

TENDER ID: BHO201912010

(Technical Bid)

Electrical work in the award staff canteen at Ground floor, LHO , BHOPAL

Sl. No.	Description
(a)	Tender ID
(b)	Tender Name <u>Electrical work in the award staff canteen at Ground floor, LHO , BHOPAL(M.P.)</u>
(c)	Start Date of Tender 27.12.2019
	Close Date of Tender 10.01.2020
(d)	Tender Fee Amount Rs.1000.00 (Rupees one Thousand only) to be paid only through State Bank Collect(SB Collect an efficient MIS report generating tool). The steps involved in making the payment is provided at Annexure-A.

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NOTICE INVITING TENDERS

SBI Infra Management Solutions Pvt. Ltd. (hereinafter mentioned SBIIMS), Circle Office, at Mezzanine Floor, State Bank of India, Local Head Office, Hoshangabad Road, Bhopal (M.P.)-462011, on behalf of State Bank of India, LHO Bhopal invites e-tenders from the empanelled/approved vendors with SBI, LHO Bhopal for the Categories 15 lacs, 50 lacs & 100 lacs through SBI service provider M/s. E-Procurement Technologies Pvt. Ltd., Ahmedabad who receive the NIT for [Electrical work in the award staff canteen at Ground floor at LHO, Bhopal.](#)

Note: The vendors should possess valid digital signature for participation in the e-tendering process.

Details of the tender are as under:-

1.	Name of Work and location of work	Electrical work in the award staff canteen at Ground floor at LHO, Bhopal.
2	Cost of Tender processing fee	Rs.1000 (Rupees one thousand Only) (Non-Refundable) to be credited only through State Bank Collect (SB Collect an efficient MIS report generating tool). The steps involved in making the payment is provided at Annexure-A .The receipt generated with the Reference No. will be submitted along with the Technical Bid as a proof for payment..
3.	Earnest Money Deposit (EMD)	Rs.7,000/- (Rupees seven Thousand Only) in the Form of Demand Draft/Banker's Cheque issued by any Nationalised /Scheduled Bank Drawn in favour of " SBI Infra Management Solutions Pvt. Ltd. " Payable at Bhopal, which is to be submitted along with the Tender Application fee in a separate envelope super scribing "EMD" & Tender Application fee and should be sent to Vice President, SBIIMS, Circle Office, SBI, LHO Building Mezzanine Floor, Bhopal. Without EMD * Tender application fee, the Tender will be rejected.
4	Start Date of Tender	27.12.2019
	Close Date	10.01.2019
5	Technical Bid	The following Documents should be submitted in a sealed envelope addressed to the Circle Head,

		<p>SBIIMS, Bhopal Circle, SBI Local Head Office Mezzanine Floor SBI Bhopal, LHO Building Hoshangabad Road, Bhopal-4620211 or the scanned copies of the following documents may be e-mailed to headbho.sbiims@sbi.co.in on or before 17.08.2019 up to 03:00 PM :-</p> <p>i) <u>Tender Processing Fee</u> amounting to Rs 1000.00 (Rupees one Thousand only)(Non-Refundable) to be credited only through State Bank Collect (SB Collect an efficient MIS report generating tool). The steps involved in making the payment is provided at Annexure-A The receipt generated with the Reference No. will be submitted along with the Technical Bid as a proof for payment.</p> <p>ii) <u>Earnest Money Deposit (EMD)</u> amounting Rs. 7,000.00 (Rupees seven Thousand only).</p> <p>iii) <u>The Process Compliance Form as at Annexure-I</u> duly filled, signed and stamped by the Bidder as token of acceptance of all the terms & conditions stipulated in this tender, which is also to be e-Mailed to the Service Provider for conducting e-Tendering Process.</p> <p>The Bidder, who failed to submit any of the above mentioned documents, will be disqualified in Technical Bid and will not be allowed to participate in subsequent online sealed Price Bid submission. Moreover, the conditional tenders are liable for rejection and will not be allowed to participate in e-Tendering Process.</p>
6	Price Bid	The Lowest Bidder will be finalized from the Price Bid submitted by the Contractors/Vendors through the service provider .The Details of the events is as un-

		der:- Only the bidders who qualified in Technical Bid (submitted Tender Processing Fee, EMD and Process Compliance Form) will be eligible to participate in the Online Sealed Price Bid submission of this e- Tendering Process. The bidder should have valid digital signature for participation in the e-tendering process.
8	Validity for Offer	3 (Three) Months from the date of opening of Price-Bid
9	Time for completion of work.	20 days from date of Purchase Order.
10	Deduction of income tax and ST works contract tax etc.,	As per Central / State Government rules from time to time.
11	Terms of payment	i) No advance is payable. ii) Payment shall be made as per tender payment conditions
12	Contact Person, Phone No and Mail Id for any clarifications	Contact Shri. D.N Rajolia, 0755-2572551, email-ID Headbho.sbiims@sbi.co.in

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Annexure-A

The steps involved in making the payment through SB Collect are as under :-

1. The Vendor needs to use SBI internet banking site <https://www.onlinesbi.com/>.
2. Select "**SB Collect**" from Top Menu, that will lead to the next page:
3. "**Proceed**" will lead to the next page:
4. Select "**All India**" in "State of Corporate / Institution" & Select "**Commercial Services**" in "Type of Corporate / Institution".
5. "**Go**" will lead to the next page:
6. Select "**SBI Infra Management Solutions**" in Commercial Services Name and "**Submit**"
7. Select "**Tender Application Fee**" in "Payment Category" and enter the "**Tender ID**"

exactly as we preloaded with characters in Uppercase only in place of Circle Codes.

8. The next Page will be ready with few of the Preloaded Tender Details:
9. The Vendor will have to fill up the fields properly and upon making the payment a receipt will be generated with a Reference No.

NOTE : Any type of vendor, whether dealing with SBI or other bank can use this SB Collect facility.

Even a contractor not dealing with any bank can use this portal and generate challan and deposit by cash in any SBI branch. The bank charges for cash deposit will be also borne by the vendor himself.

**Vice President & Circle Head
SBIIMS, CO., Bhopal**

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SECTION – 1

INSTRUCTIONS TO THE TENDERERS

1.0 Scope of work :Electrical work in the award staff canteen at Ground floor at LHO, Bhopal.

e- tenders are invited by SBIIMS, CO Bhopal for and behalf of State Bank of India for the

The proposed work is to be carried out at Award staff canteen at Ground floor, LHO, BHOPAL(M.P.)

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
Additional specifications
Drawings
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) Additional Specifications
- c) Technical specifications
- d) Drawings
- e) Special conditions of contract
- f) General conditions of contract
- g) Instructions to Tenderers

2.3 Complete set of tender documents including relative drawings can be collect from the pre-qualified agencies / companies & NIT issued by Consultants i.e. and M/s.CONCEPT ENGINEERING, Y-4 Fortune Glory ,BawadiaKalan Bhopal.M.P. 462039,Tel.No. 9826086462 during office working hours (Monday to Friday), between 10.00 A.M. and 5.00 P.M. Saturday 10.00 A.M. TO 2.00 P.M.

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**

- 4.1 The tenderers are requested to submit the Earnest Money of Rs **15,000=00** (Rupees fifteen thousand only) in the form of **only Demand Draft or Banker's Cheque** in favor of The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt. Ltd., Bhopal, payable at Bhopal.

- 4.2 EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in accordance with clause 4.1 above shall be rejected.

- 4.3 No interest will be paid on the EMD.

- 4.4 EMD of unsuccessful tenderers will be refunded within 30 days of award of Contract.

- 4.5 EMD of successful tenderer will be retained as a part of security deposit.

5.0 **Initial/ Security Deposit**

The successful tenderer will have to submit a sum equivalent to 2% of contract value less EMD. By means of D/D drawn in favour of The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal 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, which includes the EMD. 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 3% of contract value is reached. 50% of the total security shall be paid to the contractors without interest on the basis of certifying the virtual completion. The balance 50% would be paid to the contractors without interest within 15 days after the end of the defect liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.
- 6.2 No interest shall be paid to the amount retained by the SBIIMS/Bank as Security Deposit.

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 30 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 **45 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 SBIIMS/Bank shall be at liberty forfeit the EMD.

10.0 **Liquidated Damages**

The liquidated damages shall be 0.5% 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 Consultants/ SBIIMS.

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 totaled and the grand total shall be given.

11.1.6 The rate quoted shall be firm and shall include all costs, allowances, taxes, levies. All quoted rates shall be inclusive of all taxes, Govt., Sales Tax (State & Central) Works Contract Tax, all duties, octroi, excise duty, service tax, levies, and wages as per minimum wages Act or as imposed from time to time and VAT as applicable etc. The rates shall be firm for the duration of this contract plus authorized extension period if any.

GENERAL CONDITIONS OF CONTRACT

1.0 Definitions: -

"Contract means the documents forming the tender and the acceptance there of and the formal agreement executed between State Bank of India (client) and the contractor, together with the documents referred there in including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Consultants/ Bank 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 'SBIIMS' shall mean State Bank of India Infra Management Solutions (client) having its Head Office Infra Management Solution Pvt.Ltd., at Mumbai and includes the client's representatives, successors and assigns.

1.1.2 'Consultants' shall mean M/s Bisaria Power & Energy Consultants, Bhopal.

1.1.3 Deleted.

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

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

1.1.5 'Engineer' shall mean the representative of the consultant.

1.1.6 '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 value of the entire work as stipulated in the letter of acceptance of tender

subject such additions there to or deductions there from as may be made under the provide herein after contained.

- 1.1.7 Specifications' shall mean the specifications referred to in the tender and modifications thereof as may time to time be furnished or approved by the SBIIMS/ Consultant.
- 1.1.8 "30 Days" means calendar Days.
- 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.
- 1.1.11 "Bank's Engineer" shall mean The Civil / Electrical Engineer in - charge of the Project,
as nominated by the Head Office Infra Management Solution Pvt.Ltd.,Bhopal
- 1.1.12 The following shall constitute the Joint Project Committee (herein under referred to as JPC) for assessing and reviewing the progress of the work on the project and to issue instructions or directions from time to time for being observed and followed by the Consultantss site Engineer /PMC and other consultants / contractors engaged in the execution of the project.
- i) The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal who shall be the Chairman of the Committee.
 - i) Bank's Engineer (civil and Electrical) in-charge of the Project, as may be nominated by the Vice President & Circle HeadMembers
 - ii) Concerned partner of the Consultant and their Resident Consultantt....Member.
 - iii) Project Manager OR Resident Engineer -in-charge of project of the PMC...Member and Secretary respectively.

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2.0 Total Security Deposit

Total Security deposit comprise of

Earnest Money Deposit

Initial security deposit

Retention Money

a) **Earnest Money Deposit -**

The tenderer shall furnish EMD of Rs. **15,000=00** (Rupees fifteen thousand only) the form of Demand drawn in favour of The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal, payable at Bhopal.drawn on any Scheduled Bank.

No tender shall be considered unless the EMD is so deposited in the required form. No interest shall be paid on this EMD. The EMD of the unsuccessful tenderer shall

be refunded soon after the decision to award the contract is taken without interest. The EMD shall stand absolutely forfeited if the tenderer revokes his tender at any time the period when he is required to keep his tender open acceptance by the SBI or after it is accepted by the SBI the contractor fails to enter into a formal agreement or fails to pay the initial security deposit as stipulated or fails to commence the work within the stipulated time.

b) **Initial Security Deposit (ISD)**

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

c) **Retention Money: -**

Besides the ISD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 8% of the gross

value of work done by the contractor and claimed in each bill provided the total security deposit ie. the ISD plus EMD plus Retention Money shall both together not exceed

10% of the contract value. 50% of the total security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate by the consultant along with final bill. The balance 50% of the total security deposit shall be refunded to the contractors without interest within fifteen days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

d) **Language**

The language in which the contract documents shall be drawn shall be in English.

3.0 **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 former shall be adopted:
 - a) In case of difference between rates written in figures and words, the rate in words shall prevail.
 - b) Between the duplicate / subsequent copies of the tender, the original tender shall be taken as correct.

4.0 **Scope of Work:**

The contractor shall carryout complete and maintain the said work in every respect strictly accordance with this contract and with the directions of and to the satisfaction Bank to be communicated through the consultant. The consultant at the directions of the Bank from time to time issue further drawings and / or write instructions, details directions and explanations which are here after collectively references to as consultant's instructions in regard to the variation or modification of the design, quality or quantity of any work or the addition or omission or substitution 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 any substitution of any other materials therefore the removal and / or re-executed of any work executed by him. The dismissal from the work of any person engaged thereupon.

5.0 i) **Letter of Acceptance:**

Within the validity period of the tender the Bank shall issue a letter of acceptance directly or through the Consultants by registered post or otherwise depositing at the 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 bind contract between the SBI and the contractor.

ii) **Contract Agreement:**

On receipt of intimation of the acceptance of tender from the SBIIMS / Consultant the successful tenderer shall be bound to implement the contract and within fifteen days there of shall sign an agreement in a non judicial stamp paper of appropriate value.

6.0 **Ownership of drawings:**

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

7.0 **Detailed drawings and instructions:**

The SBIIMS through its consultants shall furnish with reasonable proper additional instructions by means of drawings or otherwise necessary for the execution of the work. All such drawings and instructions shall be consistent with contract documents, true developments thereof and reasonably inferable there.

The work shall be executed in conformity therewith and the contractor prepare a detailed programme schedule 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 consultant.

7.0 **Copies of agreement**

Two copies of agreement duly signed by both the parties with the drawings shall be handed over to the contractors.

8.0 **Liquidated damages:**

If the contractor fails to maintain the required progress in terms of completion time stipulated in the tender 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 contract value which subject to a maximum of 5% of the contract value.

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 re

quired 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 and shall not employ on the work any unfit person or anyone not skilled

in the work assigned to him. Workman whose work or behavior is found to be unsatisfactory by the SBIIMS / consultant he shall be removed from the site immediately.

10.0 Permits, Laws and Regulations:

Permits and licenses 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, and ordinances rules, applicable to the contract. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBIIMS in writing under intimation of the 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 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 consultant the contractor shall be responsible for the same and shall 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, except due to causes beyond his control and due to his fault or negligence.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protections of his em-

ployees on the works and shall comply with all applicable provisions of Govt. and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property on about or adjacent to his place of work. The contractor shall take insurance covers as per clause 24.0 at his own cost. The policy may be taken in joint names of the contractor and the SBIIMS and the original policy may be lodged with the SBIIMS.

13.0 **Inspection of work:**

The SBIIMS / Consultant or their representatives shall at all reasonable times 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/consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the SBIIMS/ 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 the contractor and he shall not directly entrust and engage or indirectly transfer, assign or underlet the contract or any part or share there of or interest therein without the written consent of the SBIIMS through the Consultants 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 consultant instructions and shall be subject from time to time to such tests as the consultant 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, labor, and materials as are normally required for examining measuring sampling and testing any material or part of work before incorporation in the work for testing as may be selected and required by the consultant.

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 consultant. Before submitting the sample / literature the contractor shall satisfy himself that the material / equipment for which he is submitting the sample / literature meet with the requirement of tender specification. Only when

the samples are approved in writing by the consultant the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Consultant for identification and shall be kept on record at site office until the completion of the work for inspection / comparison at any time. The Consultant 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**

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

iv) **Costs of tests not provided for**

If any test is ordered by the Consultant which is either

- a) If so intended by or provided for or (in the cases above mentioned) is not so particularised, or though so intended or provided for but ordered by the Consultant 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 fulfillment of contract.

17.0 **Contractor's superintendence**

The contractor shall give necessary personal superintendence during the execution the works and as long, thereafter, as the Consultant may consider necessary until the expiry of the defects liability period, stated here to.

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 and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent. The entire amount paid under Clause 19, 20 hereof as well as amounts of prime cost and provision sums, if any, shall be excluded.

19.0 **Works to be measured**

The Consultant may from time to time intimate to the contractor that he require the work to be measured and the contractor shall forthwith attend or send a quantity representative to assist the Consultants 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 mea-

surements detail in the specifications. The representative of the Consultant shall take measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorised 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 M book should the contractor not attend or neglect or omit to depute his representative to take measurements the measurements recorded by the representative of the consultant shall be final. All authorized extra work, omissions and all variations made shall be included such measurement.

20.0 **Variations**

No alteration, omission or variation ordered in writing by the consultant vitiates the contract. In case the SBIIMS / Consultant thinks proper at any 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 Consultant shall give notice thereof in writing to the contractor shall confirm in writing within seven days of giving such oral instructions the contract shall alter to, add to, or omit from as the case may be in accordance with such but the contractor shall not do any work extra to or make any alterations 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 Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the 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 Consultant with the concurrence of the SBIIMS as herein mentioned. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

- a)
 - (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 consultant 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 consultant 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 Consultant) the workman's name and materials employed be delivered for verifications to the 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 two months 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 SBI, the contractor shall ensure that the following works have been completed the satisfaction of the SBIIMS:

- 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, structure 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 not incorporated in the permanent works.
- c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor the SBI and shall clear, level and dress, compact the site as required by the SBIIMS.
- d) Shall put the SBI in undisputed custody and possession of the site and all land allot by the SBI.
- e) Shall hand over the work in a peaceful manner to the SBI.
- f) All defects / imperfections have been attended and rectified as pointed out by the to the full satisfaction of SBIIMS/SBI.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor is entitled to apply to the consultant is satisfied of the completion of work. Relative to which the completion certificate has been sought, the consultant shall within fourteen (14) days of the receipt of the application for completion certificate, issue a VCC in respect of the work for which the VCC has applied.

This issuance of a VCC shall not be without prejudice to the SBI's rights and contractor liabilities under the contract including the contractor's liability for defects liability nor shall the issuance of VCC in respect of the works or work at any site be construction as a waiver of any right or claim of the SBIIMS against the contractor in respect of or work at the site and in respect of which the VCC has been issued.

24.0 **Work by other agencies**

The SBIIMS / consultant reserves the rights to use premises and any portion the site for execution of any work not included in the scope of this contract with 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. Such work shall be carried out in such manner as 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 insure in the joint names of the SBIIMS & the contractor against all loss of 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 I clause 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 effected 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 consultant the policy if 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 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 SBI their agents, employees or other contractors not being employed by the contractor or for 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 SBI, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

25.3 **Contractor to indemnify SBI/SBIIMS**

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

25.4 **Contractor's superintendence**

The contractor shall fully indemnify and keep indemnified the SBI/SBIIMS 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 SBI/SBIIMS 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 SBI/SBIIMS 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 consultant 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 24.0 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 SBIIMS, or to any person, including any employee of the 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 24.0 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 which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required, produce to the consultant the policy or policies of insurance cover and receipts for payment of the current premiums.

25.6 The minimum insurance cover for physical property, injury, and death is Rs.5 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 workman:

25.7.1 The SBI/SBIIMS 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 SBI/SBIIMS or their agents, or employees. The contractor shall indemnify and keep indemnified SBI/SBIIMS 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.

25.7.2 Insurance against accidents etc. to workmen

The contractor shall insure against such liability with an insurer approved by the SBI/SBIIMS during the whole of the time that any persons are employed by him on the works and shall, when required, produce to the 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 SBI/SBIIMS is indemnified under the policy but the contractor shall require such sub-contractor to produce to the consultant when such policy of insurance and the receipt for the payment of the current premium.

25.7.3 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 SBIIMS 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 SBIIMS as aforesaid from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

25.7.4 Without prejudice to the others rights of the SBI/SBIIMS against contractors. In respect of such default, the employer 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 SBIIMS 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 date of fifteen days from the date of award of letter by the SBIIMS.

27.0 **Time for completion**

Time is essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **45 Days calendar days** from the date of commencement. If required in the contract or as directed by the consultant. 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**

No Extension of Time will be allowed , However If, in the opinion of the /consultant, the work be delayed for reasons beyond the control of the contractor, the /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 Consultant in writing at least 3 Days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reason in detail and his justification if any', for the delays. The 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 provision of liquidated damages as stated under clause 10.0 shall become applicable. Further the 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 consultant should the rate of progress of the work or any part thereof be at any time be in the opinion the. consultant too Slow to ensure the completion of the whole of the work the prescribed time or extended time for completion the consultant shall thereupon take such steps as considered necessary by the consultant to expedite progress so as to complete the works by the prescribed time or extended time. Such communications from the consultant neither shall relieve. The contractor from fulfilling obligations under the contract nor he will 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 consultant, 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 consultant. However the provisions 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 / continued with the prior approval of the consultant at no extra cost to the SBIIMS.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance.

31.0 No compensation or 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 required the whole or any part of the work to be carried out. The consultant 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 bonafide 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 Consultant 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 SBI/SBIIMS 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 consultant shall be final.

32.0 Suspension of work

- i) The contractor shall, on receipt of the order in writing of the consultant (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 consultant may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.
 - a) On account 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 the contractor, or
 - c) for safety of the works or part thereof.

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

- i) 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 **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 consultant shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBIIMS.

- a) To rescind the contract (of which rescission notice in writing to the contractor by - 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 SBIIMS and to supply materials to carry out the work, or part of the work, debiting the contractor with the cost of the labour and materials cost of such labour and materials as worked out by the consultant shall 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 certificate of the consultant as to the value of work done shall be final conclusive against the contractor.
- c) To measure up the work of the contractor, and to take such part thereof as shall 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 (The amount of which excess the certificates in writing of the consultant shall final and conclusive) shall be borne by original contractor and may be deducted f any money due to him by SBIIMS 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 rescind 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 consultant 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 Govt. 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 Consultant that he is able to carry out and fulfill the contract, and to dye security therefore if so required by the Consultant.

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 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 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 SBI through the Consultant that the said materials were condemned and rejected by the 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 SBI or consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the 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 SBIIMS or the 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 determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the SBIIMS through the consultant their agents or employees may enter upon and take possession of the work and all plants, took 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 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 complement and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient the SBI or 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 receive thereof by him the SBIIMS sell the same by publication, and after due publication, and shall, adjust the amount realised by such auction. The contractor shall have no right to question any of the act of the SBIIMS incidental to the sale of the materials etc.

35.0 **Certificate of payment**

The contractor shall be entitled under the certificates to be issued by the consultant to the contractor within 10 working days from the date of certificate to payment from SBI from time to time. The SBIIMS shall recover the statutory recovering other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the consultant during progress of works or completion shall not have effect as certificate of satisfaction relieve the contractor from his liability under clause.

The consultant shall have power to withhold the certificate if the work or in part thereof is not carried out to their satisfaction.

The consultant may by any certificate make any corrections required previous certificate.

The SBI shall modify the certificate of payment as issued by the consultant from time to time while making the payment

The contractor shall submit interim bills only after taking actual measurements and properly recorded in the M books

The Contractor shall not submit interim bills when the approximate value of work done by him is less than 25% amount of work order value .

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and consultant shall issue the certificate of payment within a period of two months. The SBIIMS shall pay the amount within a period of three months from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

36.0 **A. 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:

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 consultant 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 The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal, and endorse a copy of the same to the Architect, 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 contractor shall not be entitled to raise any claim nor shall the Bank/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 The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal,in the manner and within the time as aforesaid. The Contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal,in writing in the manner and within the time aforesaid.

B. Settlement of Disputes and Arbitration

The Vice President & Circle Head shall give his decision in writing on the claims notified by the receipt of the contractor may within 30 days of the receipt of the decision of the The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal Submit his claims to the conciliating authority For conciliation along with all details and copies of correspondence exchanged between him and the The Vice President & Circle Head, State Bank Of India, Infra Management Solution Pvt.Ltd.,Bhopal

- 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 Manager of the Bank 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 whole 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 Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager it will also be no objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates In the course of his duties as Bank Officer. 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 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 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 reenactment thereof and the rules made there under.

It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties. However, no fees will be payable to the arbitrator if he is a Bank Officer.

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 fees, if any of the arbitrators shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The Cost of the reference and of the award (including the fees, if any of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in 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

The contractor shall make his own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following condition.

- i) That the water used by the contractor shall be fit for construction purposes to the satisfaction of the consultant's.
- ii) The contractor shall make alternative arrangements for the supply of water if the arrangement made by the contractor for procurement of water in the opinion of the consultant is unsatisfactory.

37.1 The contractor shall construct temporary well / tube well in SBI land for taking water for construction purposes only after obtaining permission in writing from the SBI. The contractor has to make his own arrangements for drawing and distributing the water at his own cost. He has to make necessary arrangements. To avoid any accidents or damages caused due to construction and subsequent maintenance of the wells. He has to obtain necessary approvals from local authorities, if required, at his own cost. He shall restore the ground to its original condition after wells are dismantled on completion of work or hand over the well to the SBIIMS without any compensation as directed by the consultant.

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 included in his tender prices, He shall pay all fees and charges required, by 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 approval 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 SBIIMS and shall be handed over to the bank 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 consultant shall be final and binding on the corrector.

41.0 **Maintenance of registers**

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

- I) Register for secured advance
- ii) Register for hindrance to work
- iii) Register for running account bill
- iv) Register for labour

42.0 **Force Majeure**

42.1 Neither contractor nor SBIIMS shall be considered in default in performance of the obligations if such performance is prevented or delayed by events such as but not war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of or for any other cause beyond the reasonable control of the party affected or prevents or de

layed. 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 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 caused itself and inability resulting there from having been removed, the agreed time completion of the respective obligations under this agreement shall stand extended 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 state of force majeure lasting to a period of 6 months or wore the two parties, shall each other to 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 at contract labour (regulation and abolition act of 1970) and other safety regulations. The contractors should comply with the provision of all labour legislation including the

latest requirements of 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 1 963 and any other modifications
- viii) Employees' provident fund and miscellaneous provisions Act 1952 and amendment thereof
- ix) Shop and establishment act
- x) Any other act or enactment relating thereto and rules framed there under from time to time.
- xi) Prevailing Indian Electricity rules & act.

44.0 **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 such report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

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SPECIAL CONDITION OF CONTRACT

Scope of work

- 1.0 The scope of work is to carry out for the : This being a Very important Branch for future considerations and having expansive treatments, the contractor has to take special Care to execute these items very carefully and adhere to the time schedule , as the date of completion can not be extended for SBIIMS.

2.0 Address of site

The site is located at **SBILD, Sultania Road, Bhopal**

3.0 Dimensions and levels

All dimensions and levels shown on the drawings shall be verified by the contractor and the site and he will be held responsible for the accuracy and maintenance of. All the dimensions and the levels. Figured dimensions are in all cases to be accepted and dimension shall be scaled. Large scale details shall take precedence

over small scale drawings. In case of discrepancy the contractor shall ask for clarification from the SBIIMS / consultant before proceeding with the work.

04 **Notice of operation**

The contractor shall not carry out any important operation without the Consent in with from the SBIIMS / consultant:

5.0 **Construction records**

The contractor shall keep and provide to the SBIIMS / consultant full and accurate records of the dimensions and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as construction.

6.0 **Safety of adjacent structures and trees**

The contractor shall provide and erect to the approval of the SBIIMS / consultant supports as may be required to protect effectively all structures and protective give to trees, which may be endangered by the execution of the works or otherwise such permanent measures as may be required by the SBIIMS/Consultanttt to protect the tree structures. .

7.0 **Temporary works.**

Before any temporary works are commenced the contractor shall submit at least in advance to the architect / consultant for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the architect / consultant may require in accordance with the conditions of contract at his own cost The contractor shall be solely responsible for the stability and safety of all temporary works and unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

8.0 **Water power and other facilities**

- a) The rate quoted by the contractor shall include all expenses that are required for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water suitable for he construction and good quality drinking water for their workers If necessary the contractor has to sink a tube well / open well and bring water by means of tankers at his own cost for the purpose The SBIIMS will not be liable to pay any charges in connection with the above
- b) The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges
- c) The contractors for other trades directly appointed by the SBI shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for Construction purposes shall be borne by the contactor and

charges payable for permanent connections, if any, shall be initially paid by the contractor and the SBI will reimburse the amount on production of receipts.

- d) The SBI as well as the Architect / consultant shall give all possible assistance to the Contractor's efforts to obtain the requisite.
- e) Permission from the various authorities, but the responsibility for obtaining the same in time shall be of the contractor.

9.0 **Facilities for contractor's employees**

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

10.0 **Lighting of works**

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of work.

11.0 **Fire fighting arrangements**

- i) The contractor shall provide suitable arrangement for firefighting at his own cost. This purpose he shall provide requisite number of Fire extinguishers and adequate number of buckets, some of which are to be always kept filled with sand and some with water these equipments shall be provided at suitable prominent and easily accessible place and shall be properly maintained.
- ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and, to the approval of the relevant authorities. The contractor make the following arrangements at his own cost but, not limited the following.
 - a) Proper handling, storage and disposal of combustible materials and waste.
 - b) Work operations which can create fire hazards.
 - c) Access for firefighting equipments.
 - d) Type, number and location of containers for the removal of surplus materials and rubbish.
 - e) Type, size, number and location of fire extinguishers or other fire fighting equipment.
 - f) General house keeping

12.0 **Site order book**

A site order book shall be maintained at site for the purpose of quick communication between the Architect / Consultant. Any communication relating to the work may be conveyed through records in the site order book. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract Each site order book shall have machine numbered pages in triplicate and shall carefully maintained and preserved by the contractor and shall be made available to the architect / consultant as and when demanded- Any instruction which the architect /consultant may like to issue to the contractor or the contractor may like to bring to the architect / consultant two copies of such instruc-

tions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgment and the second copy will be retained for their record.

13.0 **Temporary fencing/ barricading**

The contractor shall provide and maintain a suitable temporary fencing / barricading and gates at his cost to adequately enclose all boundaries of the site for the protection of the public and for the proper execution and security of the work and in accordance with the requirement of the architect I consultant and regulations of local authorities. These shall be altered, relocated and adopted from time to time as necessary and removed on completion of the work.

14.0 **Site meetings**

Site meetings will be held to review the progress and quality evaluation. The contractor shall depute a senior representative along with the site representative and other staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall be held if required by the architect/ consultant. -

15.0 **Disposal of refuse**

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

16.0 **Contractor to verify site measurement**

The contractor shall check and verify all site measurements whenever requested other specialists contractors or other sub contractors to enable them to prepare the own

shop drawing and pass on the information with sufficient promptness as will in any way delay the works.

17.0 **Displaying the name of the work**

The contractor shall put up a name board of suitable size as directed by the architect/ consultant indicating there in the name of the project and other details as given by the architect/consultant at his own cost and remove the same on completion of work.

18.0 **As built drawings**

- i) For the drawings issued to the contractor by the SBIIMS / Consultant. The architect Consultant will issue two sets of drawings to the Contractor for the items for some changes have been made. From the approved drawings as instructed by the SBI/ SBIIMS / consultant. The contractor will make the changes made on these copies and return these copies to the SBIIMS / Consultant for their approval. In cases revision is required or the corrections are not properly marked the architect / Consul-

tant will point out the discrepancies to the contractor. The contractor will have to incorporated these corrections and / or attend to discrepancies either on copies as directed by the architect / consultant and resubmit to him for approval. The architect / consultant will return one copy duly approved by him.

- ii) For the drawings prepared by the contractor

The contractor will modify the drawing prepared by him wherever the changes made by the SBI / architect / consultant. And submit two copies of such modified drawings to the SBIIMS/ consultant for approval. The architect / consultant will return one copy of the approved drawing to the contractor.

19.0 Approved make

The contractor shall provide all materials from the list of approved makes at his own cost and also appoint the specialized agency for the waterproofing anti-termite, aluminum doors and windows and any other item as specified in the tender. The architect/consultant may approve any make / agency within the approved list as given in the tender after inspection of the sample/mock up.

20.0 Procurement of materials

The contractor shall make his own arrangements to procure all the required materials for the work .All wastages and losses in weight shall be to the contractors account

21.0 Excise duty, taxes, levies etc;

The contractor shall pay and be responsible for payment of all taxes, service tax, duties, levies, royalties, fees, cess or charges in respect of the works including but not limited to sales tax, tax on works contract excise duty, and octroi, payable in respect of materials, equipment plant and other things required for the contact. All of the aforesaid taxes, duties, levies, fees and charges shall be to the contractor's account and the SBIIMS shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, fees, levies etc if any, till completion of work shall be deemed to

be included in the quoted rates and no extra amount on this account. Variation of taxes, duties, fees, levies etc if any, till completion of work shall be deemed to be included in the quoted rates and no extra claim on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statua or law during the currency of contract the same shall be borne by the contractor.

22.0 Acceptance of tender

The SBIIMS shall have the right to reject any or all tenders with out assigning any reason. They are not to bound to accept the lowest or any tender and the tenderer or tenderers shall have no right to question the acts of the SBI. However adequate transparency would be maintained by the SBIIMS.

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SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressing and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time, in cases when the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that can not safely be done from the ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm. (clear) and the distance between two adjacent runnings shall not be more than 30 cm. When a ladder is used an extra maz-door shall be engaged for holding ladder.
5. The excavated material shall not be placed within 1.5 meters of the edge of the trench half of the depth of trench whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.
6. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
7. No floor, roof or other part of the structure shall be so overloaded with debris or material as to render it unsafe.

8. Workers employed on mixing and handling material such as asphalt, cement ,mortar, concrete and lime shall be provided with protective footwear and rubber hand gloves.
- 9 Those engaged in welding works shall be provided with welders' protective eye shield and gloves.
10. (i) No paint containing lead or lead products shall be used except in the form of paste readymade paint.
(ii) Suitable facemasks should be supplied for use by the workers when the paint applied in the form of spray or surface having lead paint dry rubbed and scrapped.
11. Overalls shall be supplied by the contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during cessation of work.
- 12 Hoisting machines and tackle used in the works including their attachments anchor and supports shall be in perfect condition.
13. The ropes used in hoisting or lowering material or as a means of suspension shall be durable quality and adequate strength and free form defects.

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APPENDIX HEREIN BEFORE REFERRED TO

1	Name of the Client Offering Contract	The Vice President & Circle Head State Bank Of India Infra Management Solution Pvt.Ltd. Mezzanine Floor, Local Head Office,Bhopal
2	Consultants	CONCEPT ENGINEERING ,Y-4 FORTUNE GLORY ,BAWADIA KALAN , E-8 EXTENSION BHOPAL-462039
3	Site Address	LHO, Bhopal.
4	Scope of Work	Electrification work in new canteen LHO-Ground floor , BHOPAL(M.P.)
5	Period of Completion	45 days from the date of Commencement
6	Earnest Money Deposit	Rs. Rs. 15,000=00 (Rupees fifteen thousand ponly)
7	Retention Money	As per clause no. 2 of general Conditions
8	Defects Liability Period	Twelve Months from the date of Virtual Completion
9	Insurance to be undertaken by the Contractor at his cost	: 125% of Contract Value (Contractor's all risk policy)

10	Liquidated damages	0.5% of the estimated amount shown in the tender per week max. 5% of the contract value
11	Value of Interim Bill (Min.)	Not less than 25 % of amount of the order value
12	Date of Commencement	7 days from the date of acceptance letter is issued to the Contractor/ or the day on which the Contractor is instructed to take possession of the site whichever is earlier
13	Period of Final Measurement	30 Days from the date of Virtual Completion.
14	Initial Security Deposit	2% of the Accepted Value of the Tender.(Clause No. 22)
15	Total Security Deposit	As per clause No. 11 a
16	Refund of initial Security Deposit Comprising of EMD, ISD	50% of the Security Deposit shall be refunded to the Contractor on virtual completion of the work along with final bill and balance 50% of the Security deposit to be refunded only after the defect Liability Period is over.

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17	Period for Honoring Certificate	1. One Month for R.A. Bills 2. The final bill will be submitted by the Contractor within one month of the date fixed for completion work and payment shall be made within four months from the date of receipt of final bill.
18	Name of the Contractor
19	Address of the Contractor

Signature with seal of Tenderer.

Date:

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TABLE-XII

PROFORMA FOR HINDRANCE TO WORK

Name of Work : Date of Start of work :
Name of Contractor : Period of Completion :
Agreement No. : Dt. of Completion of work :

S.No.	Nature of Hindrance	Date of Occurrence of Hindrance	Date of which Hindrance was removed	Period of which Hindrance existed	Signature of Site Engineer	Signature of Bank / Architects Representative
1	2	3	4	5	6	7

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PROFORMA FOR RUNNING A/C BILL

- i. Name of Contractor / Agency :
- ii. Name of Work :
- iii. Sl.No. of this Bill :
- iv. No. & Date of previous Bill :
- v. Reference to Agreement No. :
- vi. Date of Written order to commence :
- vii. Date of Completion as per Agreement :

S.No.	Item Description	Unit	Rate (Rs.)	As per Tender	
				Quantity	Amount (Rs.)
1	2	3	4	5	

Upto Previous R.A. Bill		Up Date (Gross		Present Bill		Remarks
Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	
6		7		8		9

- Note 1 If part rate is allowed for any items, it should be indicated with reasons for allowing such a rate.
- 2 If ad-hoc payment is made, it should be mentioned specifically.

Net Value since previous bill

-----*****-----

CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. -----
----- were made have been taken jointly on ----- and are recorded at pag-
es ----- to ----- of measurement book No. -----.

Signature and
date of Contractor

Signature and
date of Consultants Repre-
sentative (Seal)

Signature and
date of Site Engineer

The work recorded in the above mentioned measurements has been done at the site
satisfactorily as per tender drawings, conditions and specifications.

Consultant

Signature and

-----*****-----

MEMORANDUM FOR PAYMENT

R/A BILL NO.

- | | | |
|----|---|-----------|
| 1. | Total value of work done since previous bill (A) | Rs. ----- |
| 2. | Total amount of secured advance due since Previous Bill (B) | Rs. ----- |
| 3. | Total amount due since Previous Bill (C) (A+B) | Rs. ----- |
| 4. | PVA on account of declaration in price of Steel, Cement and other materials and labour as detailed in separate statements enclosed. | Rs. ----- |
| 5. | Total amount due to the Contractor | Rs. ----- |

OBJECTIONS:

- | | | |
|------|---|-----------|
| i) | Secured Advance paid in the previous R/A | Rs. ----- |
| ii) | Retention money on value of works as per accepted tenders upto date amount Rs. | Rs. ----- |
| | Less already recovered | Rs. ----- |
| | Balance to be recovered | Rs. ----- |
| iii) | Mobilization Advance, if any | |
| (a) | Outstanding amount (principal + interest) as on date | Rs. ----- |
| (b) | To be recovered in this bill | Rs. ----- |
| iii. | Any other Departmental materials cost to be recovered as per contract, if any | Rs. ----- |
| iv. | Any other Departmental service charges to be recovered if any, as per contract (water, power etc.) enclose statement. | Rs. ----- |
| | Total Deduction as per contract (F) | Rs. ----- |

Adjustments, if any ----- Rs. -----
Amount less received by Contractor in
----- R/A Bill (as per statement of
Contractor)

P.V.A. Rs. -----

Total amount payable as per contract Rs. -----
(E+F+G)

(Rupees ----- in
words)

The bill amount to Rs. ----- (both figures and words) has been scrutinized by us after due checking of the measurements of work as required and is recommended for payment.

Date: -----

Signature of Consultants
with Seal

The bill amount to Rs. ----- certified by Consultants has been scrutinized by me after due test checking of measurements of works as required and is recommended for payment for an amount of Rs.....

Date : -----

Signature of Owners
Engineer

STATUTORY DEDUCTION:

i) Total Amount due (E)	Rs. -----
ii) Less I.T. Payable	Rs. -----
iii) Less S.T. Payable	Rs. -----
Net Payable	Rs. -----

This figures given in the Memorandum for payable has been verified and bill passed for payment ----- (in words and figures)

Date: -----

Signature of the Manager

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PREAMBLE TO SCHEDULE OF QUANTITIES

1. Quantities mentioned are approximate and payment shall be made on actual measurement.
2. The rate shall include all necessary supports, frames, making holes in the RCC structures (core cult shall be paid separately as per number of holes made based on the prevailing site conditions), making foundation/ structural fabricated stand (duly applied with 2 coat of Red Oxide anti corrosive paint) and giving rough finish for plastering where the chasing of wall are done that may be required to suit site conditions or stability of the items. Decision of consultant regard to the need for such additional support shall be final.
3. The rate shall also include the interconnecting cables/wire/cable trays/terminations as well.
4. All the items shall include required scaffolding, ladders, temporary supporting, machinery & equipment.
5. If contractor quotes different rates for execution in different Area for the same item, the lowest of the quoted rates shall be considered for comparison of bid and payment for work done.
6. In case of non availability of any specified manufacturers material, the contractor shall submit samples of material, catalogues, and necessary test certificates with a covering letter to tint effect for consultants and owners approval allowed, necessary price adjustment as per consultant's scrutiny shall be applicable.
7. Vendor to include shifting of the all equipment to its respective place including the cost of lifting through crane etc, as required based on the given locations and no separate payment shall be made.
8. Seamless co-ordination is required between the haves vendor with BMS vendor as regards the services and also with other services contractor.

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TECHNICAL SPECIFICATION

FOR INTERNAL ELECTRIFICATION WORK

STANDARD:

The entire electrical installation shall be carried out by the contractor to comply with the requirements of the currently applicable regulations or acts in force in the area together with particular reference to the following.

**Indian Electricity Rules.
Fire Insurance Regulations.
Statutory Regulations.**

Indian standard Institutions specification with particular reference to:

1. IS – 732 Electrical wiring installations.
2. IS - 1554 PVC insulated cables for working voltage and incl.1100 volts.
3. IS – 1653 Specification for rigid non-metallic conduits for Electrical wirings.
4. IS – 2309 Code of practice for lightning protection
5. IS - 3043 Code of practice for Earthing System

Nothing in this specification shall be construed to relieve the Contractor of his responsibility to make the installation comply with the requirements of the above.

SCOPE OF WORK

The scope of this article covers the provision of supply installation testing and commissioning of the Low Tension Power and Lighting wiring and internal electrification as specified here under and in accordance with the I.S. specifications, Indian Electricity Rules and as per statutory rules, concerned Board Regulations and Fire Insurance Regulations etc.

- a. Distribution Boards
- b. Cables
- c. Point Wiring
- d. Earthing System
- e. Lightning protection system.
- f. Lighting Fixtures
- g. Ceiling Fans
- h. Cost of Spares

INTERNAL WIRING:

1. SYSTEM OF WIRING

The system of wiring shall consist of single-core/multi-core PVC insulated Copper conductor wires in metallic conduits concealed/ exposed as called for.

2. GENERAL

Prior to laying and fixing of conduits, the Contractor shall carefully examine the drawing indicating the layout of conduits, satisfy himself about the sufficiency of number and size of conduit, location of junction boxes, sizes and location of switch boxes and other relevant details. Any modification suggested by the contractor Shall be got approved by the Consultants before the actual laying of conduit is commenced. Any discrepancy found in the drawing shall be brought to the notice of the consultants.

3. MATERIAL

RIGID STEEL / HMS PVC CONDUITS AND ACCESSORIES:

All rigid conduit pipes shall be of steel (or as specified) and be ISI marked. The wall thickness shall be not less than 1.6 mm (16 swg) for conduits up to 32 mm dia. and not less than 2.0 mm (14 swg) for conduit above 32 mm dia. These shall be solid drawn or reamed by welding and finished with galvanized or stove enameled surface.

No steel conduit less than 20 mm in diameter shall be used.

The conduits shall be delivered to the site of construction in original bundles and each length of conduit shall bear the label of the manufacture. The number of insulated copper conductor wires that may be drawn into the conduits of various sizes that are given below and the conduit will shall not exceed 40%.

Size of wire/ Cable in sq. mm	Maximum Permissible number of 1000 V grade single core cable drawn into steel conduits.													
	Size of conduit in mm													
	16		20		25		32		40		50		63	
	S Stra ight	B ben d	S	B	S	B	S	B	S	B	S	B	S	B
1.00	5	4	7	5	13	10	20	14						
1.25														
1.50	4	3	7	5	12	10	20	14						
2.0														
2.5	3	2	4	5	10	8	18	12						
3.0														
4.0	3	2	4	3	8	7	12	10						
4.5														
6.0	2		3	2	6	5	10	6						
10.0			2		5	4	8	7	8	6				
16.0					2		4	3	7	6				
25.0							3	2	5	4	8	6	9	7
35.0							2		4	3	7	5	8	6
50.0									2		5	4	6	5

The Table shown the maximum capacity of conduits for the simultaneous drawing of cable s. the columns headed s apply to runs of conduit which have distance not exceeding 4.25 m be-

tween draw-in boxes, and which do not deflect from the straight by an angle of more than 15 degree. The columns headed B apply to runs of conduit, which deflect from the straight by an angle of more than 15 degree.

Connections:

The threads of pipe and socket shall be free from grease and oil and shall be thoroughly cleaned before making the screwed joints. All joints shall be fully water tight. Junction boxes and running joints shall be provided at suitable places to allow for subsequent extension if any, without undue dismantling of conduit system. As far as possible diagonal run of conduits and adaptable boxes, back outlet boxes, switch boxes and the like must be provided with entry spouts and smooth PVC bushes. Joint between conduit and iron clad Distribution boards and control gear shall be effected by means of conduit couplers into each of which will be coupled smooth PVC bushes from the inside of the box or case.

Conduit system shall be erect and straight as far as possible. To avoid traps where water may accumulate from condensation and is avoidable, suitable provision for draining the water shall be made. Conduit connections for MS Conduits shall be screwed metal to metal and be painted with one coat of self-etching zinc chromate primer and two coats of enamel paint. The threads and socket shall be free from grease and oil. Connection between screwed conduit and sheet metal boxes shall be by means of a brass hexagon smooth brass bush, fixed inside the box and connected through a coupler to the conduit. The joints in the conduit shall be free of burrs to avoid damage to insulation of conductors while pulling them through the conduit.

4. BENDS IN CONDUIT

Where necessary, bends or diversions may be achieved by means of bends and/or circular inspection boxes with adequate and suitable inlet and outlet screwed joints. In case of recessed system, each junction box shall be provided with cover properly secured and flush with the finished wall / ceiling surface, so that the conductor inside the conduit are accessible. No bends shall have radius less than 2.5 times the outside diameter of the conduit.

5. FIXING OF CONDUITS

Conduits and junction boxes shall be kept in position while the walls, slab and floor are under construction and proper holdfasts shall be provided. Conduits shall be arranged so as to facilitate easy drawing of wires through them. Adequate junction boxes of approved make and size shall be provided.

Where conduit cross expansion joints in the building, adequate expansion fitting or other approved devices shall be used to take care of any relative movement. All conduits shall be installed as to avoid steam and hot water pipes. Conduit stubs in floor slab shall be kept as short as possible above the finished floor level, in order to avoid any damage to them. After the conduit, junction boxes, outlet boxes and switch boxes are installed in position, their outlets shall be properly plugged or covered so that water, mortar, insects or any other foreign matter does not enter into the conduit system. Where called for, surface conduit shall be fixed by means of spacer bar saddles at intervals not more than 500 mm from both sides of fitting or accessories. The saddles shall be of 3mm * 19mm galvanized mild steel flat, properly treated, primed and painted, securely fixed to supports by means of nut and bolts/ raw plugs and brass machine screws. Conduits in chases shall be avoided. Where unavoidable conduits shall be fixed by means of staples not more than 600 mm apart and the chase filled with cement mortar 1:4. Cutting of horizontal chases is prohibited.

Before conduit is concealed in the walls, all chases shall be neatly made to proper dimensions to accommodate the required number of conduits, chase in the walls shall be made with electric cutter and the same shall be filled up by the electrical contractor before plastering. The outlet boxes, point control boxes, inspection and drawn boxes shall be fixed as and when conduit is being laid. The recessing of conduits in walls shall be so arranged as to allow at least 12mm plaster cover on the same. All grooves, chases, etc. shall be refilled with cement mortar and finishing up to the wall surface before plastering of walls is taken up by the general contractor. Where conduits pass through expansion joints in the building, adequate expansion fittings other approved devices shall be used to take care of any relative movement wherever conduits terminate in to point control boxes, distributing boards etc. conduits shall be rigidly connected to the boxes, boards etc. with check-nuts on either side of the entry to ensure electrical continuity.

Necessary GI pull wires shall be inserted in the conduit for drawing wires and proper size earth continuity wire shall be run throughout the length of the conduit with the earth wire being efficiently fastened to the conduit by means of special clamps.

6. PROTECTION

To minimize condensation or sweating inside the conduit pipes of outlets of Conduit system shall be adequately ventilated. All screwed and socket connections shall be made fully water-tight by use of proper compound.

7. SWITCH-OUTLET & JUNCTION BOXES

All outlets for switches and other receptacles shall be equipped with rust proof outlets boxes of cast iron as called for, having external and internal surface true to finish. Where called for, outlet boxes for receiving switches and fan regulators shall be fabricated to approved sizes and covered with 3mm thick Formica /Bakelite/finolic cover plate. All boxes shall have adequate numbers of knock out holes of required diameter and an earthing terminal screw. The junction boxes and switch /socket outlets boxes shall be provided with 3.0 mm thick Formica / Bakelite cover plate secured to the box with brass countersunk screws. Outlets exposed to the weather shall be fully weather tight, complete with rubber gasket covers, glass where used shall be heat resistant. The outlets boxes shall be painted with two coats of bituminous paint before they are fixed in position. Outlets boxes fixed in concrete shall be a minimum depth of 75mm and the wall thickness of the boxes and spouts shall not be less than 2.0 mm.

8. INSPECTION BOXES

Rust proof inspection boxes of cast iron and of required size having smooth external and internal finish shall be provided to permit periodical inspection and to facilitate removal and replacement of wires when required. Inspection boxes shall be mounted flush with ceiling /wall finished surface and shall be provided with screwed covers of 3mm thick. Formica/Bakelite cover plate secured to the box with brass screw. Adequate holes shall be provided for ventilation in inspection box covers.

9. TELEPHONE SYSTEM

Conduit, junction boxes, draw boxes, outlets boxes and covers for telephone system shall be as described under relevant clauses elsewhere in these specification. Conduits for telephone system shall be at least 150 mm away from the electrical conduits. The conduits for telephone

wiring shall be of specified size and shall terminate at outlets as indicated on the drawing. Telephone system conduits have galvanized steel pull wires installed.

10. BUNCHING OF WIRES

Wires carrying current shall be so bunched in the conduit that the out going and return cables are drawn into the same conduit.

11. CONDUCTOR

All PVC insulated Copper conductor wires shall conform in all respects to relevant Indian Standards.

12. DRAWING CONDUCTOR

The drawing and jointing of copper conductor and cables shall be executed with due regards to the following precaution.

While drawing insulated wires into the conduit, care shall be taken to avoid scratches and kinks, which cause breakage of conductor. There shall be no sharp bends. Insulation shall be shaved off like sharpening of the pencil and it shall not be removed by cutting it square of wiring. Oxide inhibition grease shall be liberally applied at all terminal points. Stands of wires shall not be cut for connecting at terminals. The Terminals shall have sufficient cross sectional area to take all strands and shall be soldered. The connecting brass screw shall have flats ends. All looped joints shall be soldered and connected through terminal block /connectors. The pressure applied to tighten terminal screw shall be just adequate neither too much nor too less. Conductors having nominal cross section area exceeding 10 Sq. mm shall always be provided with cable sockets. At all bolted terminals, brass flat washer of large area and approved steel spring washer shall be used. Brass nuts and bolts shall used for all connections. Only certified wire men and cable jointers shall be employed to do jointing work. All wires and cables shall bear the manufacture's label and shall be brought to site in new and original packages.

For all internal wiring PVC insulated wire of 650 /1100 Volts grade shall be used. The sub-circuit wiring for points shall be carried out in looping in system and no joints shall be allowed in the length of the conductor. If the use of joint connections is unavoidable due to any specified reason, prior permission in writing shall be obtained from the Consultant before the use of such connection No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Before the wire are drawn into the conduit, the conduits shall be thoroughly cleaned of moisture, dust, dirt or any other obstruction by forcing compressed air through the conduits. The minimum size of PVC insulated copper conductor wires for all sub-circuit fan points shall be 1.5 Sq.mm. In case of power circuit not more than two 15 amps power outlets shall be grouped in one circuit. All power outlet shall be provided with 1.5 sq. mm stranded copper earth wire or as specified.

13. JOINTS

All joints shall be made at main switches, distribution boards, socket outlets lighting outlets and switch boxes only. No joint shall be made in conduits and junction boxes. Conductors

shall be continuous from outlets to outlet. Joint are unavoidable shall be made to conform at approved standards.

14. MAINS AND SUB-MAINS

Mains and sub-mains cable where called for shall be of the rated capacity and approved make. Every main and sub-main shall be drawn into an independent adequate size conduit. Adequate size draw boxes shall be provided at convenient locations to facilitate easy drawings of the sub-main and main cables. As independent earth wire of proper rating shall be provided for every sub-main. Where mains and sub-main cables are connected to the switch-gear, sufficient extra lengths of sub-main and mains cable shall be provided to facilitate easy connections and maintenance.

15. LOAD BALANCING

Balancing of circuits in three-phase installation shall be planned before the commencement of wiring and shall be strictly adhered to.

16. Shifting / re-locating of Ceiling fan / Fans , lights etc as required at site is included in the scope of work and No extra amount shall be paid on this regard.

SWITCHES ,RECEPTACLES & FIXTURES

1. SWITCHES

All 5 /15 amp switches shall be enclosed type flush mounted switches of 250 V AC grade. All switches shall be fixed inside the switch boxes on adjustable flat MS strip /plates with tapped holes and brass machine screw, leaving ample space at the back and sides of accommodating wire. Flush mounted fans regulators shall be fixed inside the switch boxes over adjustable MS flat saddles with tapped holes and brass machine screws. The switch controlling the light or fan shall be connected on the phase wire of the circuit. Switches shall be located at 1000 mm above finished floor level unless otherwise indicated.

Flush Plates

All switch receptacles and telephone system outlets in walls shall be provided with 3mm thick Formica / Bakelite cover plates, secured to the box with countersunk brass screw. Where two or more switches are installed together, they shall have gang plates unless otherwise calls for.

2. WALL SOCKET OUTLETS

All 5 amp 3 pin wall socket outlet were called for on the drawing shall be switched and 3 pin type. All 15amp 3 pin wall socket outlets were called for shall be switched,3 pin type. The socket shall be erected approximately 150 mm above floor level, unless otherwise specified. The switch controlling the point outlets and socket outlets shall be on the phase wire of the circuit. The earth terminal of the socket shall be connected to the earth terminal provided inside the box by means of copper earth wire.

3. LIGHTING FIXTURES

The light fixture and fans shall be assembled and installed position complete and ready for service in accordance with the detailed drawing s, manufacturer's instruction and to the satis-

faction of the Consultant. Fixtures shall be suspended true to alignment plumb level and capable of resisting all lateral and vertical forces and shall be fixed as required.

All ceiling fans shall be provided with suspension arrangement in the concrete slab/ roof. It is duty of the contractor to make these provisions at the appropriate stage of the construction. Exhaust fans shall be fixed at locations shown on the drawings. They shall be wired to a ceiling rose at a convenient location near the fan. All switches and outlet boxes, fan and light fitting shall be bonded to the earth through connector blocks.

MCB's

01. L series MCB's shall be used only for light circuits.

02. G series MCB's shall be invariably used for motor loads, halogen lamp fittings, sodium, mercury discharge lamps and all power points.

03. Rating, number of poles, type as MCB or Isolator, etc shall be specified in the tender documents.

CABLES

1. GENERAL

MV cables shall be supplied, inspected, laid tested and commissioned in accordance with drawing, specifications, relevant Indian Standard Specifications cable manufacturer's instructions.

The recommendations of the cable manufacturer with regard jointing and sealing shall be strictly followed.

2. MATERIAL

The MV cable shall be PVC insulated Aluminium / copper conductor armoured cable conforming to IS : 1554-1972 (part-1) laid in trenches, ducts and underground as shown on the drawings.

3. INSPECTION

All cables shall be inspected upon receipt at site and checked for damage during transit.

4. JOINT IN CABLES

The conductor shall take care to see that all the cables received at site are apportioned to various location in such a manner as to ensure maximum utilization and avoidance of joining cables. This apportioning shall be got approved by consultant before the cables are cut to the lengths. Straight joints are prohibited.

5. LAYING CABLES

Cables shall be laid by skilled and experienced workmen using adequate rollers to minimize stretching of cables. The cable drums shall be placed on jack before unwinding the cables. Great care shall be exercised in laying cables to avoid forming kinks, the drums shall be un-

rolled and cables run over wooden rollers in trenches at interval not exceeding 2 meters. Cables shall be laid at a depth of 0.75 meters below ground level. A cushion of sand, not be laid in the same trench or along side a water main. The cable shall first be laid in excavated trench 80 mm layer of sand and shall be spread over the cable. The relative position of the cable, laid in the same trench shall be preserved and the cables shall not cross each other as far as possible. At all changes in directions in horizontal and vertical planes, the cable shall be bent smooth with a radius of bend not less than 8 times the diameter of cable.

Minimum 3 meters long loop shall be provide at both sides of every straight joint and 3 meters at each end of cable. Distinguishing marks shall be made on the cable ends for identification. Insulation tapes of appropriate voltage and in red, yellow and blue colors shall be wrapped just below the socket for phase identification.

Laying Direct in Ground

This method involves digging a trench in the ground and laying cables on a bedding of minimum 75 mm riddle soil or sand at the bottom of the trench and covering it with additional riddled soil or sand of minimum 75 mm and protecting it by means of tiles bricks or slabs.

Depth of trench - The desired minimum depth of laying from ground surface to the top of cable is as follows:

	From top of the Cable to ground surface	Minimum depth of trench
High voltage cables, 3:3kV to 11kV rating	0.90 m	1.00 m
High voltage cables, 22kV, 33kV rating	1.05 m	1.15 m
Low voltage and control cables	0.75 m	0.85 m
Cables at road crossings	1.00 m	1.10 m
Cables at railway level crossing (measured from bottom of sleepers to the top of pipe)	1.00 m	1.10 m

Width of trench –

The minimum width of the trench for laying a single cable shall be 35 cm.

Where more than one cable is to be laid in the same trench in horizontal formation, the width of the trench shall be increased such that the inter-axial spacing between the cables, except where otherwise specified, shall be at least 20 cm.

The bottom of the trench shall be level and free from stones, bricks bats etc.

6. PROTECTION OF CABLES

The cables shall be protected by bricks on the top layer of the sand for full length of underground cable. Where more than one cable is running in same trench, the bricks shall cover all the cables and shall project a minimum of approximately 80 mm on either sides of the cable.

Cable under road crossing and any other places subject to heavy traffic shall be protected by running them through Hume Pipes of suitable size. The depth of Hume Pipe shall be 1 meter below the finished road level.

7. EXCAVATION AND BACK FILL

All excavation and back fill including timbering, shoring and pumping required for the installation of the cables be carried out by the Contractor in accordance with the drawings and requirements laid down elsewhere. Trenches shall be dug true to line and grades. Back fill for trenches shall be filled in layer not exceed 150 mm. Each layer shall be properly rammed and consolidate before laying the next layer. The contractor shall restore all surface, road ways, side walks, curbs, walls or other works cut by excavation to their original condition, satisfactory to the consultant.

8. TESTING OF CABLES

Prior to burying of cable, following tests shall be carried out:

Insulation test between phase and phase and earth for each length of cable before and after jointing.

On completion of cable laying work, the following test shall be conducted in the presence of the Consultant

- a. Insulation Resistance Test (section and overall)
- b. Continuity Resistance Test.
- c. Sheathing Continuity Test.
- d. Earth test.

All test shall be carried out in accordance with Relevant Indian Standard Code of Practice and Indian Electricity Rules.

The contractor shall provide necessary instruments, equipments and labour for conducting the above test and shall bear all expenses in connection with such test. All tests shall be carried out in the presence of the, Consultant.

IV EARTHING

1. All the non current carrying metal parts of electrical installation shall be earthed properly. All metal conduits, trunking, cable armour, switchgear, distribution boards, lighting fixtures and all other parts made of metal shall be bonded together and connected by means of specified earthing conductors to an efficient earthing system. All earthing will be in conformity with relevant Indian Electricity Rules 1956 and Indian Standard specifications IS: 3043-1966.

2. Eathing conductor

Every earthing conductor shall be of high conductivity CU and shall be protected against mechanical injury or corrosion.

3. Sizing of earthing conductor

All fixtures fans, outlet boxes and junction boxes shall be earthed with PVC insulated one sq mm stranded Cu wire. All single phase metal clad switches and distribution board shall be earthed with PVC insulated 2.5 sq mm stranded Cu wire. All 3 phase switches and distribution board up to 60 amps rating shall be earthed with 2 nos distinct and independent 8 SWG bare Cu wire. All 3 phase switches, bus bar and distribution panels of 100 amps and above shall be earthed with 2 nos distinct and independent 25x 3 mm Cu strips or as specified.

4. Connection of earthing conductors :

Main earthing conductor shall be taken from the earth connections at the main distribution panel to the earth electrode with which the connection is to be made. Distribution boards, earthing conductors shall run Main Distribution Boards.

Circuit earthing conductors shall run from the exposed metal of equipment and shall be connected to any point on the main earthing conductor, or its distribution boards or to an earth leakage circuit breaker. Metal conduits, cable sheathing and armouring shall be earthed at the ends adjacent to switch boards at which they originate, or otherwise at the commencement of the run by an earthing conductor in effective electrical contact with cable sheathing. Where equipment is connected by flexible cord, all exposed metal parts of equipment shall be earthed by means of an earthing conductor enclosed with the current carrying conductor within the flexible cord. Switches, accessories, lighting fitting etc. which are rigidly secured in effective electrical contact with a run of metallic conduct shall not be considered as apart of earthing conductor for earthing purposes, even though the run of metallic conduit is earthed.

5. Earthing stations

Plate electrode earthing :

Earthing electrode shall consist of 600 x 600 x 3 mm/300x3mm electrode as called for in the drawings. The electrode shall be buried as far as possible below permanent moisture level but in any case not less than 3mt below ground level. Wherever possible, earth electrode shall be located as near the tap, water drain or a down pipe as possible. Earth electrode shall nearer than 2 mt from the outer surface of the wall.

The earth plate shall be set vertically surrounded with 150 mm thick layer of charcoal dust and salt mixture. A 20mm dia. G.I. pipe shall run from top edge of the plate to the level. The top of pipe shall be provided with a funnel and a mash for watering the earth through the pipe. the funnel over the G.I. pipe shall be housed in a masonry chamber approximately 300 mm x 300mm x 300 mm deep. The masonry chamber shall be provided with a cast iron cover resting over CI frame..

6. Earth connection

All metal clad switches and other equipments carrying single phase circuit, shall be connected to earth by single connection. All metal clad switches carrying 3 phase shall be connected with

earth by two separate and distinct connections. Earthing conductor out side the building shall be laid 600mm below finished ground level. The over lapping in CU strips in joints where required shall be minimum 75 mm. The joints shall be made with Cu / Brass bolts in approved manner. Lugs shall be bolted to the equipment body to be earthed after the metal is cleaned of paint and other oily substances.

7. Artificial treatment of soil

If the earth resistance is too high and the multiple electrode does not give adequate low resistance to earth, then the soil resistivity immediately surrounding the earth electrode shall be reduced by adding sodium carbonate, copper soleplate, salt and soft coke or charcoal in suitable proportion.

8. Resistance to earth

The resistance to each earthing system shall not exceed 1.0 Ohm. Or as specified.

V TESTING

1. General

At the completion of the work, the entire installation shall be subjected to the following tests :

- a) Insulation continuity test
- b) Insulation resistance test
- c) Earth continuity test.
- d) Earth resistivity test

Beside the above tests any other test specified by the local authority shall also be carried out.

2. Testing of wiring

All the wiring system shall be tested for continuity of circuits, short circuits and earthing after the wiring is completed and before energizing.

3. Insulation resistance test

The insulation resistance shall be measured by applying between the earth and whole system of conductors, or any section thereof, with all fuses in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure provided that it does not exceed 600 Volts for medium voltage circuit.

Where the supply is derived from AC 3 phase system the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the less than 50 divided by the number of points on the circuit provided that the whole installation shall not be required to have an insulation greater than one mega ohm.

The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and all the conductors connected to the middle wire of the neutral or to the other phase conductors of the supply. Such a test shall be carried out after re

moving all metallic connection between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above. The insulation resistance between the case of frame work of housing and power appliances, and all live parts of each appliances shall not be less than that specified in the relevant Indian Standard specification and where there is no such not be less than half mega ohm.

4. Testing of earth continuity test

The earth continuity conductor metallic envelopes of cable shall be tested for electric continuity and electric resistance of the same along with the earthing lead but excluding any added resistance and earth leakage circuit breaker measured from the connection from the earth electrode to any point in the earth continuity conductor in the complete installation shall not exceed 1 ohm.

5. Testing of polarity of non linked single pole switches

In a two wire installation a test shall be made verify that all non linked single pole switches have been fitted in the same conductor through out and such conductor shall be labeled or marked for connections, to phase conductor or to the non earthed conductor of the supply. In the three or four wire installation a test shall be made to verify that every non linked single pole switch fitted in a conductor to one of the phase conductor of the supply. The entire electrical installation shall be subjected to the final acceptance of consultant as well as local authorities.

6. Earth resistivity test

Earth resistivity test shall be carried out in accordance with Indian Standard code of practice for earthing IS 3043-1966. All shall be carried out in the presence of the consultant.

VI DISTRIBUTION BOARDS

The distribution panel and distribution boards shall be suitable for operation on three phase /single phase

415 /230 Volts, 50 cycles, neutral grounded at transformer and short circuit level not less than 31 MVA at 415 Volts.

The distribution panel / boards shall comply with latest addition of relevant Indian standard and Indian electricity rules.

1. Construction features

The distribution panel /board shall be metal enclosed sheet steel cubical, indoor dead front, floor/ wall mounting type. The distribution board shall be totally enclosed complex dust and vermin proof. Gaskets between all advents units and beneath all covers shall be used to render the joints dust proof. Distribution boards shall be preferable arranged in multitier. All doors and covers shall be fully gasketed with foam rubber and / or rubber strips and shall be lockable. All MS sheet steel used in the construction of distribution board shall be 2 mm thick all shall be folded and braced as necessary to provide a rigid support for all the components. Joints of any kind in sheet metal shall be seam welded, all welding slag grounded off welding pits wiped smooth with plumber metal. All the panels and covers shall be properly fitted and square with the frame, and holes in the panel correctly positioned. Fixing screws shall enter into holes taped into an adequate thickness of metal or provided with hank nuts. Self thread

ing screws shall not be used in the construction of distribution boards. A base channel of 75 mm x 75mm x 9 mm thick shall be provided at the bottom or as specified.

Knock out holes of appropriate size and number shall be provided in the distribution board in conformity with the location of in coming and out going. Removable sheet steel plates shall be provided at top and bottom to drill holes for cable entry at site if required.

2. Bus bar connections

The bus bar and the inter connections shall be electrolytic copper bar and of regular cross section suitable for full load current for phase bars and half rated current for neutral bus and shall be extensible on either side. The bus bar and the enter connection shall be insulated with insulation tape and color coded. The bus bar shall be supported on unbreakable non hygroscopic insulated supports at regulars intervals to with stand the forces arising from short circuit in the system. All bus bar shall be provided in a separate chamber and properly ventilated. All bus bars connections shall be done by clamping. No holes shall be drilled in the bus bar for mounting clamps.

All connections between bus bars and switches and between switches and cable alley terminal shall be through solid copper strip of proper size to carry full rated current and insulated with insulation tapes.

3. Construction feature of distribution boards

All distribution boards shall be provided with load break switches /MCB of appropriate capacity as incoming. All TPN distribution shall be provided with TP /SP MCB's as out going. Separate neutral bus bar shall be provided for distribution boards.

MCB's shall be provided on the phase of each circuit. The individual banks of MCB's shall be detachable. There shall be ample space behind the banks of MCB's to accommodate all the wiring. All the internal wiring of distribution boards shall be concealed behind 5mm thick bekalite sheet. All the distribution boards shall be completely factory wired, ready for connection. All the terminal shall have adequate current rating size to suit individual feeder requirements. Each circuit shall be clearly numbered from left to right to correspond with wiring diagram. All the switches and circuit shall be distinctly marked with a small description of the service installed.

4. Cable compartments

Cable compartments of adequate size shall be provided in the panels / boards for easy termination of all incoming and out going cables interring from bottom. Adequate support shall be provided in cable compartments to support cables .All incoming and out going switches, terminal shall be brought out to terminal blocks in cable compartment.

5. Circuit compartments

Each circuit breaker and SFU's shall be housed in separate compartments and shall be enclosed on all side. Sheet steel hinged lock-able doors shall be duly interlocked with breaker /SFU in ON and OFF position. Salty interlock shall be provided for air circuit breakers to prevent the breaker from being drawn out when the breaker is in ON position, The door shall not from an integral part of draw out portion of the ACB. All instrument and indicating lamps shall

not be mounted on ACB compartment door. Sheet steel barriers shall be provided between the tires in the vertical sections.

6. Instrument accommodation

Separate and adequate compartment shall be provided for accommodation instruments, indicating lamps, control contractors and control fuses etc. These shall be accessible for testing

and maintenance without any danger of accidental contact with live parts of circuit breaker, bus bars and connections.

7. Terminals

The out going terminal of the breaker and neutral link shall be brought out to a terminal block suitably located at the rear side of the panel. Separate cable compartment shall be provided for incoming and outgoing cables.

8. Wire ways

A horizontal wire way with screwed cover shall be provided at the top to take interconnecting control wiring between different vertical section.

9. Switch fuse units

The switch fuse unit shall be three pole double break type suitable for low duty quick make and break action. Separate neutral link shall be provided with hinged doors duly interlocked with operating mechanism, so as to prevent opening of door when the switch is in ON position and also to prevent closing of the switch when door is not properly screwed. All contacts shall be silver plated and all live parts shall be shrouded. High rupturing capacity fuse links shall be provided with SFU's and shall be in accordance with IS 2208-1962 and having rupturing capacity of not less 31 MVA at 415 Volts. HRC fuse links shall be provided with visible indicators to show that they have operated

10 Fuses

Fuses shall be HRC fuse link and shall be in accordance with IS 2208 –1962 and having rupturing capacity of not less 31 MVA at 415 Volts

11. Current transformers

Current transformers shall be provided for main distribution boards carrying current in excess of 60 Amps where ever shown in drawing. All phase shall be provided with CT of accuracy class I and suitable burden to operate associated metering. CT shall in accordance with IS 2705 –1964. Separate CT 's shall be used for protective devices.

12. Distribution

All meters and indicating instruments shall be in accordance with relevant Indian standers. The meters shall be flush mounted and draw out type. Indicating lamps shall be low burden.

13. Earthing

CU earth bars of 25 x 3mm shall be provided for the distribution panel for the full length of the panel and connected to the frame work. Provision shall be made for connection from this earth bar to main earthing bar on both side of distribution panel

14. Meters

All the meters shall be housed in a separate compartment and accessible from front only. Lockable doors shall be provided for the metering compartments. The distribution boards shall be provided with indicating panel comprising of one number (0 –500 volts) 90 x 90 mm square type Voltmeter with selector. And CT operated ammeter with selector switch of appropriate range and scale. Wring for motors shall be color coded and labeled with approved plastic beads for identification.

COMPLETION PLAN AND COMPLETION CERTIFICATE :

Completion plan drawn to a suitable scale in tracing cloth with indicating the following along with three print copies of the same shall be submitted.

- a). General layout of the building.
- b). Location of main switch board and distribution boards, indicating the circuit numbers controlled by them.
- c). Position of all points and their control.
- d). Types of fittings, viz. fluorescent, pendants, bracket, bulkhead, fans and exhaust fans etc.
- e). Name of work, job number, accepted tender reference, actual date of completion, names of department.

Names of firm who executed the work with their signature.

Definition and conventional symbols –

The definition of terms in I.E.E wiring regulation shall apply except the definition of a point.

1. Point wiring shall length from the tapping point on the Distribution Board to the following, via the switch.

- (a) 3 plate ceiling rose (in the case of ceiling and exhaust fan points).
- (b) Ceiling rose or connector (in the case of pendants except stiff pendant points).
- (c) Back plate (in case of stiff pendants.)
- (d) Socket outlet (in the case of socket outlet points)
- (e) Lamp holder (in case of wall brackets, batten points, bulk fittings and similar other fitting)
- (f) Call bells /buzzer (in this case the words 'via the switch' shall be read as via the ceiling rose / socket outlet or bell push 'where no ceiling Rose / socket outlet is provided).

2. The following shall be deemed to be included in the point wiring-

- (a) Switch and ceiling Rose as required.
- (b) Bushed conduit or porcelain tubing or pilcs pipe where cables pass through walls etc.
- (c) Earth wire from three pin socket point to the Switch Board .

- (d) All woods or metal block, boards and boxes sunk or surface type including those required for mounting fan regulator socket, switch etc.
- (e) All fixing accessories such as clips, nail screw Phil plug, rawl plug, wooden plug etc. as required.
- (f) Joint for junction boxes and connections to ceiling rose or connector, socket outlet lamp holder, switch fan regulator etc. unless otherwise stated.
- (g) Circuit wiring from switch board to Sub- Distribution Board.

Note –I

A light point controlled by two nos of two way switches shall be measured as one point from the fitting to the switches on either side.

Note-II

In the case of call-bell / buzzer points with a single call bell / buzzer controlled by more than one place with a ceiling Rose / socket outlet or bell push where ceiling rose / socket outlet is not provided the length of point shall be from the call bell /buzzer to one of the bell pushes. The additional bell push on the same points shall be separately quoted for as indicated in the schedule of quantity.

L.T. PANEL AND DISTRIBUTION BOARDS

1.Scope of work under this item shall cover detailed Engineering, fabrication, assembly of switchgears, testing of distribution boards at factory, delivery at site, testing of L.T. distribution boards for 500V 50 Hz operation. Complete panel shall be fabricated at premises of approved vendor where fabrication, hydraulic/ power press, 7 tank metal treatment facilities are available. The design of distribution board shall confirm to latest applicable Indian Standards, safety codes as per detailed specification given in bill of quantities.

2. ENERGY METER PANELS

These shall be made as per the prevailing norms laid down by the concerned EB division of the area. Sizes of meter chambers, slotted angles, auxiliaries acrylic plate for meter reading, card holder, MCB compartment, locking and sealing arrangement etc shall all be as per the requirement of MPEB . All other details would be as per above mentioned. LT PANEL AND DISTRIBUTION BOARD specifications and those given in the schedule of items of the tender. The panels should be got approved by the competent of MPEB.

3. ENCLOSURES :

The fabrication details of distribution boards shall be worked out on the basis of type (Floor mounted/ wall mounted), area of auxiliaries (on trench / on floor etc.) For free standing distribution boards a robust base channel of not less than 10 gauge with section of 100 x 50 shall be prepared. Complete panel shall be fabricated as per following details:

Door, mounting plates of switchgears, Vertical compartment sheets	14 gauge
Compartment partition horizontal plates	16 gauge
Gland plates (with minimum 4 nos. of Fixing bolts)	10 gauge

The panel shall be provided with top as well as bottom gland plate unless specified otherwise. One gland plate shall be made suitable for maximum 4 nos. of cable, if no. of feeders in particular alley has more cables, then multiple cable glands has to be provided. The panel should be fabricated with separate provisions for bus-bar chamber, cable alleys,

Instrumentation & metering units. Facility of front & back maintenance door shall be provided for every maintenance . Cable alley shall be provided with slotted angle supports of suitable size for cable supports at every 300 mm vertical hinges on one side.

The front doors shall have panels door locks openable by key & back door shall be with bolt type arrangement having locking washers. All doors shall have rubber gaskets along the periphery to ensure dust proof / vermin proof conditions. Suitable stiffeners if required due to larger size of doors are to be provided while fabricating doors.

The panel cubical shall be fabricated strictly as per details given in drawing . The panel shall be front operated front maintenance type, unless specified otherwise. The meter relays, indication lamps shall be provided on front doors with proper cutouts. The arrangements to mount ACB, SFU shall be made within the panel, however operating handles etc. shall be mounted on doors. Arrangement for earthing terminals extended flats of 'AL' on both sides to connect 50x 5 GI earth strips shall be provided on panel.

VENTILATION

Ventilation louvers with removable type welded wire mesh are to be provided on sides of panel , backside cover of busbar chamber doors. Also on PCC at top of bus-bar chamber welded wire mesh

protected ventilation duct with canopy of sheet shall be provided for proper cooling & to ensure temperature rise within limits as per standards. ¾" size propellar fan fixed on opening at both ends in case of main panel & floor mounted distribution boards.

BUSBARS

High conductivity electrolytic grade 'Cu/ Al ' alloy of size as per details/ specifications confirming to E 91 E IS- 5082 shall be used to construct bus-bar. The bus-bar size shall remain same throughout the length of panel up to incomer & only branch sizes are to be different as per requirement & arrangement of outgoing feeders. Maximum current density permissible in

aluminium bus-bar shall be 0.8A / sqmm. The bus-bar shall be provided with heat shrinkable sleeves with appropriate colour code for phase & neutral. The material sleeves shall be non inflammable & self extinguishing type. The bus-bars shall be adequately supported by SMC – DMC fingers/ supporters, epoxy compound casted in desired no. & size to make care of thermal / mechanical stresses during normal & short circuit condition (50 KVA fault level).

HARDWARE/ MISCELLANEOUS ITEMS:

The hardware to be used in panels shall be zinc plated & all joints & connections shall be made with auxiliary zinc passivated or cadmium plated high tensile strength steel bolts/nuts/spring washers etc. The make of hardware items shall be UNBREKO/ GKW. All control wires shall be of 1.1 KV grade flexible copper of Finolex/ Milax make with Dowell/ 3D make copper pin type lugs. The control fuses of HRC 2A/ 4A of English electric make shall be provided with ferrules for identification of wires. PVC gray casing for wires shall be provided in cubicles. All wire shall be suitably tied with PVC button straps. Appropriate rubber bushes, clamps are to be crossover of control wiring in cubicles etc.

PAINTING

After completion of fabricated work, fabricated structure shall be thoroughly cleaned to remove traces of grease, rust, scale and dust. The seven tank process for treatment of fabricated structure shall be painted with one coat of anti-corrosive surface/ primer & two coats of synthetic enamel paint.

The furnished panels shall be dried in storing ovens in dust free atmosphere to ensure fine quality finish. The paint shall be Berger Luxol Higlloss, with light gray colour in matt finish for outside.

INCOMING & OUTGOING TERMINATION ARRANGEMENT

All incoming and outgoing feeders are to termination arrangement in separate cubicle. The incomer bus extension shall be provided from incomer SFU/ ACB/ MCCB up to incomer termination chamber. Also all outgoing feeders shall have bus-bars extension up to cable alleys. Sufficient space has to be provided for termination of cable/wires in cable alleys. The feeders below 40A can be provided with flexible cable & ELMAX connectors. All feeders outlet shall be provided with insulated barrier plates between two outgoing.

TELEPHONE SYSTEM

The wires and cable used for telephone system shall be as mentioned in list of approved make and PVC insulated and sheathed 0.5 sq.mm. Tinned copper conductor wires of various pairs should be laid in previously laid conduits.

The telephone wiring shall be carried out in the under mentioned manner confirming to the particular specifications:

- a) In concealed system including providing and laying conduits, bends, junctions boxes, pull boxes, hardware etc.
- b) The installation generally will be carried out in auxiliary with the norms and rules laid down by the P& T deptt. Of Govt. of India and IS specifications.
- c) The rate shall be on the basis of supply and fixing of dummy conduits and supply, installation, testing and commissioning of telephone cables as described above on per meter basis and of tag blocks and distribution frames on per unit basis.

STATUTORY APPROVALS

All statutory approvals from electrical inspectors and MPEB are to be obtained by the electrical contractor at no extra cost only official payment made in the Govt. treasury fir the first inspection of the electrical inspector will be reimbursed to you against receipt. The work also includes getting connection sanctioned from MPEB for individual meter for office/ flat and common meters at no extra cost. Only official charges to be deposited for deposit of MPEB shall be reimbursed against treasury slip.

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APPROVED MAKE OF MATERIALS (For Internal Electrification)

S. No.	Description	MAKE
01.	Modular type 10 Amp/20 Amp 250 Volt switch, plate, box with accessorize	Legrand / Anchor (Roma) / Finolex
02.	Modular type 10 Amp/20 Amp 5/6 pin socket, 25 Amp. starter, TV/Telephone socket, plate, box with accessories	Legrand / Anchor (Roma) / Finolex
03.	Moduler type step electronic fan regulator plate, box with accessorize	Legrand / Anchor (Roma) / Finolex
04.	Bulb Holder/3 pin Ceiling Rose	Legrand / Anchor (Roma) / Finolex
05.	PVC Non-metallic conduit with accessories	BEC/Precision/AKG /NIC
06.	MS conduit pipe with accessories	BEC/Precision/AKG /NIC

07.	PVC insulated copper wire 650 V-Grade.	Finolex / R.R.Cable / L&T / Havells
08.	MCB/MCCB/ELCB	Legrand / Siemens/ L&T
09.	MCB DB	Legrand / Siemens/ L&T
10.	AL. Ar. XLPE / PVC insulated and sheathed aluminum armored cable 1100 V-Grade	Finolex/Havells/Gloster / C.C.I. (Cable Corpn. Of India) / Universal (Uni-Star, Satna)
11.	Telephone wire	Delton / Finolex
12.	Cat -6 Cable	Finolex / Digi link
13.	LAN Equipments like Port switches, patch cords, patch panels etc.	D-Link / Sisco
14.	Computer Information outlets (I/O's)	D-Link / Sisco
15.	Coaxial cable for T.V.	Finolex / National
16.	Ceiling fan and exhaust fan	Crompton / Bajaj / Havells
17.	Luminaries (Light Fittings and its accessories)	Philips / Crompton / Wipro
18.	Decorative light fittings	Philips / Crompton / K-lite
19.	LED Strip	Philips / Wipro

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20.	G.I.PIPE	SWASTIK / KHANDELWAL / PRAKESH
21.	METERS (Ammeters , Voltmeters ,Power Factor Meters , Freq. Meters)	ELMEASURE /CONZERV/ L&T
22.	SELECTOR SWITCH	KAYCEE / SALZER
23.	IND LAMPS / PUSH BUTTONS	SIEMENS /MIMIC / TEKNIC
24.	Panel Manufacturer	CPRI approved Manufacturers.

- 1) The contractor should obtain prior approval from Banks Engineer / Consultants before placing order for any specific materials. Employer may / delete any of the makes or brands out of the above list.
- 2) All materials should conform to relevant standards and codes of BIS.

3) Materials with I.S.I. mark shall be used duly approved by the Banks Engineer / Consultants

Note: - The Bank may choose to ask contractor to produce original bills/certificate from the manufacturer or his authorized Distributor for authenticity and genuineness of the material for consideration and as per make approved by the Bank. In case of their failure to do so the same will not be considered for payment.

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ARTICLES OF AGREEMENT

(On non-judicial Stamp Paper of Rs. 1000/-)

ARTICLES OF AGREEMENT made the _____ date of _____ between State Bank of India, having its office at Mumbai hereinafter called "the Bank" of the One Part and

WHEREAS the Bank is desirous of _____

_____ and has caused drawings and specifications describing the work to be done to be prepared by M/s. Concept Engineering , Bhopal.

AND WHEREAS the said Drawings numbered _____ to _____ inclusive, the Specifications and the Schedule of Quantities have been signed by or on behalf of the parties hereto.

AND WHEREAS the Contractor has agreed to execute upon and subject to the Conditions set forth herein and to the Conditions set forth herein in the Special Conditions and in the Schedule of Quantities and Conditions of Contract (all of which are collectively hereinafter referred to as "the said conditions") the works shown upon the said Drawings and / or described in the said Specifications and included in the Schedule of Quantities at the respective rates therein set forth amounting to the sum as therein arrived at our such other sum as shall become payable there under (hereinafter referred to as "the said Contract Amount.")

NOW IT IS HEREBY AGREED AS FOLLOWS:

- 1) In consideration of the said Contract Amount to be paid at the times and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Conditions execute and complete the work shown upon the said Drawings and described in the said Specifications and the priced Schedule of Quantities.
- 2) The Employer shall pay to the Contractor the said Contract Amount, or such other sum as shall become payable, at the times and in the manner specified in the said Conditions.
- 3) The term "the Consultants" in the said Conditions shall mean the said M/s. Bisaria Power & Energy consultant Bhopal, or in the event of their ceasing to be the Consultants for the purpose of this Contract for whatever reason, such other person or persons as shall be nominated for that purpose by the Employer, not being a person to whom the Contractor shall object for reasons considered to be sufficient by the Employer, PROVIDED ALWAYS that no person or persons subsequently appointed to be Consultants under this Contract shall be entitled to disregard or overrule any previous decisions or approval or direction given or expressed in writing by the outgoing Consultants for the time being.
- 4) The said Conditions and Appendix thereto shall be read and construed as forming part of this Agreement, and the parties hereto shall respectively abide by submit themselves to the said Conditions and perform the Agreements on their part respectively in the said Conditions contained.
- 5) The Plans, Agreements and Documents mentioned herein shall form the basis of this Contract.
- 6) This Contract is neither a fixed lump-sum contract nor a piece work contract but a contract to carry out the work in respect of the entire building complex to be paid for according to actual measured quantities at the rates contained in the Schedule of Quantities and Rates or as provided in the said Conditions.
- 7) The Contractor shall afford every reasonable facility for the carrying out of all works relating to civil works, installation of lifts, Telephone, electrical installations, fittings air-

conditioning and other ancillary works in the manner laid down in the said Conditions, and shall make good any damages done to walls, floors, etc. after the completion of his work.

- 8) The Employer reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract.
- 9) Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work soon after the Site is handed over to him or from 14th day after the date of issue of formal work order as provided for in the said Conditions whichever is later and to complete the entire work within **45** Days subject to nevertheless the provisions for extension of time.
- 10) All payments by the Employer under this Contract will be made only at Bhopal.
- 11) All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen at Mumbai and only the Courts in Bhopal shall have jurisdiction to determine the same.
- 12) That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor.

IN WITNESS WHEREOF THE EMPLOYER and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written.

SIGNATURE CLAUSE

SIGNED AND DELIVERED by the

_____ By the
(Employer)

hand of Shri _____

(Name and Designation)

(Signature of Employer)

In the presence of :

1) Shri / Smt. _____

(Signature of Witness)

Address _____

(Witness)

SIGNED AND DELIVERED by the

_____ by the
(Contractor)

(Signature of Contractors)

in the presence of :

Shri / Smt. _____

(Signature of Witness)

Address _____

(Witness)

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