABLES**

a) Direct in Ground

Trenches shall be 750 mm deep (minimum) for LT Cables and 1.2 M (4'-0") deep minimum for HT Cables from ground level and trenching work shall include all pumping and bailing out water. These trenches shall be wide enough to accommodate all the cables with brick separations as per the requirements specified in the relevant I.S.

When more than one multicore cable is to be laid in the same trench, a minimum horizontal interaxial spacing between cables will be as per relevant I.S.

After excavation of the trench of proper size, the bottom of the trench shall be dressed and leveled and filled with a 75 mm layer of fine sand. The cable shall then be laid with bricks on both sides of the cable continuously. After having the space within the bricks, filled and packed up to a level of 75 mm (3") above top of cable with find sand, the top layer of bricks shall be placed side by side in continuous series as protective cover. Total No. of bricks required being 16 per meter run. The remainder of the trench shall be filled with riddled soil, well rammed and watered to a level of 75 mm (3") above surrounding ground level. The ground level surface of the whole trench route shall be restored properly after completion of cable laying.

b) **Inside Building**

Cables shall be laid on walls/ceiling/structure, unless specified otherwise, with M.S. brackets and suitable clamps or over claw type aluminium cleats fixed on M.S. brackets, spaced not more than 450 mm apart. G.I. Bolts of suitable sizes are to be grouted on the wall properly for fixing the brackets.

c) Minimum bending radius permissible is 12D for MV Cables and 20D for HV cables. At joints and termination, the individual core of multicore cables should never be bent so that the radius is less than 15 times the diameter over the insulation.

3. **CABLE JOINTING**

Experienced and licensed jointers under strict supervision shall carry out all cable joints. Electro plated brass cable glands; aluminium/tinned copper cable sockets and

approved jointing materials must be used. The price for cable jointing and finishing the ends of the cable shall include all materials and shall also provide for tools and plants for the work. The cable armouring is to be properly terminated. All cable accessories and other associated materials shall conform to Indian Standard Specification where applicable. Proper earthing of cable glands and armouring shall be included in the job.

4. **TESTING OF CABLES**:
   All cables shall be tested for insulation resistance with megger– 5,00V constant pressure megger insulation tester for HT Cables and 1,000 V constant pressure megger for MV Cables, before installation.
   After installation and end termination, the cables shall be again subjected to the above test. Insulation value for HT Cables shall not be less than 100 megohms and for MV Cables 1.0 megohm.
   After laying and jointing, the HV Cables shall be subjected to high voltage pressure test before commissioning, the test voltage being as specified in I.S. 1255-1967 or latest.

5. **TESTING OF INSTALLATION**

   Before the completed installation is put into service or handed over to Owner, the installation is to be subjected to the above tests to the satisfaction of the Engineer-in-Charge. The completed work will be taken over only if the results are acceptable to the Owner.

EARTHING INSTALLATION

The installation shall generally conform to IS 3043 – Indian Standard Code of Practice for Earthing, as amended up to date.

1. **EARTHING**

   a. **Pipe Electrode**

      The earthing electrode shall be galvanized steel pipe of Class B medium quality – 50 mm (2”) dia bore and 3.04 M (I0’) long. A hole shall be provided at 100 mm (4”) from the top end to receive a 13 mm (1/2”) dia galvanized bolt and the bottom end shall be chisel cut for easy penetration into soil.

      A suitable trench shall be excavated about 0.45 M (I’-6”) deep and the pipe electrode driven to an average depth of 3.35 M (II’-0”) below ground level. The top end of the electrode shall be at an average depth of 0.30 M (I’-0”) below the ground surface.

      Alternate layers of Charcoal or Salt and Coke to be provided for Electrode as per I.S. Code of Practice unless specified otherwise.

One no. 6 SWG G.I. wire (unless otherwise specified) shall be connected securely on the properly cleaned surface at the top end of pipe electrode by means of a 100 mm (4") long x 13 mm (1/2") dia G.I. Bolts, double nuts and double washers. The earth lead conductor shall be protected mechanically be means of a continuous length of G.I. Pipe (Class A) having 13 mm (1/2") inside diameter up to a height of 0.60 M (2'-0") above ground and the same shall be completely filled with bitumen compound and topped up to overflowing.

b. Plate Electrode

Where plate electrode for earthing is to be employed, the size of the plate shall not be less than 0.6 m x 0.6 m x 6.3 mm thickness for G.I. plate and 0.6 m x 0.6 m x 3.15 mm thickness in case of copper plate.

The plate shall be buried vertically with the top at a minimum of 4.0 M below the ground level for sandy soil and 2.0 M below the ground level for normal soil. In order to place the same at the prescribed depth, the dimension of pit to be excavated shall be 0.9 m x 0.9 x 3 M deep. The plate shall be placed in position by the contractor only after the inspection of excavated pit and approval is obtained from the Engineer.

One no. 50 mm x 6 mm G.I. flat (for electrical installation) or one no. 25 mm x 6 mm GI flat (for Lighting conductor) should be connected to the plate at two points by means of 65 mm long 12 mm dia galv bolts, nuts and galv washers. In case of copper plate copper flat of not less than 32 mm x 6.0 mm shall be used as the earth lead. Brass bolts, nuts and washers shall be used for fixing. All other details shall be in accordance with IS 3043-1987. No joint on the earth lead conductor is permitted. Every care be taken to ensure that the ends of the wire/flats have been securely clamped by the bolt on cleaned surface of the plate and established a goods electrical contact.

After placing the plate the earth lead conductor shall be protected by means of a continuous length of G.I. pipe (Class-B) having 50 mm dia bore or depending upon the size of the lead, right from the plate up to a height of 0.60 meter (2 ft) above ground level. The whole length of pipe shall be filled with bituminous compound of approved make and brand. The molten compound shall be poured from the top end the pipe and topped up to overflowing.

The plate electrode shall have a 50 mm galvanized iron water pipe buried vertically and adjacent to the electrode and reaching up to the center of the plate. The upper end of the pipe shall be at least 5 cm above the bottom of the inspection pit and with wire mesh, funnel, etc as per IS specification.

2. **MASONRY INSPECTION PIT**

The inspection pit for the earth station shall be approx 0.56 M x 0.56 M (1'-10"x1'-10") outside dimensions and approx 0.45 M (1'x6") deep when completed, having 5" thick cement brick work with 1st class bricks in cement mortar (6:I) both inside and outside plastered 19 mm (3/4") thick and neatly cemented I.60 mm (1/16") thick, both inside, outside and top. The opening on top shall be provided with a C.I. ring with lockable cover fixed flush with ground surface.

All the excavations shall be duly back filled, dressed and rammed.

3. **LOCATION FOR EARTH ELECTRODES**

Electrodes shall be buried at least 2 M (6'-6') away from the building pole or object to be earthed. However, earthing electrodes for L.C. installations should be as close to the down conductors as possible.

Electrodes, when installed in parallel, shall not be placed less than 1 M (6'-6") apart and preferably placed at distances greater than twice their lengths.

4. EARTH BUSBAR

a) Galvanized M.S. Flat

The busbar shall be of suitable size and length, as specified in the Schedule of items, heavily galvanized and having adequate number of drilled and tapped holes 30 mm apart, complete with G.I. bolts, nuts, washers for securely connecting the earth leads and earth continuity conductors. The busbar shall be fixed on wall, having clearance of 6 mm from wall with spacing insulators with at least 13 mm (1/2") G.I. rag bolts spaced about 0.46 M (I'-6") apart.

b) Copper Flats:

To be used, as specified, in the Schedule of items, where earthing requirements are more stringent. Brass bolts, nuts washers shall be used for connections.

5. **VALUE OF EARTH RESISTANCE**

In case of installations where the load does not exceed 5 K.W. the resistance to earth shall on no account exceed 5 ohms. Where the load exceeds 5 K.W. the resistance shall not exceed I ohm.

For sub-stations, the value is I ohm.
For L.C. installations, the value is I ohm.

11KV AC SWITCHGEAR WITH VACCUM CIRCUIT BREAKER

1.0 SCOPE

This specification covers the requirement the manufacturer and supply of a single panel extensible type HT switchboard. The HT supply (nominal) is to be received from the supply authority on the HT switch board for feeding 1 no. 315 KVA transformer.

2.0 AMBIENT CONDITION

The switchboard shall be suitable for continuous operation at rated load at ambient temperature of 50 degree centigrade /relative humidity of 100%, the maximum temperature and humidity not occurring simultaneously.

3.0 STANDARDS & CODES

The switchgear and other equipment incorporated in the switchboard shall comply with, but not limited to the following:

IS 13118 IS 2516 IS 3427 IEC Publ 298 and 694	H.T Circuit Breaker
BS 5227 IEC 60056	
IS 2705	: Current Transformer
IS 1248 & 2419	: Indicating Instruments
IS 3231	: Protective Relays
IS 375	: Busbar Markings

4.0 ELECTRICAL SYSTEMS

Voltage	: 11KV ± 12.5%
Frequency	: 50 Hz ± 3%
Short circuit level	: 250 MVA (18.1 KA) at 11 KV

System Neutral : Directly Earthed

5.0 BASIC SPECIFICATION OF HT SWITCHGEAR (SINGLE PANEL)

These shall be circuit breakers and shall be triple pole vacuum type with minimum rating of 400A at 11KV and having rupturing capacity of 250 MVA and short circuit breaking current of 18.1 KA. The circuit breaker to have electrically operated motorized spring charged type closing and trip free mechanism and with DC shunt trip coils for tripping and minimum 4 nos. 'NO' and 4 nos 'NC' auxiliary air break contacts for control circuits with E/F, S/C and O/L protection. The circuit breakers shall have integral vacuum interrupters, which should use the rotating arc principle, in which the arc in vacuum bottle is driven around the contact surface without arc extinguisher and should be extinguished in short time. The entire circuit breaker with its operating mechanism, shall be mounted on a draw out type chassis/trolley inserted into floor standing sheet steel enclosure, suitable for withstanding electromagnetic forces at the time of as symmetrical fault, and have plug-in type off load isolating contacts.

The vacuum circuit breakers shall be enclosed in sheet steel clad independent floor mounting cubicles, capable of being coupled with identical units on either side to from the switch board.

The circuit breaker shall be such that when the with draw able part has been removed the metal shutters can be opened with a lever, e. g to inspect the mating contacts, or locked with a padlock, the upper portion (access to the busbar) and the lower portion (access to the termination. compartment) can be unscrewed with the metal shutter closed. This makes it possible to work in the busbar compartment with the termination compartment fully partitioned off, and vice versa. The breaker shall be provided with three distinct positions namely Service, Test and Isolate.

The stationary enclosure of Vacuum Circuit Breaker shall have:

a) Set of three phases busbars extendable at either end

b) Current and potential Transformers, as mentioned below and in SLD

c) One no. Cable box with air termination of incoming/outgoing cable

d) One set indicating/recording instrument with protective relays, as the case may be, mounted on the same panel.

Necessary selector switches, indicating lamps etc. for all the breakers shall also be mounted on the same panel. The trip circuit shall be continuously supervised with trip circuit supervision relay and provided with push button and indication lamps.

6.0 **FORMATION**

The single panel HT switchboard shall comprise of –
1 No. Incomer controlled by 1 no. 11 KV, 400A, 250 MVA (18.1 KA) vacuum circuit breaker

7.0 **INSTRUMENTS AND PROTECTIONS**

The single panel switchboard shall have following instruments and protections:

7.1 **Current Transformers**

3 Nos 60/30/5/5A 5P 10 and 0.5, 10 VA for protection and metering.

7.2 **Potential Transformers**

3 Nos 60/30/5/5A 5P 10 and 0.5, 10 VA for protection and metering.

7.2.1 The panel shall be provided with 1 no. 11 KV/ 110V, 100 VA star/star voltage transformer accuracy class 0.5 as per IS 4046.
The Voltage Transformer shall be 11000/110 Volts, three-phase star/star type with one neutral terminal on HT & LT side connected to earth. The transformer shall be complete with HT and LT side fuses and shall be draw out type with plug in type contacts.

7.3 **Indicating Instruments**

a) 1 No. 0-60 scale, CT opened 144 x 144 mm flush mounting MISC ammeter, 1.0 accuracy class to IS 2419 with Ammeter selector switch.
b) 1 No. 1-15 KV scale 144 sqmm flush mounting Voltmeter with 1.0 accuracy to IS 2419 with voltmeter selector switch.

7.4 **Protections**

Through CDG – 61 Relay (1.3 Seconds) having:
a) 2 pole O/C and 1 pole E/F, IDMTL protection with settings 50% to 200% for over current and 20% to 80% for earth fault respectively.
b) High set instantaneous units along with IDMTL over current elements, setting range 200% to 800% for O/C and 100% to 400% for E/F.
c) Auxiliary relay for continuous supervision of trip circuit with push buttons.

7.5 **Indications**

Red and Green indication lights shall be provided on each panel for ON/OFF Indications. Indication lights for “Trip “shall be “White” and “Trip circuit Supervision Healthy” shall be “Amber”.

7.6 **Identification Labels**

The labels shall comprise of 12 mm high back engraved lettering on 3 mm thick white Perspex materials.

8.0 **EARTH BUSBAR**

A copper earth bus of adequate section shall be provided along with the width of cubicle.

Earth buses of adjacent panels of the switch board shall be suitably coupled to form a continuous earth bus over the entire width of the switch board.

The earth bus of the switch board shall be suitable for connection with earth conductor at the place of installation at either end.

All the stationary items of the panels shall be directly connected with earth bus.

The frame of each VCB carriage shall be earthed through heavy multiple finger contacts.

There shall be provision of earthing of outgoing cable cores at the time of maintenance. Interlock shall be provided to prevent switching ON of circuit breaker without removal of above cable core earthing.

9.0 **TESTS**

Vacuum Circuit Breaker panel shall undergo routine tests as per latest issue of ISS at manufacturers premises. The equipment shall be suitable to withstand second high voltage pressure Test as per I.E Rules, on completion of all cable connections, prior to Commissioning. The tests shall be carried out in presence of Owner or his Authorized representative.

10.0 PAINTING

All sheet steel parts (both inside and outside) of the Vacuum Circuit Breaker panels shall be given anti-corrosive treatment and finish to approved shade as per the manufacturer's practice.

11.0 GUARANTEE

All equipment shall be guaranteed for 12 calendar months from the data of commissioning and handing over, against defective design, manufacture and/or workmanship.

12.0 DARWINGS

The drawings and documents as scheduled below shall be furnished:

S No.	Description	To be submitted
1	3 copies of descriptive technical literature with outline dimensions of PCB panels relays meters etc.	With tender
2	3 sets of test certificates of VCB's, issued by Central Power Research Institute, Bhopal/Bangalore	With tender
3	Certified General Arrangement Drawing with fixing details and cable plan with plan and sectional view, with material list of components and makes, for the complete three panel board.	
a)	4 prints for comments and approval	With one month from the

		date of order
b)	4 prints of final working drawings and one copy of reproducible print each.	Within 15 days from the date of receipt of comments
4	Certified schematic and wiring showing CTs, Relays, metering, shunt trip coil and contacts, auxiliary contactors and contacts etc. with ferrule numberings, for each of the two panels.	
a)	4 prints for comments and approval.	Within one month from the date of receipt of order
b)	4 prints of final working drawings and one copy reproducible print each.	Within 15 days from the date of receipt of comments.
5	4 copies of Test Certificates.	With 15 days from the date of supply
6	4 copies of Guarantee Certificate.	With dispatch documents
7	3 copies Recommended list of spares with prices thereof, for two years routine maintenance.	With tender
8	4 sets of Installation, operation and maintenance instructions.	With dispatch documents

Note: All drawings and documents shall be submitted before submission of final bills. The final bill shall be processed and paid by Owner only after compliance of the above formalities.

INSTALLATION OF HT/LT SUBSTATION

1.0 SCOPE

The specification covers the requirements of installation, testing and commissioning of Indoor HT/LT sub-station and associated items cabling, earthing etc. The HT/LT substation comprising of 11 KV 400 A , 250 MVA 18.1 KA indoor sheet steel enclosed floor mounting circuit breaker (VCB) and 315 KVA 11/00.433 KV ONAN outdoor type transformer, LT switchboards and associated cabling and earthing etc. The substation shall be located in the separate building and feed power supply to each and every loads of the project. The works are to be carried out in accordance with the drawings, bill of quantities/schedule of items to which this specifications has been referred to and together with any other specification/instructions given to the contractor by the Consultants/Owner. Detailed working/installation shall have to be prepared by the contractor and work shall be executed as per the approved drawings. This includes GA single line diagram drawings, cable schedule with sizes and specifications, type and destination etc.

2.0 CODES AND STANDARDS

All electrical installation shall be strictly in accordance with Indian Electricity Rules and Acts, currently inforce and in accordance with relevant Indian Standard Code of Practice, wherever such code of practice exists, namely:

a)	Earthing	:	I.S 3043
b)	HT XLPE Cable	:	I.S 7098
c)	Switchgear	:	I.S 3072
d)	Transformer	:	IS – 11171/1985, I.S 1886, IS 2026
e)	Danger Board	:	I.S 2551
f)	Electrical Wiring	:	I.S 732, 400/440 KV
e)	Electrical Wiring	:	I.S 2274, 11 KV

For installation of such equipment, not covered by above Standard Code of Practice, the procedure shall be compatible with the essential features of above standards.

3.0 AMBIENT CONDITION

The atmosphere at the project site shall be considered to have following conditions:

a) Maximum ambient temperature: 50°C
b) Maximum relative humidity: 100%
c) Maximum temperature and humidity not occurring simultaneously
d) Contamination: Air contamination with fine dust particles

4.0 REFERENCE DRAWINGS AND SPECIFICATION

The electrical installation shall be carried out in accordance with the working drawing to be prepared on the basis of drawings and specifications issued by architects and after obtaining proper approval from the statutory authorities.

5.0 CIVIL ENGINEERING WORK

All civil works such as making of foundations, pockets for bolts for grouting the equipments, cutting of floors, walls for the passage of cables, earth strips etc. including insertion of suitable sized CI pipes at such cutting/opening and filling and sealing of them etc are to be included in the present scope. For all doors, ducts buildings to be provided ready to the contractor and any other floor chasing required to be made by the contractor, shall be filled up with sand or otherwise as approved and acceptable to the Electrical Inspector to an acceptable level after laying of cables and other materials and shall be as far as practicable flush with the floor.

6.0 DELIVERY & HANDLING

All deliveries to site storage and subsequent loading, handling, transporting and placing in position of all equipment and materials shall be carried out by the contractor and the cost shall be included in the offer.
During the process of installation and construction, if any, materials/ equipments brought to the site by the contractor is found left in a position causing obstruction to any activity, the contractor shall remove the same promptly, when instructed, without any additional charges.

7.0 H.T SWITCHBOARD

There shall be a single panel 11KV, 250 MVA 18.1 KA sheet steel enclosed vertical floor mounting vacuum circuit breaker switchboard panel of recommended make.
The HT switchboard shall be installed in position in the Sub-station consumer HT switch room as per the approved layout drawing.
The HT switch board shall e fixed to the floor by means of holding down bolts, placed in 100 mm deep pockets cut in floor and filled with 1:2:4 cement concrete. The switchboard shall be aligned and leveled properly before final fixing.
The indoors of the HT panel namely current carrying parts, insulators, busbars, wiring, CTs, PTs, fuses, meters etc shall be thoroughly cleaned. If necessary good cleaning solvent suitable for cleaning electrical items shall be used without damaging the components so as to reach a very good and high insulation value when measured with a 5000V megger.
The circuit breaker unit shall be checked for proper ON/OFF/TRIP operations with secondary injection testing kit.
The switchboard to be finally tested and commissioned after cable connections and obtaining proper approval from the Electrical Inspector in writing following the HV tests.

8.0 EQUIPMENT ENCLOSURE EARTHING

All individual HT and LT equipment panel, switchboard etc shall be double earthed in conformity with IE Rules and ISI Specifications.
Double earth connection conductors shall be as follows:
HT switch board, Transformer and LT Switch board. : 2 Nos 50 x 6 mm GI strip
All non current carrying metal parts of electrical equipment including light fittings, switches, socket outlets, shall be earthed in conformity with IE Rules and acts as according to the latest IS specifications. The small power consuming equipment using 240V AC power supply shall be provided with single earth of 14 SWG GI wire.

9.0 TESTING AND COMMISSIONING

In addition to various tests specified hereinbefore with the individual equipment including HV test, further tests are to be carried out by the power supply authority (WBSEB) and permission to be obtained from the Electrical Authority for commissioning and permanent energisation of the substation equipment. The installation will be deemed to have been completed and commissioned when it shall be found satisfactory in operation for minimum 15 days without interruptions, after attendance of all defects and rectifications as pointed out by the Electrical Authority as well as Architect/Owner to their full satisfaction.
The load on the installation will be given progressively as and when the power commissioning equipment are installed and put to use. Any deficiency detected during progressive loading shall be rectified /replaced by the contractor immediately after identification under the defect liability period without any extra charge.

10.0 SPARES

All consumables/spares required at the time of commissioning shall be supplied free of charge by the contractor.
The recommended spares for two years routine maintenance shall be quoted for by the contractor.

APPROVED MAKES/BRAND OF MATERIAL

Sl. No.	Description		Make
1	ONAN Transformer		Kirloskar / CG / Schneider / ABB/ L&T / Siemens
2	11 KV Vacuum Circuit Breaker		Kirloskar / CG / Schneider / ABB/ L&T / Siemens
3	11 KV (UE) XLPE Armoured cable		CCI / INCAB / Gloster / Skytone / KEI
4	11 KV Cable Termination Kit		INCAB / CCI / M-Seal / Denson / Raychem
5	MCCB		ABB / L&T / Siemens / Schneider / Legrand/ hager/ Havells
6	LT Panel		Fabricator who has ISO certification or CPRI Test certification for this panel
7	MCB and MCB Board		ABB / Siemens / Schneider / Legrand / GE / Hager/Indoasian
8	ELCB, RCBO		ABB / Siemens / Schneider / Legrand / Hager/Indoasian
9	Switch Fuse Unit		HPL/ Standard/Indo Asian / L&T / Siemens /ABB
10	1.1 KV PVC / XLPE Aluminium / Copper conductor cable		CCI / INCAB / Gloster / Polycab / Skytone / KEI / Havells/ Finolex/RR Kabel
11	1100V, PVC insulated multistrand Copper wire		National / Skytone / Polycab / RR Kable / Finolex / KEI
12	Steel Conduit and accessories		BEC / NIC / AKG
13	PVC conduits (Heavy Duty) and accessories		BEC / CAP / AKG
14	Voltmeter, Ammeter (Analog)		L&T / AE / IMP / Rishabh
15	Voltmeter, Ammeter (Digital)		Schneider / L&T / Siemens / ABB
16	Selector Switch		Kaycee / L&T
17	Relays		Schneider / L&T / Siemens / ABB / Minilec / GE
18	Current Transformer		L&T / Kappa / AE
19	Indication Lamps		L&T / Siemens
20	Energy Meter		L&T / GE Power / HPL/ Schneider
21	Telephone wire		National / Skyline / Polycab / Delton / Finolex
22	Switch / Sockets, Ceiling rose		Anchor / SSK / Rider / Precision/ CPL

	(3 plate)		
23	Multi function digital meter, TV meter MWH, PF, KVAH, A, V etc, Relays		L&T / Alsthom / Schneider / Siemens / ABB
24	Power factor Microprocessor Controller		BLR CXD (Beluk)
25	Capacitors HPP heavy duty		L&T / Neptune / Schneider / Siemens / ABB/GE
26	Contactors		L&T / Schneider / Siemens / ABB
27	PVC Terminal		Elmex / Essen
28	Holder		Anchor / SSK / Precision
29	GI Pipe		Tata / ITC / Jindal / QST / XST
30	Changeover Switch		ABB / HPL - Socomec / Standard
31	Paint		Jenson & Nicholson / Berger / Asian
32	Push Button		L&T / Siemens / ABB
33	Metal Clad Socket		BCH / Crompton / HPL / Standard
34	Cable lugs		Dowells
35	Cable Gland		Comet / Dowells
36	Modular switch, socket, board, plate, cover etc.		Anchor / Legrand / CPL
37	KWH meter analog mechanical, electronic		GE / HPL / ABB / Jaipur
38	LED Light fittings		Philips/Crompton/Bajaj/Wipro
39	All type of Fan		Crompton/Bajaj/Usha