



भारतीय स्टेट बैंक  
State Bank of India

जयपुर  
Jaipur

SBI LOCAL HEAD OFFICE, Tilak Marg, C-Scheme, Jaipur- 302005

# TENDER DOCUMENT

P&E/LHOJAI/2025

**PROPOSED EXTERNAL ELECTRICAL RELATED WORK  
ON BANK'S PLOT AT SECTOR 3, VIDHYADHAR  
NAGAR, JAIPUR (RAJASTHAN)**

Date of Issue of Tender : 06.11.2025  
End Date & Time of Submission : 21/11/2025 at 03.00 PM

**ARCHITECTS**

M/S. AXES ARCHITECTURAL DESIGN & ENGINEERING SERVICES PVT. LTD.  
3-Ta-57, Ratan Duggar Marg,  
Jawahar Nagar, Jaipur-302004  
Ph: 9828115410  
Email:- [architectsaxes@gmail.com](mailto:architectsaxes@gmail.com)

**STATE BANK OF INDIA  
NOTICE INVITING TENDER**

State Bank of India (SBI) Invites Sealed Tenders from The Eligible Empaneled Electrical WORKS Contractors in the category of 50 lacs and above for <b>EXTERNAL ELECTRICAL WORK FOR SITE DEVELOPMENT AND LANDSCAPE WORK ON BANK'S PLOT AT SECTOR 3, VIDHYADHAR NAGAR, JAIPUR (RAJASTHAN)</b> Details of tenders are as under: -		
1.	<u>Name of work</u>	<b>EXTERNAL ELECTRICAL RELATED WORK FOR SITE DEVELOPMENT AND LANDSCAPE WORK ON BANK'S PLOT AT SECTOR 3, VIDHYADHAR NAGAR, JAIPUR (RAJASTHAN)</b>
2.	<u>Time allowed for completion</u>	<b>30 days from the date of commencement/ handing over of site whichever is earlier.</b>
3.	<u>EMD</u>	<b>EMD of Rs 80,000/-</b> (Rupees Eighty Thousand Only) as Earnest Money (approx. 2 % of the estimate) in favour of SBI payable at Jaipur and deposited at SBI LHO Jaipur along with SB collect Payment receipt for tender fees. Vendor has to submit the difference amount of the estimated cost and tender amount as performance guarantee in the form of FD if the quoted amount observed below 10% of the estimated cost. by crossed Bank draft/ Banker's cheque drawn in favour of State Bank of India payable at JAIPUR latest by 21.11.2025 upto 03:00 PM.
4.	<u>Security Deposit</u>	For the successful bidder, total security deposit shall be 5% of the contract value. Out of this, 2% of the contract value will be in the form of Initial Security Deposit (ISD); which includes the EMD. Balance 3% shall be deducted from the running account bill of the work at the rate of the 10% of respective running account bill i.e. deduction from each running bill account will be 10%, till the 3% of the contract value is achieved and total of 5%. In case running bills are not paid/submitted, whole 3% of the remaining ISD will be deducted from the final bill paid
5.	<u>Additional Performance Guarantee</u>	Vendor has to submit additional

		performance guarantee in the form of FDR or Bank Guarantee favoring State Bank of India, difference amount of the 92.50% of the estimated cost and tender cost, if the tender value is lower by more than 7.5% of estimated value
6.	<u>Cost of tender documents</u>	Online, Free of Cost. Can be downloaded
7.	<u>Last date and time of receipt of tender</u>	Online 21/11/2025 Up to 03:00 PM
8.	<u>Address at which the tenders are to be submitted (Technical Bid Along with EMD to be submitted in Hard copy Only) and Price bid to be submitted online)</u>	AGM(P&E), SBI, LHO, C-Scheme , Near Udyog Bhawan , Jaipur-302005
9.	<u>Date and time of opening of tender</u>	Online on 21/11/2025 at 03:30 PM
0.	<u>Place of opening tenders</u>	Online
1.	<u>Defects Liability Period</u>	12 months from the date of completion
2.	<u>Validity of offer</u>	90 days from the date of opening of tenders.
3.	Liquidated Damages	At the rate of 0.5% of the contract value per week of delay subject to a maximum of 5% of the accepted contract value.
4.	Rates	Rates quoted by the bidder shall remain firm throughout the contract period (including variations) taxes, duties, levies, royalties, transportations, labour other incidental charges, WCT etc. PVA & PVA clause shall not be applicable, rates are inclusive of all taxes except GST. GST shall be paid as per Bank's norms.
5.	Payment terms	1st Running / Ad hoc payment @ 50% of work progress assessment. Maximum One Interim bill shall be submitted.  Final payment will be made within 30 days from the date of joint verification of the bill by the Bank's engineer/Architect and contractor
6.	Working schedule	The L-1 Bidder has to submit the timelines in the form of PERT Chart and get it approved from Architect/Banks Engineer
7.	Insurance	The contractor shall obtain all necessary insurance policies as per the law applicable at the center and shall be required to produce the original policies and receipts of the premium applicable in the matter to the Bank.
8.	Water & Electricity	Water and Electricity shall be provided by the Bank at one point. However, further distribution and extension and light

		fixtures etc. with required MCB switches. Switch boards, lamp, tube etc shall be arranged by the contractor at their own cost with the accepted tender cost.
19.	For e-Tender related queries	<p>Service provider:  <a href="http://www.tenderwizard.com/SBIETENDER">www.tenderwizard.com/SBIETENDER</a>  M/s. Antares Systems Limited,  Registered Office: #24, Sudha Complex,  3rd Stage, 4thBlock, Bangalore – 560079,  Karnataka. Ph.: 080-49352000 / 40482000  Fax:080-49352034</p> <p><b>Contact Persons:</b>  1. Mr. Parvej, Mobile No.: +91 9044314492  e-Mail: parvej@antaressystems.com  2. Mr. Kushal Bose, Mobile No.: +91 7686913157, e-Mail: kushal.b@antaressystems.com</p>
<p>Project Architect: <b>Axes Architectural Design &amp; Engineering Services Pvt. Ltd.</b>  3-Ta-57, Ratan Duggar Marg, jawahar nagar,  JAIPUR-302004 MO. – 98281-15410  E-mail <b>architectsaxes@gmail.com</b></p> <p><b>The tenderer may contact at the above for clarification of any tender related query.</b></p>		
In case the date of opening of tenders is declared as a holiday, the tender will be opened on the next working day at the same time.		
SBI has the right to accept/reject any/ all tenders without assigning any reasons.		

Yours Faithfully,

AGM(P&E),  
SBI, LHO,  
C-Scheme ,  
Near Udyog Bhawan ,  
Jaipur-302005

**MODE OF SUBMISSION OF TENDER:**

The tender shall be submitted in two cover system in accordance with the procedure detailed herein below. Specified documents shall be sealed in envelopes of appropriate size each of which shall be sealed :-

a)	1)	<b>HARD COPY</b> : Only EMD to be deposited in hard copy duly signed at the Office of The AGM(P&E). Scanned copy of the EMD shall be uploaded mandatorily on the e portal along with complete tender document and price bid latest by 21/11/2025 up to 03:00 PM.
	2)	<b>ONLINE</b> : Priced Bill of Quantities duly filled to be uploaded ONLINE.

**OPENING OF TENDER:**

1)	TECHNICAL BID ALONG WITH EMD-----To be uploaded online. Only EMD shall be submitted in hard copy. PRICE BID: TO BE UPLOADED ONLINE
2)	The submitted Hard copies of Envelope No. 1 containing the EMD, covering letter, terms and conditions will be opened first and if the EMD is not found as prescribed, the tender shall be rejected.
3)	After opening of cover 1 and after evaluating the clarifications / conditions, if any, stipulated by the contractors, i.e., if the vendors are qualified, priced BOQ will be opened ONLINE of those qualified vendors.

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

State Bank of India has the right to accept / reject any or all tenders without assigning any reasons.

Yours faithfully,

Signature of the Tenderer

AGM(P&E),  
SBI, LHO,  
C-Scheme ,  
Near Udyog Bhawan ,  
Jaipur-302005

## **INSTRUCTIONS TO THE TENDERERS**

### **1.0 SCOPE OF WORK**

ONLINE Sealed Tenders are invited by **M/s. Axes Architectural Design & Engineering Services Pvt. Ltd.** (Architect) systems for and on behalf of State bank of India for **EXTERNAL ELECTRICAL WORK FOR SITE DEVELOPMENT AND LANDSCAPE WORK ON BANK'S PLOT AT SECTOR 3, VIDHYADHAR NAGAR, JAIPUR (RAJASTHAN)**

### **1.1 SITE AND ITS LOCATION**

**Site is located at RESIDENTIAL BUILDING (G+2) FOR FOUR RESIDENCES AT VIDHYADHAR NAGAR, SECTOR 3, JAIPUR.**

### **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
- Technical specifications
- Price bid
- Drawings

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:

- i) Price bid
- ii) Additional condition for electrical installation
- iii) Technical specifications
- iv) Instructions to the tenderer
- ii) Special Conditions of Contract
- iii) General Conditions of Contract

2.3 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 which 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' requirements, 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 DEPOSIT**

4.1 The tenderers are requested to submit the **earnest money deposit of Rs 80,000.00/-** (Rupees Eighty Thousand Only) in the form of Demand Draft/ Banker's Cheque from any scheduled Nationalized Bank in favor of State Bank of India payable at Jaipur (Valid for a period of 90 days from the last date of submission of tender) **at the office address SBI LHO**

**Jaipur**

- 4.2 EMD in any other form other than as specified will not be accepted. Tender not accompanied by the EMD shall be rejected.
- 4.3 EMD of unsuccessful tenderers will be refunded within 30 days of award of Contract.

**5.0 Initial Security Deposit**

The successful tenderer will have to submit a sum equivalent to 2% of the accepted tender value less EMD by means of D/D drawn in favor of State Bank of India within a period of 10 days from the date of receipt of Letter of Indent (LOI)/Work order from SBI.

**No interest shall be paid to the amount retained by the SBI as Security Deposit.****6.0 Retention Deposit**

- 6.1 An amount @ 5% of the bill amount will be retained by the SBI from the bills and the same will be released by the SBI against Bank guarantee for equal amount issued by any Nationalized/Scheduled Bank in the SBI's approved format valid for 1 year.
- 6.2 No interest shall be paid to the amount retained by the 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 15 days from the receipt of intimation of acceptance of his tender by the Bank. However, the written acceptance of the tender 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 30 days** from the date of commencement.

**9.0 Validity of Tender**

Tenders shall remain valid and open for acceptance for a period of 3 (Three) months from the date of opening price bid. If the tenderer withdraws his/her offer during the validity period or makes modifications in his/her original offer which are not acceptance to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to 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 Rates 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 figures in case of discrepancy between the rates quoted in words and figures the unit rate quoted in words will prevail. If no rate is quoted for a particular item, the contractor shall not be paid for that item when it is executed. The amount of each item shall be calculated, and the requisite total is given. In case of discrepancy between the unit rate and the total amount calculated from multiplication of unit rate and the quantity the unit rate quoted will govern and the amount will be corrected.

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

11.1.3 The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly. The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed he should immediately bring to the knowledge of the Architect/ Bank.

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, VAT, levies, etc.

## **GENERAL CONDITIONS OF CONTRACT**

### **1.0 Total Security Deposit**

Total Security deposit comprise of:

Initial Security Deposit

Retention Money

#### **a) Earnest Money Deposit (EMD)**

The tenderers are requested to submit the requisite **earnest money deposit at the office address SBI LHO JAIPUR**. No tender shall be considered unless the Declaration submitted in the required form. The EMD of the unsuccessful tenderer shall be returned soon after the decision to award the contract is taken. The EMD amount shall be payable and shall stand absolutely forfeited if the tenderer revokes his tender at any time during 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 successful tenderer will have to submit a sum equivalent to 2% of the accepted tender value less EMD by means of D/D drawn in favor of State Bank of India within a period of 10 days from the date of receipt of Letter of Indent (LOI)/Work order from SBI

#### **c) Retention Money**

An amount @ 10% of the bill amount will be retained by the SBI from the bills until the total retention amount reaches 5% of the total work order value including ISD and EMD and the same will be released by the SBI against Bank guarantee for equal amount issued by any Nationalized/Scheduled Bank in the SBI's approved format valid for 1 year i.e after the completion of defect liability period of one year.

### **3.0 Language Errors, Omissions and Discrepancies**

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

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



#### **4.0 Scope of Work**

The contractor shall carry out, complete and maintain the said work in every respect strictly in accordance with this contract and with the directions of and to the satisfaction of the Bank to be communicated through the architect/consultant. The architect/consultant at the directions of the Bank from time-to-time issue further drawings and/or written instructions, details directions and explanations which are hereafter collectively referred to as Architect's/Consultant's instructions in regard to: the variation or modification of the design, quality or quantity of work or the addition or omission or substitution of any work, any discrepancy in the drawings or between the BOQ and/or drawings and/or specifications, the removal from the site of any material brought thereon by the contractor and the substitution of any other materials thereof, the demolition, removal and/or re-execution of any work executed by him, the dismissal from the work of any person employed/engaged thereupon. The contractor shall submit 3-4 models of the poles, lights or any other item as per the specification and make given in the BOQ and as directed by the Architect/Bank as a sample at his own cost and take the prior approval of the final/approved samples before installation at site.

#### **5 (i) Letter of Acceptance**

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

#### **5 (ii) Contract Agreement**

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

#### **6.0 Ownership of drawings**

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

#### **7.0 Detailed drawings and instructions**

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

The work shall be executed in conformity therewith and the contractor prepare a detailed program schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBI through the Architect/Consultant.

#### **Copies of Agreement**

Two copies of agreement/tender document 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 clause 30 of GCC or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damage at the rate of 0.5% of the contract value per week 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 required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be best quality. The contractor shall at all times enforce strict discipline and good order among his employees 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 SBI/Architect/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 contractor. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBI in writing under intimation of the Architect/Consultant. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBI any legal actions arising there from.

## **11.0 Setting out Work**

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

## **12.0 Protection of works and property**

The contractor shall continuously maintain adequate protection, of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss due to his fault or negligence except which are due to causes beyond his control.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Government and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property of about or adjacent to his place of work. The contractor shall take insurance covers as per clause 25.0 at his own cost. The policy may be taken in joint names of the contractors and the SBI and the original policy may be lodged with the SBI.

## **13.0 Inspection of Work**

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

## **14.0 Assignment and subletting**

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer assign or underlet the contract or any part or share thereof or interest therein without the written consent of the SBI through the architect and no undertaken 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**

(i) All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with Architect/Consultant instructions and shall be subject from time to time to such tests as the architect/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, labour and materials

#### **(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 Architect/ consultant. Before submitting the sample/literature the contractor shall satisfy himself that the material/equipment for which he is submitting the samples/literature meet with the requirement of tender specification. Only when the samples are approved in writing by the architect/consultant the contractor shall proceed with the procurement and installation of the particular material/equipment. The approved samples shall be signed by the Architect/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 Architect/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/equipments etc shall be to the account of the contractor. Authorization certificate from the OEMs/Dealers etc shall be submitted if asked by the consultant/bank for the items mentioned in the boq

#### **(iii) Cost of tests**

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

#### **(iv) Cost of test not provided for**

If any test is ordered by the Architect/ Consultant which is either:

(a) If so intended by or provided for or ( in the cases above mentioned) is not so particularized or through so intended or provided for but ordered by the Architect/Consultant which is either to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government/approved laboratory, then the cost of such test shall be borne by the contractor.

### **16.0 Obtaining Information related to execution of work**

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

### **17.0 Contractor's superintendence**

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

### **18.0 Quantities**

i) The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements

The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under Clause 20

hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

ii) Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 22(e) hereof.

### **19.0 Works to be measured**

The Architect/Consultant may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the Architect in taking such measurements and calculation and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the Architect/Consultant shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the M book. Should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the Architect/consultant shall be final. All authorized extra work, omissions and all variations made shall be included in such measurements.

### **20.0 Variations:**

No alteration, omission or variation ordered in writing by the Architect/Consultant shall vitiate the contract.

In case the SBI/Architect/Consultant thinks proper at any time during the progress of works to make any alteration in, or additions to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the Architect/Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice but the contractor shall not do any work extra to or make any alteration or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect/Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect/Consultant and the same shall be added to or deducted from the contract value, as the case may be.

### **21.0 Valuation of Variations**

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

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 Architect/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 Architect/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 Architect/Consultant) the workman's name and materials employed be delivered for verifications to the Architect/Consultant at or before the end of the week following that in which the work has been executed.

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

## **22.0 Final Measurement**

The measurement and valuation in respect of the contract shall be completed within six 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 to the satisfaction of the SBI.

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

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

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

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

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

f) All defects/imperfections have been attended and rectified as pointed out by the SBI to the full satisfaction of SBI.

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

This issuance of a VCC shall be without prejudice to the SBI's rights and contractor's liabilities under the contract including the contractor's liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the SBI against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

## **24.0 Work by other agencies**

The SBI/Architect/Consultant reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried

out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBI. Such work shall be carried out in such manners not to impede the progress of the works included in the contract.

## **25.0 Insurance of Works**

25.1 Without limiting his obligations and responsibilities under the contract the contractor shall insure in the joint names of the SBI and the contractor against all loss or damages from whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the SBI and contractor are covered for the period stipulated in clause 28 of GCC and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under clause.

a) The works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.

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

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

## **25.2 Damage to persons and property**

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBI 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 SBI to execute the works or any part thereof, on, over, under, in or through any lands.

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

d) Injuries or damage to persons or property resulting from any act or neglect of the SBI, their agents, employees or other contractors not being employed by the contractor or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBI, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

## **25.3 Contractor to indemnify SBI**

The contractor shall indemnify the SBI 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 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 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 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 Architect/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 25.0 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 SBI, 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 26.0 thereof.

#### **25.5.2 Minimum Amount of Third-Party Insurance**

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

25.6 The minimum insurance cover for physical property, injury, and death is Rs.5.0 lacs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

### **25.7 Accident or Injury to Workmen**

25.7.1 The SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBI against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

#### **25.7.2 Insurance against accidents etc to workmen**

The contractor shall insure against such liability with an insurer approved by the SBI during the whole of the time any person employed by him on the works and shall, when required, produce to the architect/consultant such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall have insured against the liability in respect of such persons in such manner that SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect/Consultant when required 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 SBI may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SBI as aforesaid and also deduct 15% of contract value from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

25.7.4 Without prejudice to the other rights of the SBI against contractors, in respect of such default,

the Bank shall be entitled to deduct from any sums payable to the contractor the amount of any damage's costs, charges, and other expenses paid by the SBI and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

### **26.0 Commencement of Works**

The date of commencement of the work will be reckoned as the recorded date of handing over site by the SBI or **15 days** from the date of issue of Letter of Acceptance of Bank, whichever is earlier.

### **27.0 Time for completion**

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period **of 30 days** from the date of commencement. If required in the contract or as directed by the Architect/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**

If, in the opinion of the Architect/Consultant, the work be delayed for reasons beyond the control of the contractor, the Architect/Consultant may submit a recommendation to the SBI 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 SBI through the Architect/Consultant in writing at least 30 days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reasons in detail and his justification if any, for the delays. The architect/consultant shall submit their recommendations to the SBI 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 SBI the provision of liquidated damages as stated under clause 8 of GCC shall become applicable. Further contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

### **29.0 Rate of progress**

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

### **30.0 Work during nights and holidays**

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the Architect/Bank, 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 Architect/Bank. However the provision of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required and continued with the prior approval of the



Architect/consultant at no extra cost to the SBI.

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

### **31.0 No compensation for restrictions of work**

If at any time after acceptance of the tender SBI shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not require the whole or any part of the work to be carried out, the Architect/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 bona fide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the Architect/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 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 Architect/Consultant shall be final.

### **32.0 Suspension of work**

i) The contractor shall, on receipt of the order in writing of the Architect/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 Architect/Consultant may consider necessary so as not cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.

- a) On account any default on the part of the contractor, or
  - b) For proper execution of the works or part thereof for reasons other than the default of the contractor, or
  - c) For safety of the works or part thereof. The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Architect/Consultant.
- ii) If the suspension is ordered for reasons (b) and (c) in sub-Para (i) above: The contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

### **33.0 Action when the whole security deposit is forfeited**

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

- a) To rescind the contract (of which rescission notice in writing to the contractor by the Architect/Consultant shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of SBI.
- b) To employ labour paid by the SBI and to supply materials to carry out the work, or any part of the

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

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

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

#### **34.0 Owner's Right to Terminate the Contract**

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Government and of the Official Assignee of the liquidator in such acts of insolvency or winding up shall be unable within seven days after notice to him to do so, to show to the reasonable satisfaction of the Architect/Consultant that he is able to carry out and fulfil the contract, and to give security therefore if so required by the Architect/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 SBI through the Architect/Consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor there under.

a) Has abandoned the contract; or

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

c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect/ Consultant that the said materials were condemned and rejected by the Architect/ Consultant under these conditions; or has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or in defiance of the SBI's or Architect's/Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect/Consultant, may not withstanding any previous

waiver, after giving seven days notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect/Consultant or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the SBI through the Architect/Consultant, their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads, use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient the SBI or the Architect/Consultant shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within **14 days** after receipt thereof by him the SBI sell the same by public auction after due publication and shall adjust the amount realized by such auction. The contractor shall have no right to question any of the act of the SBI 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 Architect/ Consultant to the contractor within **10 working days** from the date of certificate to the payment from SBI from time to time. The SBI shall recover the statutory recoveries and other dues including the retention amount from the certificate of payment.

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

The Architect/Consultant shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

The Architect/Consultant may by any certificate make any corrections required in previous certificate.

The SBI shall modify the certificate of payment as issued by the Architect/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 Measurement book (M.B). The contractor shall not submit interim bills.

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and Architect/Consultant shall issue the certificate of payment within a period of two months. The SBI 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 Settlement of Disputes and Arbitration**

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

i) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the Contractor shall forthwith give notice in writing of his claim, or dispute to the Assistant General Manager (Premises& Estate)/Dy. General Manager (Premises) 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 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 Assistant General Manager (Premises& Estate)/Dy. General Manager (premises) 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 Assistant General Manager (Premises& Estate)/Dy. General Manager (premises) in writing in the manner and within the time aforesaid.

ii) The Assistant General Manager (Premises& Estate)/Dy. General Manager (premises) shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the Assistant General Manager (Premises& Estate)/Dy. General Manager (premises) submit his claims to the conciliating authority namely the Circle Development Officer/General Manager (Corporate Services) for conciliation along with all details and copies of correspondence exchanged between him and the Assistant General Manager (Premises& Estate)/Dy. General Manager (premises)

iii) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Chief General Manager/Dy. Managing Director &Corporate Development Officer of the Bank for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.

iv) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager/Dy. Managing Director &Corporate Development Officer. 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/Dy. Managing Director &Corporate Development Officer. Such person shall be entitled to proceed with the reference from the stage at which it was left 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 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 statutory modification or re-enactment 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 arbitrator 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 conditions:

- i) That the water used by the Contractor shall be fit for construction purpose to the satisfaction of the Architect/Consultant.
- ii) The Contractor shall make alternative arrangements for the supply of water if the arrangements made by the Contractor for procurement of water in the opinion of the Architect/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 the 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 SBI without any compensation as directed by the Architect/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 be included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approvals from the appropriate authorities, if required.

### **39.0 Treasure Trove etc.**

Any treasure trove, coin or object antique which may be found on the site shall be the property of SBI and shall be handed over to the 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 Architect/Bank shall be final and binding on the contractor.

### **41.0 Maintenance of Registers**

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

- 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 SBI shall be considered in default in performance of their obligations if such performance is prevented or delayed by events such as war, hostilities, revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However, a notice is required to be given **within 45 days** from the happening of the event with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.

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

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

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

#### **43.0 Local Laws, Acts, Regulations**

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. The contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.

- i) Minimum Wages Act, 1948 (Amended)
- ii) Payment of Wages Act 1936 (Amended)
- iii) Workmen's Compensation Act 1923 (Amended)
- iv) Contract Labour Regulation and Abolition Act 1970 and Central Rules 1971 (Amended)
- v) Apprentice Act 1961 (Amended)
- vi) Industrial Employment (Standing Order) Act 1946 (Amended)
- vii) Personal Injuries (Compensation Insurance) Act 1963 and any other modifications
- viii) Employees' Provident Fund and Miscellaneous Provisions Act 1952 and amendment thereof
- ix) Shop and Establishment Act
- x) Any other Act or enactment relating thereto and rules framed thereunder from time to time.

#### **44.0 SAFETY CODE:**

##### **SAFETY MEASURES AT SITE:**

1. All personnel at site should be provided with Helmets and Safety Boots with some Identification Mark. Visitors also should be provided with Helmets. It should be ensured that these are used properly.
2. First Aid Box should be kept at site with all requisite materials.
3. No one should be allowed to inspect / work at a height without Safety Belt.
4. Suitable scaffolds should be provided for workmen for all Works that cannot safely be done from the ground, or from solid construction except such short period Work as can be done safely from ladders. When a ladder is used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (¼ horizontal and 1

vertical).

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

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

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

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

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

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

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

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

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

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

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

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

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

- g) Those engaged in welding works shall be provided with Welder's protective eye-shields.
  - h) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
  - i) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals and boards to prevent accident to the Public.
12. Use of hoisting machines and tackle including their attachments, anchorage and support shall conform to the following standard or conditions: -
- a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repairs and in good working order.
  - b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
  - c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffold, winch or give signals to the operator.
  - d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension the safe working load shall be ascertained by adequate means.
  - e) Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
  - f) Motor, Gearing, Transmission, Electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced.
  - g) When workers are employed on electrical installation, which are already energized, insulating mats, wearing apparel such as gloves, sleeves, and boots as may be necessary should be provided. The workers should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

13. All scaffolds, ladders and other safety devices, mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

### **30.0 Accidents**

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

46. Storage of materials: The contractor shall not store their materials and debris within the premises other than the work site handed over to him.



47. Shelter or stay for the labourers has to be arranged by the contractor at his own expense & responsibility.

48. The rates quoted shall be for complete work at site and inclusive of WCT., Sales Tax, VAT, Service Tax or any other Government levies if applicable, E.S.I. charges, Octroi, Royalties, Cartage etc. or any other tax as applicable during the course of execution of works as applicable by State government or Central Government or as per direction of the Government. The rates shall be firm and shall not be subject to cost other condition whatsoever. All taxes shall be deducted at source as per Government norms. Nothing extra including Escalation shall be payable by the Bank.

49. The Quantities taken in schedule are only for guide. It may increase or decrease or deleted & payment shall be made on the basis of actual measurement/quantities executed on site, which to be measured jointly with the Architect and contractor. In absence of contractor for joint measurement, the quantity measured by the Architect/Bank's Engineer will be final & binding upon you.

50. The STATE BANK OF INDIA does not bind itself to accept the lowest or any tender, or to assign any reason thereof and also reserves the right of accepting the whole or part of the tender and the tenderer shall in such an event is bound to perform the contract at the same rates quoted in the tender for the various items of the work.

51. At any point of time Bank may cancel competitive tenders if it is found that rates thus arrived are on higher side/extreme lower side or delete a part of it as required by bank. It will be sole discretion of Bank to decide and allocate works to respective contractor as per his past performance or even he may be debarred from the forthcoming tender/tenders; against this decision no challenge will be entertained by Bank.

52. Time is the essence of the contract and the tenderer are required to complete the work in all respects within the stipulated time of completion and hand over the same, complete in all respect to the satisfaction of the Bank and if the contractor fails to complete the work within stipulated time, then left over works and other job will be allotted to another contractor, may be at his own cost and risk. The contractor will have to ensure normal function of staff at the floor during office hours/ non banking hours/ day/ night without hampering normal banking business and the site will be available in parts as progress of work. Existing furniture, dismantled items shall be shifted from one place to other and form the floor by the contractor for which no extra payment will be made.

53. It shall be clearly understood that the rates quoted in the tender are to be for complete work on site, as per instructions in the tender specifications and drawing and also for all such works as are necessary for the proper completion to the contract. Although specifications thereof may not have been made in the specifications or drawings or tender documents. The rates shall be firm and shall not be subject to cost escalation on account of labour and material, and labour condition or any other reason whatsoever.

54. Regarding the list of material to be used in works has to be got approved by the Architect/Engineer in-charge along with drawing of works, if not attached with the tender; these may be obtained from the Architect/Bank's Engineer, prior to submission of tender. The decision of the Engineer in-charge shall be considered as final and binding upon you.

55. The tenderer shall use only the form issued with this tender to fill up the rates. Every page of the tender shall be signed by the contractor along with stamp & Digital Signature.

## 56. DELINQUENCIES

The under noted delinquencies / defaults / misconduct / misdemeanors on the part of tenderer or enlisted contractor will attract disqualification action.

- ❖ Incorrect information about credentials, about his performance, equipment, resources, technical staff etc.
- ❖ Non-submission of the fresh / latest income tax clearance certificate
- ❖ Irregular tendering practice.
- ❖ Submission of tender containing far too many arithmetical errors and freak rates.
- ❖ Revoking a tender without any valid reasons.
- ❖ Tardiness in commencing work
- ❖ Poor organization at site and lack of his personal supervision
- ❖ Ignoring Bank's notices for replacement / rectification of rejected materials, workmanship etc.
- ❖ Violating any of the important conditions of contract i.e. site facilities, insurance, labour laws, ban on subletting etc.
- ❖ Lack of promptitude and co-operation in measurement of work and settlement of final account.
- ❖ Non-submission of vouchers and proof of purchases etc.
- ❖ Tendency towards putting up false and untenable claims.
- ❖ Tendency towards suspension of work for frivolous reasons.
- ❖ Treatment of labour
- ❖ Bad treatment of sub-contractors (piece workers) and unbusiness like dealings with suppliers of material.
- ❖ Lack of co-operation with nominated contractors of Bank
- ❖ Contractors becoming Bankrupt or insolvent.
- ❖ Contractor's conviction by a Court of Law.
  
- ❖ Failure to satisfactorily rectify defects during Defects Liability Period (DLP) and discovery of latent defects in contractor's work after the expiry of DLP of his contract.

## DISQUALIFICATION ACTION AGAINST (DELINQUENCIES OF) CONTRACTOR

The award of the under noted disciplinary action shall be considered.

- ❖ a) Placing embargo on issue of tenders or temporary suspension from the Bank's approved list.
  
- ❖ b) Permanent ban on issue of tenders and removal from the Bank's approved list.

57. The contractor will attend to all the defects noticed during the defect liability period. If the contractor fails to attend the defects, the same will be rectified by the Bank and the expenditure incurred on this account will be recovered from security deposit amount. If the expenditure incurred exceeds the security deposit the contractor has to deposit such excess amount **within 15 days** otherwise Bank will initiate action as deemed fit at the risk and cost of the contractor.

58. Deduction of Income tax and W.C.T, Service Tax and other govt. levies, etc will be made as per the prevailing rates/Government rule from the contractor's final bill applicable as per Bank's requirement/instructions and the final bill shall be submitted by bifurcating service tax component on gross bill amount.

59. No mobilization advance, or secured advance is to be allowed to the contractor.

60. The tenderer, must associate himself with agencies of the appropriate class for specialized works such as flooring, tiling, false ceiling, plumbing, sanitary etc.

61. The contractor shall remove all malba/debris, wastage material from the site beyond municipal limit and clean the floor, furniture, glass etc at his own cost and handover the site in proper manner after the completion of the project. Any damage done to the property of SBI during execution of work shall be the responsibility of the contractor and it shall be made good by him at his cost to the entire satisfaction of consulting Architect/Bank.

62. The contractor shall arrange to deploy himself or their competent representative (acceptable to the Bank) who will responsible for the conduct of the worker and who has authority to receive and act on such instructions issued by the Architect/Bank's Engineer.

63. The contractor shall give due notice to the Bank/Architect to check measurement of any work which is likely to be hidden before covering the same. The final measurement of works shall be taken jointly for the finalization of final bill along with the Architect or his representative and Engineer in-charge; if contractor remains absent during the final measurement, the measurement & quality of work certified by the Architect/Bank's Engineer binding upon you.

64. Certificates of purchase of company specified items/units like Chairs, Tube lights, electrical fixture & fittings, AC's and any such items as deemed necessary by the Architects/Bank Engineer may be asked to produce by the contractor from the authorized distributors/dealers/company showroom/transporter along with the final bill. If required bank may ask the purchase bill of the Material. The Architect/Bank Engineer shall have full powers to get the material or workmanship to be inspected and tested by an independent agency for its soundness and adequacy on all the cost of contractor.

State Bank of India has right to accept / reject any or all tenders without assigning any reason.

Contractor's signature with seal

## TECHNICAL SPECIFICATIONS

### TECHNICAL SPECIFICATIONS – ELECTRICAL & LOW VOLTAGE WORKS

#### 1. GENERAL

GM Bungalows, DGM Residential Blocks and Office Block, Club House, etc. as per architectural plan is proposed to be constructed.

#### 2. SCOPE OF WORK

The scope of work shall cover External Electrical Installations for residential, & Office Complex complete as required for Electrification of proposed Works. It shall cover designing of complete Electrical System for the entire complex, preparation of Shop Drawings, supply of all equipment, material, electrical Fixtures & Accessories required, installation, testing and commissioning of all electrical installations for the project for the following, but not limited to, main items/systems:

#### 2.3 SPECIAL CONDITIONS FOR ELECTRICAL SERVICES:

##### a) GENERAL

The design and workmanship shall be in accordance with the best engineering practices, to ensure satisfactory performance and service life. The requirement offered by the Contractor shall be complete in all respects.

- b)** The Contractor shall obtain all sanctions (electrical loads sanction, approval of drawing / ESS/ D.G.'s / Estimate / Lift / approval of meter & Meter Room etc. from the concerned authorities and permits required for the electrical installation work. The actual fee payable in this regard will be reimbursed against receipt/documentary evidence. On completion of work, the Contractor shall obtain NOC from SEB & Director of Safety of the concerned state; a copy of the same shall be delivered to SBI / PMC / Engineer in charge.
- c)** The SBI shall have full power regarding the materials or work to be got tested through independent agency at the EPC Contractor's expenses in order to prove their soundness and adequacy. The Contractor will rectify the defects/suggestions pointed out by SBI/ independent agency at his own expenses.
- d)** The installation shall comply in all respects with the requirements of Indian Electricity Act 1910, Indian Electricity Rules (IER) 1956 and other related Laws and Regulations as amended up to date, there under and special requirements, if any, of the State Electricity Boards etc. The bidder is liable to furnish the list of authorized licensed persons/ employed/deputed to carry out the works/perform the assigned duties to fulfill the requirement of Rule No.3 of IER 1956 as amended up to date.

#### As-Built Drawings:

On completion of the work and before issue of certificate of virtual completion, the Contractor shall submit to the SBI, required Sets of 'As Built' drawings (in AutoCAD & PDF format) along with soft copy of the executed works incorporating all such

changes and modifications during engineering and execution along with Operation and Maintenance Manuals, Warranty & Guarantee Certificates from Original Equipment Manufacturers (OEM), authorized Suppliers & Vendors, as applicable.

These drawings must provide:

- Run and size of conduit, inspection and pull boxes including routing and locations.
- Number and size of conductor in each conduit.
- Locations and rating of sockets and switches controlling the light and power outlet.
- A complete wiring diagram as installed and schematic drawings showing all connections in the complete electrical system.
- Location of outlets of various services, junction boxes, light fixtures.
- Location of all earthing stations route and size of all earthing conductors.
- Layout and particulars of all cables.
- Location and details of Feeder panels etc.

The Contractor shall submit 2 sets of samples of each type of accessories and apparatus, proposed to be used in the installation at site for approval (drawings or samples) as required shall be submitted by Contractor and the choice of selection out of the approved list lies with the SBI. For all non-specified items, approval of the SBI shall be obtained prior to procurement of the same. SBI shall in no way be liable for rejection of the any material due to poor quality, poor workmanship, poor material etc.

## 2.5 MANUFACTURER'S INSTRUCTIONS

Where manufacturers have furnished specific instructions, relating to the material/equipment to be used on this job, covering points not specifically mentioned in this document, manufacturers' instructions should be followed.

## 2.6 MATERIALS AND EQUIPMENT

All the materials and equipment shall be of the approved make and design. Unless otherwise called for any approval by SBI's PMC/Engineer in charge, only the best quality materials and equipment shall be used.

## 2.7 GENERAL DETAILS

### a) Space Heaters & Lighting.

One of more adequately rated heaters thermostatically controlled with On-Off switch and fuse shall be provided to prevent condensation in any panel compartment. The heaters shall be installed in the lower portion of the compartment and electrical connections shall be made from below the heaters to minimize deterioration of supply wire insulation. The heaters shall be suitable to maintain the compartment temperature to prevent condensation. CFL lamp shall be provided in any panel compartment.

### b) Fungistatic Varnish

Besides the space heaters, special moisture and fungus resistant varnish shall be applied on parts, which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interfere with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application of the varnish.

### c) Ventilation Opening

In order to ensure adequate ventilation, compartments shall have ventilation openings provided with fine wire mesh of brass to prevent the entry of insects and to reduce to a minimum the entry of dirt and dust. Outdoor compartment openings shall be provided with shutter type blinds.

**d) Degree of Protection**

The enclosures of the Control Cabinets, Junction Boxes and Marshalling Boxes, Panels etc. to be installed shall provide degree of protection as called for in specifications / General arrangement, whenever it is not mentioned it shall be as given below:

- Installed out door: IP-65.
- Installed indoor in air-conditioned area: IP-52.
- Installed in covered area: IP-52.
- Installed indoor in non-air-conditioned area where possibility of entry of water is limited: IP-42.
- For L.T. switchgear (AC and DC distribution boards): IP-52.

The degree of protection shall be in accordance with IS: 13947 (Part-I)/IEC-947 (Part-I). Type test report for degree of protection test, on each type of the box shall be submitted for approval.

## **2.8 Rating Plates, Name Plates and Labels**

Rating Plates, Name Plates and Labels are to be provided & attached permanently in a conspicuous position to all equipment & items installed in various buildings. A rating plate of non-corrosive material engraved with manufacturer's name, year of manufacture, equipment name, diagram, type or serial number etc. together with details of the loading conditions of equipment. The rating plate of each equipment shall be according to relevant BIS & IEC norms, as applicable.

All such nameplates, instruction plates, rating plates shall be bilingual with Hindi inscription first followed by English. Alternatively, two separate plates one with Hindi and the other with English inscriptions may be provided.

## **2.9 First Fill of Consumables, Oil and Lubricants**

All the first fill of consumables such as oils, lubricants, filling compounds, touch up paints, welding/ soldering/ brazing material for all copper/ G.I. earthing and essential chemicals etc. which will be required to put the equipment/ scheme covered under the scope of the specifications, into successful operation, shall be furnished by the Contractor unless specifically excluded under the exclusions in these specifications and documents.

## **2.10 DESIGN IMPROVEMENTS / DEVIATIONS**

The bidder shall note that the equipment offered by him in the bid only shall be accepted for supply. If for any reason, Contractor wishes to deviate from specification, prior permission from SBI will be sought.

If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the Contractor proceeds with the change. Following such agreement, the provision thereof, shall be deemed to have been amended accordingly in the specification.

## **3. QUALITY ASSURANCE PROGRAMME**

To ensure that the equipment and services under the scope of this Contract whether manufactured or performed within the Contractor's works or at his sub-Contractor's premises or at the Purchaser's site or at any other place of work are in accordance

with the specifications, the Contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be outlined by the Contractor and shall be finally accepted by the Purchaser after discussions before the award of Contract. A quality assurance programme of the Contractor shall generally cover the following:

- His organization structure for the management and implementation of the proposed quality assurance programme.
- Documentation control system.
- Qualification data for bidder's key personnel.
- The procedure for purchases of materials, parts components and selection of sub-Contractor's services including vendor analysis, source inspection, incoming raw material inspection, verification of material purchases etc.
- System for shop manufacturing and site erection controls including process controls and fabrication and assembly control.
- Control of non-confirming items and system for corrective actions.
- Inspection and test procedure both for manufacture and field activities.
- Control of calibration and testing of measuring instruments and field activities.
- System for indication and appraisal of inspection status.
- System for quality audits.
- System for authorizing release of manufactured product to the Purchaser.
- System for maintenance of records.
- System for handling storage and delivery.
- A quality plan-detailing out the specific quality control measures and procedures adopted for controlling the quality characteristics relevant to each item of equipment furnished and/or services rendered.

### 3.1. QUALITY ASSURANCE DOCUMENTS

The Contractor shall be required to submit the following Quality Assurance Documents within three weeks after dispatch of the equipment:

- All Non-Destructive Examination procedures, stress relief and weld repair procedure actually used during fabrication and reports including radiography interpretation reports.
- Welder and welding operator qualification certificates.
- Welder's identification list, listing welders and welding operator's qualification procedure and welding identification symbols.
- Raw material test reports on components as specified by the specification and/or agreed to in the quality plan.
- Stress relief time temperature charts/oil impregnation time temperature charts.
- Factory test results for testing required as per applicable codes/ mutually agreed quality plan/ standards referred in the technical specification.
- The quality plan with verification of various SBI inspection points as mutually and methods used to verify the inspection and testing points in the quality plan were performed satisfactorily.

#### 4. INSPECTION, TESTING AND INSPECTION CERTIFICATE

- The SBI/ PMC/ duly authorized representative shall have at all reasonable times free access to the Contractor's/ Manufacturer's premises or works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the works during its manufacture or erection, if part of the works is being manufactured or assembled at other premises or works, the Contractor shall obtain permission to inspect as if the works were manufactured or assembled on the Contractor's own premises or works. Inspection may be made at any stage of manufacture, dispatch or at site at the option of the Purchaser and the equipment if found unsatisfactory due to bad workmanship or quality, material is liable to be rejected.
- All equipment being supplied shall confirm to type tests and shall be subject to routine tests in accordance with requirements stipulated under respective sections. Bidder shall submit the type tests reports for approval. The Contractor shall intimate the SBI the detailed programme about the tests at least three (3) weeks in advance in case of domestic supplies.
- The Contractor shall give the SBI thirty (30) days written notice of any material being ready for testing. Such tests shall be to the Contractor's account. The SBI, unless witnessing of the tests is virtually waived off, will attend such tests within thirty (30) days of the date of which the equipment is notified as being ready for test/ inspection, failing which the Contractor may proceed with the test which shall be deemed to have been made in the presence of SBI and he shall forthwith forward to the SBI duly certified copies of tests in triplicate.
- The SBI shall within fifteen (15) days from the date of inspection as defined shall inform in writing to the Contractor of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The Contractor shall give due consideration to such objections and make the necessary modifications accordingly.
- When the factory tests have been completed at the Contractor's or Sub-Contractor's works, the SBI shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the SBI, the certificate shall be issued within fifteen (15) days of receipt of the Contractor's Test certificate by the SBI. Failure of the issue such a certificate shall not prevent the Contractor from proceeding with the works. The completion of these tests or the issue of the certificate shall not bind the SBI to accept the equipment should, it, on further tests after erection, is found not to comply with the Specification. The equipment shall be dispatched to site only after approval of test reports and issuance of clearance by the SBI.
- The Contractor shall arrange all necessary tools and testing facilities for inspection purpose including arrangement of air travel (inland as well as abroad), conveyance, lodging, boarding and other miscellaneous expenses etc. SBI shall depute its inspection engineers (2 or more as decided by SBI) after receipt of inspection call from the Contractor. All such expenses incurred by the Contractor towards inspection of equipment by SBI' inspection engineers shall be borne by the Contractor.
- For tests whether at the premises or at the works of the Contractor or of any SubContractor, the Contractor except where otherwise specified shall provide free of



charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be required by SBI or this authorized representative to carry out effectively such tests of the equipment in accordance with the Specification.

- The inspection by SBI and issue of Inspection Certificate thereon shall in no way absolve the liabilities and responsibilities of the Contractor in respect of the agreed quality assurance programme forming a part of the Contract.
- The SBI will have the right of having at his own expenses any other tests(s) of reasonable nature carried out at Contractor's premises or at site or in any other place in addition of aforesaid type and routine tests to satisfy that the material complies with the specifications.
- The SBI reserves the right for getting any field tests not specified in respective sections of the technical specification conducted on the completely assembled equipment at site. The testing equipment for these tests shall be provided by the Contractor.

## **5. TESTS**

### **5.1. Charging Tests**

On completion of erection of the equipment and before charging, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the SBI and the Contractor for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at Site. The pre-commissioning tests to be performed as per relevant

I.S. given and shall be included in the Contractor's quality assurance programme.

### **5.2. Commissioning Tests**

- The available instrumentation and control equipment will be used during such tests and the Contractor will calibrate all such measuring equipment and devices as far as practicable. However, unmeasurable parameters shall be taken into account in a reasonable manner by the Contractor for the requirement of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The Contractor will apply proper corrections in calculation, to take into account conditions, which do not correspond to the specified conditions.
- All instruments, tools and tackles required for the successful completion of the Commissioning Tests shall be provided by the Contractor, free of cost.
- Pre-commissioning test shall be carried out as per relevant IS and/or as specified in the relevant clause.
- The Contractor shall be responsible for obtaining statutory clearances from the concerned authorities for commissioning of the equipment.

## **6. PACKAGING**

All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. While packing all the materials, the limitation from the point of view of availability of Railway wagon/truck/trailer sizes in India should be taken account of the Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. SBI takes no responsibility of the requirement of any special packaging/transporting arrangement.

## 7. PROTECTION

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves and pipings and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner.

## 8. FINISHING OF METAL SURFACES

### 8.1. General

All metal surfaces shall be subjected to treatment for anti-corrosion protection. All ferrous surfaces for external use unless otherwise stated elsewhere in the specification or specifically agreed, shall be hot-dip galvanized after fabrication. High tensile steel nuts and bolts and spring washers shall be electro galvanized. All steel conductors used for earthing/grounding (above ground level) shall be galvanized according to IS: 2629.

Priming: Priming is not normally required on good quality concrete substrates. However, absorbent surfaces such as porous concrete, sand/cement and cement boards will require sealing (as per manufacturers specification) to prevent absorption of polyurethane waterproofing.

Cracks: All shrinkage and non-moving structural cracks should be pretreated with not less than a 1.3mm coating of polyurethane extending 75mm either side of the crack. Allow to cure overnight before general application.

Application: Single component pitch modified polyurethane should be applied by brush, trowel, squeegee or airless spray (two coat application for standard grade on vertical surfaces) at a minimum wet film thickness of 1.3mm (1.3 litre/m<sup>2</sup>).

Flood test: Prior to placement of protection, flood to a minimum depth of 50mm of water for 24 hours. Drains shall be plugged and barriers placed to contain the water.

Curing and protection: Polyurethane membrane waterproofing must be cured for a minimum of 24 hours @ 25°C before placing protection. Where damage to the membrane is possible (by traffic, backfilling, etc) it should be protected by a cementitious screed or protection boards.

For vertical surface: The entire treatment will be taken upto 30 cm on parapet wall or upto parapet projection as per manufacturer's specification.

If a water test is to be run, the membrane should be fully cured.

### 8.2. Hot Dip Galvanizing

- The minimum weight of the zinc coating shall be 700 gm/sq.m and minimum thickness of coating shall be 85 microns.
- The galvanized surfaces shall consist of a continuous and uniform thick coating of zinc, firmly adhering to the surface of steel. The finished surface shall be clean and smooth and shall be free from defects like discolored patches, bare spots, unevenness of coating, spelter which is loosely attached to the steel globules, spiky deposits, blistered surface, flaking or peeling off etc. The presence of any of these defects noticed on visual or microscopic inspection shall render the material liable to rejection.
- After galvanizing drilling or welding shall be performed on the galvanized parts of the earthing materials. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

- The galvanized steel shall be subjected to six one minute dips in copper sulphate solution as per IS-2633.
- Sharp edges with radii less than 2.5 mm shall be able to withstand four immersions of the Standard Preece test. All other coatings shall withstand six immersions. The following galvanizing tests should essentially be performed as per relevant Indian Standards.
  - Coating thickness,
  - Uniformity of zinc,
  - Adhesion test,
  - Mass of zinc coating.
- Galvanized material must be transported properly to ensure that galvanized surfaces are not damaged during transit. Application of zinc rich paint at site shall not be allowed.

### 8.3. Painting

- All sheet steel work shall be degreased, pickled, phosphate in accordance with the IS-6005 "Code of practice for phosphating iron and sheet". All surfaces which will not be easily accessible after shop assembly shall beforehand be treated and protected for the life of the equipment. The surfaces, which are to be finished painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. Oil, grease, dirt and swarf shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.
- After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute dichromate solution and oven drying. The phosphate coating shall be sealed with application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be "flash dried" while the second coat shall be shoven.
- Powder coating/electrostatic painting of approved shade shall be applied.
- The exterior color of the paint shall be as per Shade No. 697 of IS-5 or as approved by PMC/Engineer in charge and inside shall be white or as approved by PMC/Engineer in charge. A small quantity of finishing paint shall be supplied for minor touching up required at site after installation of the equipments, if required.
- In case the Bidder proposes to follow his own standard surface finish and protection procedures or any other established painting procedures like electrostatic painting etc. the procedure shall be submitted along with the Bids for SBI's review and approval.

## 9. HANDLING, STORING AND INSTALLATION

- In accordance with the specific installation instructions as shown on manufacturer's drawings or as directed by the Purchaser or his representative, the Contractor shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented.

- Contractor shall follow the unloading and transporting procedure at site, as well as storing, testing and commissioning of the various equipment being procured by him separately. Contractor shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer's Engineer(s) and shall extend full co-operation to them.
- In case of any doubt/ misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the SBI. Contractor shall be held responsible for any damage to the equipment consequent for not following manufacturer's drawings/instructions correctly.
- Where assemblies are supplied in more than the one section, Contractor shall make all necessary connections between sections. All components shall be protected against damage during unloading, transportation, storage, installation, testing and commissioning. Any equipment damaged due to negligence or carelessness or otherwise shall be replaced by the Contractor at his own expense.
- The Contractor shall submit to the SBI every week, a report detailing all the receipts during the weeks. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at Site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor.
- The Contractor shall be fully responsible for the equipment/material until the same is handed over to the SBI in an operating condition after commissioning. Contractor shall be responsible for the maintenance of the equipment/material while in storage as well as after erection until taken over by SBI, as well as protection of the same against theft, element of nature, corrosion, damages etc.
- The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipment, which require indoor storage.
- The words 'erection' and 'installation' used in the specification are synonymous.
- Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.
- The minimum phase to earth, phase to phase and section clearance along with other technical parameters for the various voltage levels shall be maintained as per relevant IS.

## **10. PROTECTIVE GUARDS**

Suitable guards shall be provided for protection of personnel on all exposed rotating and/or moving machine parts. All such guards with necessary spares and accessories shall be designed for easy installation and removal for maintenance purpose.

## **11. DESIGN CO-ORDINATION**

The Contractor shall be responsible for the selection and design of appropriate equipments to provide the best coordinated performance of the entire system. The basic design requirements are detailed out in this Specification. The design of various components, sub-assemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

## 12. DESIGN COORDINATION MEETING

The Contractor will be called upon to attend design co-ordination meetings with the Engineer, and the SBI during the period of Contract. The Contractor shall attend such meetings at his own cost at mutually agreed venue as and when required and fully co-operate with such persons and agencies involved during those discussions.

## 13. TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly and maintenance of the equipments.

## 14. SAFETY CODES & PRECAUTIONS

The Contractor at his own expenses shall arrange for safety provisions as required to comply with the statutory regulations, ISI recommendations and CPWD codes.

The Contractor shall provide necessary barriers, warnings, signals and other safety measures to avoid accidents. He shall indemnify SBI against any claims arising out of negligence in this respect.

## 15. REGULATIONS AND STANDARDS

All equipment's their installation, testing and commissioning shall confirm latest CPWD/ IS specifications in all respects. Indian Standard Code of Practice for Electrical Wiring Installation IS:732-1989. It shall also be in conformity with Indian Electricity Rules and the Regulations, National Electric Code, National Building Code 2016, ECBC, latest CPWD specifications amended up to date and requirements of the Local Electric Supply

Authority. In general, all materials equipment and workmanship shall confirm to the Indian Standards specifications and codes latest as amended. Some of the applicable codes/standards are as under:

a.	CPWD General specifications for electrical works	Part-I (Internal) 2023
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## 16.7. LT CABLES

### 16.7.1. GENERAL

LT Cables shall be supplied, inspected, laid tested and commissioned in accordance with drawings, specifications, relevant Indian Standards specifications as per given below. The cable shall be delivered at site in original drums with manufacturer's name clearly written on the drums.

Total number of runs and size of LT power cables shall be designed so that the distribution losses do not exceed 3% of the total power usage in the system as per ECBC norms.

CODES OF PRACTICE GUIDE		
S. NO.	Reference	Description
1	IS 694: 1990 IEC 60227 - 1 to 5: 1979	PVC insulated cables for working voltages up to and including 1100 V

2	IS 694: 2010	Polyvinyl chloride insulated sheathed and unsheathed cables with rigid and flexible conductor for rated voltages up to and including 450/750 V: Part general requirements( fourth revision)
3	IS: 7098: 1988 (Part-I)	XLPE insulated (heavy duty ) electric cables. For working Voltages up to and including 1100 V ( third revision)
4	IS 4288: 1988	PVC insulated ( heavy duty) electric cables with solid aluminium conductors for voltages up to and 1100 V ( second revision)

#### **16.7.2. CABLE CONDUCTOR MATERIAL**

- a) The LT Power cables shall be XLPE insulated, PVC sheathed, copper conductor armoured cable for sizes up to & including 16 sqmm, unless otherwise stated.
- b) For LT Power cable sizes above 16 sqmm, cables shall be XLPE insulated, PVC sheathed, Aluminium conductor armoured cables, unless otherwise stated.
- c) LT Control cables shall be XLPE insulated PVC sheathed type copper conductor armoured cables, unless otherwise stated.
- d) All LT Power & Control cables shall confirm to IS: 7098: 1988 (Part-I) with up to date amendments.

#### **16.7.3. INSTALLATION OF CABLES**

Cables shall be laid directly in ground, pipes, masonry ducts, on cable tray, surface of wall/ceiling etc. as indicated on drawings and/or as per the direction of PMC / Engineer in charge. Cable laying shall be carried out strictly as per CPWD specifications.

#### **16.7.4. INSPECTION**

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

#### **16.7.5. JOINTS IN CABLES**

The Contractor shall take care to see that the cables received at site are apportioned to various locations in such a manner as to ensure maximum utilization and avoiding of cable joints. This apportioning shall be got approved from PMC/Engineer in charge before the cables are cut to lengths.

#### **16.7.6. LAYING CABLES IN GROUND**

Cables shall be laid by skilled experienced workmen, using adequate rollers to minimize stretching of the cables. The cable drums shall be placed on jacks before unwinding the cable. With great care it shall be unrolled on over wooden rollers placed in trenches at intervals not exceeding 2 meter. Cables shall be laid at depth of 0.75 meters below ground level for LT Cables and 1.20 meter below ground level for HT cable. A cushion of sand total of 250 mm shall be provided both above and below the cable, joint boxes and other accessories. Cable shall not be laid in the same trench or alongside a water main.

The cable shall be laid in excavated trench over 80mm layer of sand cushion. The relative position of the cables, laid in the same trench shall preserved. At all changes in direction in horizontal and vertical planes, the cables shall be bent smooth with a radius of bent not less than 12 times the diameter of cables. Minimum 3-meter-long loop shall be provided at both ends of cable.

Distinguishing marks may be made on the cable ends for identifications of phases. Insulation, tapes of appropriate voltage and in red, yellow and blue colours shall be wrapped just below the sockets for phase identifications.

**16.7.7. CABLE ROUTE MARKERS:**

Cable route marker shall be provided at regular intervals as per CPWD specifications. Cost of cable route markers is deemed to be included in the cost of cables/cable laying.

**16.7.8. PROTECTION OF CABLES:**

The cables shall be protected by bricks laid on the top layer of the sand for the full length of underground cable. Where more than one cable is laid in the same trench, the bricks shall cover all the cables and shall project a minimum of approximately 80mm on either side of the cables. Cable under road crossings and any other places subject to heavy traffic shall be protected by running them through Hume Pipes of suitable size. Hume Pipes for road crossing of the cables shall be laid at a depth of 1000 mm.

**16.7.9. EXCAVATION & BACK FILL**

All excavation (hard rock, soil, cc road, bt road etc..) and back fill required for the installation of the cables shall 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 exceeding 150mm. Each layer shall be properly rammed and consolidated before laying the next layer.

The Contractor shall restore all surfaces, road ways, sidewalks, curbs, wall or the works cut by excavation to their original condition to the satisfaction of the SBI/PMC in charge - Charge.

**16.7.10. LAYING OF CABLES ON CABLE TRAY/SURFACE OF WALL/ CEILING**

Cable shall be laid on Ladder/perforated HDGI. Cable tray Cables shall be properly dressed before cable ties/clamps are fixed. Wherever cable tray is not proposed, cables shall be fixed on surface of wall or ceiling slab by suitable MS clamps/saddles. Care shall be taken to avoid crossing of cable.

**16.7.11. CABLES ON HANGERS OR RACKS**

The Contractor shall provide and install all iron hanger racks or racks with die cast cleats with all fixings, rag bolts or girder clamps or other specialist fixing as required. Where hangers or racks are to be fixed to wall sides, ceiling and other concrete structures, the Contractor shall be responsible for cutting away, fixing and grouting in rag bolts and making good.

The hangers or racks shall be designed to leave at least 25mm clearance between the cables and the face to which it is fixed. Multiple hangers shall have two or more fixing holes. All cables shall be saddled at not more than 150mm centres. These shall be designed to keep provision of some spare capacity for future development.

**16.7.12. CABLES TAGS**

Cable tags shall be made out of 2mm thick aluminium sheets, each tag 1-1/2 inch in dia with one hole of 2.5mm dia, 6mm below the periphery. Cable designations are to be punched with letter/number punches and the tags are to be tied inside the panels beyond the glanding as well as below the glands at cable entries. Tray tags are to be tied at all bends. On straight lengths, tags shall be provided at every 5 metres.

**16.7.13. TESTING OF CABLES**

Prior to installation burying of cables, following tests shall be carried out. Insulation test between phases, phase & neutral, phase & earth for each length of cable. i. Before laying. ii. After laying.

iii. After jointing.

Along with the test as prescribed in IS Code, cross sectional area shall also be checked. On completion of cable laying work, the following tests shall be conducted in the presence of the SBI/PMC in Charge.

i. Insulation Resistance Test (Sectional and overall).

ii. Continuity Resistance Test. iii. Earth Test.

All tests shall be carried out in accordance with relevant Indian Standard code of practice and Indian Electricity Rules. The Contractor shall provide necessary instruments, equipments

## 20.7. LIGHTING FIXTURE

### 20.7.1. INSTALLATION

Fixtures shall be installed at mounting heights as detailed on the Drawings or as instructed on site by the SBI/PMC in charge .

Pendent fixtures within the same room or area shall be installed plumb and at a uniform height from the finished floor. Adjustment of height shall be made during installation.

Flush mounted recessed fixtures, shall be installed so as to completely eliminate leakage of light within the fixture and between the fixture and adjacent finish.

Fixtures mounted outlet boxes shall be rigidly secured to a fixture stud in the outlet box.

Hickeys or extension pieces shall be installed where required to facilitate proper installation.

Fixtures located on the exterior of the building shall be installed with non-ferrous metal screws finished to match the fixtures.

### 20.7.2. LED Light Fixtures - GENERAL

Outdoor type LED Lighting Fixtures shall confirm to following specifications:

### LED Light Fixtures - Outdoor

SI	Criteria	Specification
1	The Luminaire Construction	Single Piece Pressure die cast Aluminium alloy housing for better thermal conductivity. Seperate driver and optical compartment for Thermal isolation. Each LED should be covered with IP66 or more protected lens. Luminaire with glass/PC/Acrylic cover/diffuser will not be accepted due to accumulation of insects/dust and decrease in light output.
2	Operating Voltage Range	140 - 270 VAC
3	Frequency	50 Hz
4	Power Factor@240 VAC	≥ 0.90
5	Driver	Driver Efficiency ≥85% Driver inbuilt Surge Protection: 2 KV Silicon Potted IP66 Over voltage Protection Short circuit Protection Thermal Protection
6	THD @240 VAC	≤ 10%
7	Ingress Protection	IP-66
8	Impact Resistance	IK-08
9	Colour Temperature	5300 K to 6000 K
10	Color Rendition Index - CRI	≥70
11	System Efficacy	≥110 Lumens per Watt
12	junction Temperature of LED	≤ 85° Celsius.



13	LED Make	NICHIA/Philips Lumileds/ CREE/ OSRAM/ Samsung/ BridgeLux
14	Operating Temperature Range	0°C to 50°C
15	Average Operating Life	50,000 Hours @ L 70B50
16	Humidity	10 to 90 %

All relevant Test Reports for Light Fixtures from NABL accredited laboratory shall be submitted at site along with Light Fitting consignments.

#### 20.7.4. BALLASTS/ Driver

Ballasts/ Driver shall be electronic type and having high power factor type. Ballasts shall have manufacturer's lowest sound level and case temperature rise rating.

#### 20.7.5. Standards:

The lighting and their associated accessories such as lamps, reflectors, housings, ballasts etc., shall comply with the latest applicable standards, more specifically the following:

Luminaries – General requirement	-	IS – 10322 (Part-1)
Luminaries – Constructional requirement	-	IS – 10322 (Part-2)
Luminaries – Screw and Screwless termination	-	IS – 10322 (Part-3)
Luminaries – Methods of Tests	-	IS – 10322 (Part-4)
Particular requirement – General purpose Luminaries	-	IS – 10322 (Part-5/Sec-1)
Particular requirement – Recessed Luminaries	-	IS – 10322 (Part-5/Sec-2)
Particular requirement – Luminaries for Road and Street lighting	-	IS – 10322 (Part-5/Sec-3)
Particular requirement – Flood Lighting	-	IS – 10322 (Part-5/Sec-5)
Emergency lighting units	-	IS – 9583: 1981 Flame
proof electric lighting fittings	-	IS – 2206 (Part 1 of 4)
Standard for Eye and Skin / Photobiological Safety	-	IEC 62471
Standard for Led Drivers	-	IEC 61347-2-13

The equipment should be compliant to IEC 60598-1, 2, 3, IEC 62031 and IEC/PAS 62612 depending on the type of luminaire. In addition to the above luminaire shall adhere to relevant BIS standards IS 15885, 16101, 16102, 16103, 16104, 16105, 16106, 16107 (Part I & II), 16108 as per

the application requirement.

## **EXTERNAL STREET LIGHTING SYSTEM:**

### **23.1. Scope of Work:**

The scope of works under External Street Lighting System requires illumination of all external areas like streets, roads, ornamentals, boundary walls, parks, gardens, landscaping, porches, building facades, walkways, pathways etc., which shall be illuminated confirming to NBC 2016, ECBC 2017 and CPWD specifications maintaining required Lux levels. Suitable LED fixtures shall only be used with inbuilt harmonic suppression mechanism for external area illumination. Solar and conventional street light poles, bollards, gate lights, post-top lantern etc. shall be used for this purpose keeping in view aesthetical and architectural requirements. The external lighting shall be fed from outdoor type feeder panels and automatically controlled through 24-hour Digital/ Astronomical Timers.

All solar & conventional street light poles of single arm /double arm/triple arm, as required shall be GI Octagonal with heights as per relevant IS Codes, NBC Code & ECBC.

### **23.2. GENERAL SPECIFICATION FOR HIGH MAST:**

#### **i. SCOPE:**

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding of High Mast. High Mast lighting shall be provided as per specification Type-I, unless stated otherwise, as per direction of PMC/Engineer in charge.

#### **ii. APPLICATION STANDARDS:**

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International standards and shall confirm to the regulations of the local authorities.

- IS 875 (Part III) 1987 (Code and practices for design loads for structures)
- IS 2062: 2006 (Hot rolled low, medium and high Tensile structural steel)
- BSEN 10025/DIN 17100 (Grades of MS Plates)
- BSEN 60529 (Degree of protection by Enclosures- IP code)
- BS 5135 / AWS (Welding)
- BS EN ISO 1461: 1999 (Galvanizing)
- BS EN 5649-4: 1982 (Lighting columns, Recommendations for surface protection of metal lighting columns)
- TR No. 7 1996 of ILE, UK (Specifications of Masts and foundations)

#### **iii. GENERAL CONSTRUCTIONS:**

The High Mast shall be designed to withstand the maximum wind speed as per IS: 875. The top loading, i.e. the weight and the area of luminaries are to be considered to calculate maximum deflection of the pole and the same shall meet the requirement of BS: 5649 Part VI – 1982. The Mast shall be designed using limit state principle. The limit states to be considered are: (i) Ultimate and (ii) Serviceability; based on a design wind speed with a return period of 25 years. The total Height of the High Mast, with luminaries mounting carriage cum head frame and luminaries installed all be measured as the vertical distance between the base flange plate and the plane in which the lamps lie in their operating position.

#### **a. STRUCTURE:**

The High Mast shall be of continuously tapered, polygonal cross section; ranging from 8 to 20 sided, and shall be based on proven In-Tension design confirming to the standards referred above, to give an assured performance and reliable service. The structure shall be suitable for wind loading as per IS 875 part3 1987.

#### **b. CONSTRUCTION:**

The High Mast shall be manufactured using steel plates, confirming to BS-EN 10025. The high mast shall be manufactured in two sections for 12.5 meters, 16metres and 20metres. In case of

25 meters and 30 meters high mast shall be manufactured in three sections. Each mast section shall be fabricated out of single plate duly folded and welded. The Mast shaft shall have polygonal cross section and shall be continuously tapered with single/Double longitudinal welding. There shall not be any circumferential welding and pole shafts with more than two longitudinal welds shall not be acceptable. The welding of pole shaft shall be done by Submerged Arc Welding (SAW) process. No site welding and bolted joints shall be done on the mast. The minimum overlap distance shall be 1.5 times the diameter at penetration. The minimum top diameter and bottom diameter shall be as specified in data sheets and plate thickness shall be as per the structural design requirements. The calculation for civil design and foundation details shall be submitted by the EPC Contractor for approval of PMC/Engineer in charge. The mast shall be provided with fully penetrated flange, which shall be free from any lamination or incursion. The welded connection of the base flange shall be fully developed to the strength of the entire section. The base flange shall be provided with supplementary gussets between the bolt- holes to ensure elimination of helical stress concentration.

c. GALVANIZING:

For environmental protection of the mast the entire fabricated mast shall be hot dip galvanized internally and externally as per BS EN ISO 1461 standards with an average coating thickness of minimum 85 micron. The galvanizing shall be done in single dipping only. Double dip-galvanized shafts with overlapping are not acceptable. Further, no post galvanizing painting, touch-up or rectification shall be allowed.

d. DOOR OPENING:

All adequate door opening shall be provided as per the GTP such that the minimum distance from the mast flange plate to the bottom of the door opening shall be twice the width of the door opening. The door shall be flushed with the exterior surface. The door opening shall be such that it permits clear access to equipment like winches, cables, plug and socket, etc. and also facilitate easy removal of the winch. The door opening shall be complete with a close fitting, vandal resistant, weatherproof door, provided with heavy duty double internal lock with special paddle key. The minimum radius at the corners of openings shall be 20mm. The door opening shall be carefully designed and reinforced with welded steel section, so that the mast section at the base shall be unaffected and undue buckling of the cut portion is prevented.

e. DYNAMIC LOADING FOR THE MAST:

The mast structure shall be suitable to sustain an assumed maximum reaction arising from a wind speed as per IS: 875 (Part-III) 1987 (three second gust) and shall be measured at a height of 10 meters above ground level. The design life of the mast shall be minimum of 25 years.

f. LANTERN CARRIAGE:

i. FABRICATION:

A fabricated raising and lowering type Lantern Carriage cum head frame shall be provided at the top of high mast shaft properly secured for fixing and holding the flood light fittings and control gear boxes. The Lantern Carriage shall be of special design and shall be of steel channel construction. The Lantern Carriage shall be so designed and fabricated to hold the required number of flood light fittings and the control gear boxes, and also have a perfect self-balance. The Lantern Carriage shall be fabricated in two/three halves and joined by bolted flanges with stainless steel bolts and nylon type stainless steel nuts to enable easy installation or removal from the erected mast. The inner lining of the carriage shall be provided with protective PVC arrangement, so that no damage is caused to the surface of the mast during the raising and lowering operation of the carriage.

The entire Lantern Carriage shall be hot dip galvanized after fabrication. The lantern carriage shall be fabricated out of M.S. channel with suitable reinforcements. Also an certificate to this effect quoting safe working load shall be supplied with each carriage. The carriage shall carry a permanently attached label stating the safe working load. Both the Mast Shaft and Luminaries Mounting Carriage shall be sourced from one manufacturer only so as to ensure compatibility and overall finish of the material.

ii. JUNCTION BOX:

Weather proof junction box, made of Cast Aluminum shall be provided on the Carriage Assembly as required, from which the inter-connections to the designed number of the flood light luminaries and associated control gears fixed on the carriage shall be made.

iii. RAISING AND LOWERING MECHANISM:

For the installation and maintenance of the luminaries and lamps, it will be necessary to lower and raise the Lantern Carriage Assembly. To enable this, a suitable Winch Arrangement shall be provided, with the winch fixed at the base of the mast and the specially designed head frame assembly at the top.

iv. WINCH:

The winch shall be of completely self-sustaining type, without the need for brake shoe, springs or clutches. Each driving spindle of the winch shall be positively locked when not in use by gravity activated PAWLS. The capacity, operating speed, safe working load, recommended lubrication and serial number of the winch shall be clearly marked on each winch. The gear ratio of the winch shall be calculated considering minimum working load not less than 750 kg. The winch shall be self-lubricating type by means of an oil bath and the oil shall be readily available grades of reputed producers. The winch drums shall be grooved to ensure perfect seat for stable and tidy rope lay, with no chances of rope slippage. It shall be possible to operate the winch manually by a suitable handle and electrically by an external power tool also. It shall be possible to remove the double drum after dismantling, through the door opening provided at the base of the mast. A test certificate shall be furnished by the Contractor from the original equipment manufacturer, for each winch in support of the maximum load operated by the winch.

g. STAINLESS STEEL WIRE ROPES:

The suspension system shall essentially be without any intermediate joint and shall consist of only non-corrodible stainless steel of AISI 316 grade. The stainless steel wire ropes shall be of marine grade 7/19 construction, the central core being of the same material. The overall diameter of the rope shall not be less than 5mm for 12mtr. High mast and 6mm for 16mtr. And 20mtr. High mast. The breaking load of each rope shall not be less than 2350 kg giving a factor of safety of over 5 for the system at full load as per the TR-7 referred to in the beginning of this specification. The end constructions of ropes by compression splices. Continuous lengths of stainless steel wire ropes shall be used in the system and no intermediate joints are acceptable in view of the required safety. No intermediate joints/ terminations, either bolted or else, shall be provided on the wire ropes between winch and lantern carriage. The design of the whole suspension system shall be such that the wire ropes can be removed and replaced from ground level without the necessity of lowering the mast or use of special equipment.

h. ELECTRICAL SYSTEM, CABLE AND CABLE CONNECTIONS:

The control panel at the bottom of the mast shall have facility for terminating up to 1.1kV, 4C x 25 sq. mm, Aluminium conductor, armoured, XLPE incoming cable. The outgoing from this panel shall be the trailing cable, which is terminated at the weather proof junction box provided at the top. This cable shall be minimum 6 cores, 2.5 sq. mm, 1100V, electrolytic grade, EPR insulated, copper conductor and PCP sheathed cable to get flexibility and endurance. The connections from the top junction box to the individual luminaries shall be made by using 3 core 4 sq.mm flexible PVC cables of reputed make. The cable shall run via metal ducts or tubes provided in luminary's carriage up to individual luminaries and control gear units. All steel conduits shall be of heavy gauge welded type with hot dipped galvanized finish.

i. LIGHTNING SPIKE:

One number heavy duty hot dip galvanized lightning spike shall be provided for each mast. The lightning spike shall be minimum 1.2 M in length (except for 12.5m where it will be 0.6m) and shall be provided at the centre of the head frame. It shall be bolted solidly to the head frame to get a direct conducting path to the earth the mast. The lightning spike shall not be provided on the lantern carriage under any circumstances in view of safety of the system.

j. AVIATION OBSTRUCTION LIGHTS:

Provision for mounting LED type aviation obstruction lights of reliable design shall be provided on top of each mast for 20m high masts only.

a. Dimensions are subjected to tolerance allowed as per IS.

- b. Diameter of wire rope may increase to 8 mm wherever qty. of light fittings are more on lantern carriage.
- c. Motor can be supplied in single and three phase as per requirement.

<b>20 METER HEIGHT</b>
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S.No	Description[Lighting Mast]	Specification				
		1	2	3	4	5
	Type					
1	High mast Height[mtrs] incl.Luminaires Carriage	20	20	20	20	20
1.1	Material Construction	BSEN10002 5 or Equiv	BSEN10002 5 or Equiv	BSEN10002 5 or Equiv	BSEN10002 5 or Equiv	BSEN10002 5 or Equiv
1.2	Welding	As per IS	As per IS	As per IS	As per IS	As per IS
1.3	No.Of Sides	20	20	20	20	20
2	WIND LOAD DATA taken for this project	as per IS 875	as per IS 875	as per IS 875	as per IS 875	as per IS 875
3	Mast Section Details					
3.1	Top Diameter [In mm]	166	166	206	208	210
3.2	Base Diameter[In mm]	419	419	489	489	518
3.3	Number of Sections[ Nos]	2	2	2	2	2
3.4	Top Sections length[mm]xthickness[mm]	10375X3	10375X4	10375X4	10375X4	10375X5
3.5	Middle SectionLength[mm]xthickness[mm]	NA	NA	NA	NA	NA
3.6	Bottom Section Length[mm]xthickness[mm]	10375X4	10375X4	10375X4	10375X5	10375X6
3.7	Over lapping [between Sections]	375	375	375	375	375
3.8	Base Flange Diameter[mm]	630	630	730	730	730
3.9	Base FlangeThickness[mm]	32	32	32	32	32
3.10	P.C.D [mm] x Hole Dimensions [mm]	530	530	630	630	630
3.11	No.Of Bolts[Qty]	12	12	16	16	20
3.12	Foundation bolts Details	1200x24	1200x24	1200x24	1200x24	1200x24

		mm	mm	mm	mm	mm
3.13	Metal Treatment Protection for Mast	Galvanised	Galvanised	Galvanised	Galvanised	Galvanised
3.14	Thickness of Galvanisation (min.)	min 65 micron for sheet thickness of 2mm up to 4 mm and 86 Microns for 5 mm and above.				
3.15	Size of opening and door at base	1000mmx300 mm	1000mmx300 mm	1000mmx300 mm	1000mmx300 mm	1000mmx300 mm

3.16	Type of locking arrangement	Anti-Vandalism	Anti-Vandalism	Anti-Vandalism	Anti-Vandalism	Anti-Vandalism
3.17	Size of Anchor Plate & Thickness	630mmx6mm	630mmx6mm	730mmx6mm	730mmx6mm	730mmx6mm
3.18	Details of Template	630mmx6mm	630mmx6mm	730mmx6mm	730mmx6mm	730mmx6mm
4	HEAD FRAME	3-POINT	3-POINT	3-POINT	3-POINT	3-POINT
4.1	Construction	MS.Fabricated				
4.2	Metal Treatment protection for HEAD FRAME	Galvanised				
4.3	Pulley Arrangements (For Steel Wire Rope)	3SETS OF PULLEYS	3SETS OF PULLEYS	3SETS OF PULLEYS	3SETS OF PULLEYS	3SETS OF PULLEYS
4.4	Pulley Arrangements (For Electric Cable)	1 set OF PULLEY	1 set OF PULLEY	1 set OF PULLEY	1 set OF PULLEY	1 set OF PULLEY
5	LANTERN CARRIAGE					
5.1	Matreial of Construction	IS2062	IS2062	IS2062	IS2062	IS2062
5.2	Diameter of Carriage Ring(mm)-1NO	1200	1200	1200	1200	1200
5.3	Construction	M.S fabricated	M.S fabricated	M.S fabricated	M.S fabricated	M.S fabricated
5.4	Number of Joints	3	3	3	3	3
5.5	Buffer arrangements between Carriage & MAST	Will be provided	Will be provided	Will be provided	Will be provided	Will be provided

6	Compensating Disc between L-Ring and DD Ring	PROVIDED	PROVIDED	PROVIDED	PROVIDED	PROVIDED
7	Safety Locking on both sides at Base of Mast	PROVIDED	PROVIDED	PROVIDED	PROVIDED	PROVIDED
8	Winch	D/Drum, 750 Kg cap	D/Drum, 750 Kg cap	D/Drum, 750 Kg cap	D/Drum, 750 Kg cap	D/Drum, 750 Kg cap
9	Stainless Steel wires diameter	6 mm	6 mm	6 mm	8 mm	6 mm
9.1	Number of Ropes	3	3	3	3	3
9.2	C/disc to D/d.Winch	two[6m m size]	two[6m m size]	two[6m m size]	two[6m m size]	two[6m m size]

9.3	C/disc to Lantern Ring	Three[6mm size]	Three[6m m size]	Three[6mm size]	Three[6mm size]	Three[6mm size]
9.4	Thimbles & Terminals	Provided.	Provided.	Provided.	Provided.	Provided.
9.5	Factor Of Safety	>5	>5	>5	>5	>5
10	POWER TOOL	Gear Ration 53:1	Gear Ration 53:1	Gear Ration 53:1	Gear Ration 53:1	Gear Ration 53:1
10.1	Model	Integral	Integral	Integral	Integral	Integral
10.2	Input Supply	415v,50c/s;3 - ph	415v,50c/s;3 - ph	415v,50c/s;3 - ph	415v,50c/s;3 - ph	415v,50c/s;3 - ph
10.3	WATTAGE	1.5KW	1.5KW	1.5KW	1.5KW	1.5KW
10.4	Num. Of Speeds	Single	Single	Single	Single	Single
10.5	Reversible/Non-reversible	Reversible	Reversible	Reversible	Reversible	Reversible
10.6	Operating Speed	1400 Rpm	1400 Rpm	1400 Rpm	1400 Rpm	1400 Rpm
11	Lightning Arrestor [1.2m Length]	will be provided	will be provided	will be provided	will be provided	will be provided
12	Aviation Obstruction light	Provision for mounting will be provided				



**Note:**

- a. Dimensions are subjected to tolerance allowed as per IS.
- b. Diameter of wire rope may increase to 8mm wherever qty. of light fittings are more on lantern carriage.
- c. Motor can be supplied in single and three phase as per requirement.

### 23.3. Standard Galvanised Octagonal Poles (Sample shall be approved by the Architect/Bank before installation)

Octagonal poles shall be designed as per ILE TR7 & BS5649 for structural design & as per IS875 (Part III), 1987 for dynamic loading.

The pole shaft shall be made single piece MS structure continuously tapered having polygonal (8/12 sides) cross section and a single longitudinal welding. The welding will be done as per BS 5135 / IS 9595. No circumferential welding shall be allowed in the pole shaft. The MS shall conform to BSEN 100025/100027. The structure shall be single hot dip galvanized as per BS 729

/ IS 2629. A suitably designed door shall be provided at approximate 700mm height from the pole base. The door opening will be suitably reinforced for structural strength. The door shall be flushed with pole external surface and shall provide easy access for electrical connections at a maintainable height. A Suitable base flange will be welded and plate reinforcements will be provided between base flange & pole. Foundation accessories will be as per IS 1367.

POLE DESCRIPTION	HEIGHT	POLE DETAILS		THICKNESS	BASE PLATE	FOUNDATION BOLT DETAILS		
		TOP	BOTTOM			LENGTH	NOS	DIA.
	H	TD	BD	T	BP: LXLXT	FL	N	D
3 MTR GI OCTAGONAL POLE	3000	70	130	3	200 X 200X 12	450	4	16
4 MTR GI OCTAGONAL POLE	4000	70	130	3	220 X 220X 12	450	4	20
5 MTR GI OCTAGONAL POLE	5000	70	130	3	200 X 200 X 12	600	4	24
6 MTR GI OCTAGONAL POLE	6000	70	130	3	220X 220 X 16	600	4	24
7 MTR GI OCTAGONAL POLE	7000	70	130	3	220 X 220 X 16	700	4	24
8 MTR GI OCTAGONAL POLE	8000	70	135	3	225 X 225 X 16	750	4	24
9 MTR GI OCTAGONAL POLE	9000	70	155	3	260 X 260 X 16	750	4	24

10 MTR GI OCTAGONAL	10000	70	175	3	275 X 275 X 16	750	4	24
POLE								
11 MTR GI OCTAGONAL	11000	90	210	3	300 X 300 X 20	750	4	24
POLE								
12 MTR GI OCTAGONAL	12000	90	240	3	320 X 320 X 20	750	4	24
POLE								

#### 24.7. Testing:

##### Type Tests:

Type tests shall be carried out to prove confirmation with the requirement of specification and general quality/design features of the unit by the firm on particular models of the luminaire. Necessary type test reports from NABL and ISO accredited Laboratory shall be submitted to SBI.

##### Acceptance Tests:

These tests shall be carried out in the presence of Client, SBI/PMC in charge representatives at the Contractor's premises on random sample drawn from a lot, for the purpose of acceptance. The luminaries shall be selected from the lot at random. Sample size shall be as per mutual agreement between Contractor and the client, SBI/PMC in charge.

#### 24.8. Simulation:

Color Simulation of façade lighting shall be submitted to SBI for approval prior to commencement of Facade Lighting works at site.

#### 24.9. Power cabling for External illumination:

The power shall be fed to Street Light Poles, High Mast Poles, Solar street Light Poles, Bollards, Post Top lanterns, Gate Lights, Façade Lights, walk way lights etc. through suitable size aluminium armored XLPE insulated power cables, laid underground as per CPWD Specifications. Suitable Feeder Pillars shall be provided to feed various circuits of street lights.

#### 24.10. Street Light Pole Height & distance between poles:

Street Light Poles, High Mast Poles, Hybrid Solar street Light Poles, Bollards, Post Top Lanterns of suitable height shall be provided to achieve illumination with required Lux levels in the external areas as per CPWD, NBC 2016 & ECBC norms. Distance between street light poles shall be as per CPWD, NBC 2016 & ECBC norms as applicable.

**Inspection:** Street Light Poles, High Mast Poles, Hybrid Solar Street Light Poles etc shall be offered for inspection by SBI/PMC at manufacturer's works before final dispatch to site as per terms of the contract.

**Drawings:** Site Layout drawings and Single Line diagrams shall be prepared and submitted for approval of SBI/PMC by the Contractor for the Street Light Poles, High MasPoles, Hybrid Solar street Light Poles, Bollards, Post Top lanterns, Gate Lights, Façade Lights, Walk Way lights etc. The drawings shall be got approved from SBI/PMC before commencement of works at site.

#### 24.11. Applicable IEC Standards:

- i. IEC 61215 latest: Solar Panel
- ii. IEC 61347-2-13: LED driver safety
- iii. IEC 62384: LED driver performance
- iv. CISPR 15: Radio disturbance characteristics
- v. IEC 61547: EMC immunity requirements
- IEC 60598: General requirements and tests

**List of Approved Makes**

S.No	Particulars and Specifications	Approved Makes
1	Armoured LT cables	Polycab, RR Kabel, Havells, Finolex
2	Armoured cables	Polycab, RR Kabel, Havells, Finolex
3	Lighting pole	Philips,K-Lite, Bajaj, Havells.
4	Bollard Light	Philips, K-Lite, Bajaj, Havells
5	Flood Light	Philips,K-Lite, Bajaj, Havells.
6	Street Light	Philips,K-Lite, Bajaj, Havells.
7	FEEDER Panel	Neptune (India) Limited, Arihant Electricals, Accu-Panels Energy

**Signature & Seal of the Contractor**

**DRAWINGS & SAMPLES MENTIONED IS ONLY FOR THE REFERENCE PURPOSE ONLY. CONTRACTOR MAY PROVIDE THE SIMILAR PRODUCT OF ANY OTHER MENTIONED MAKES ALSO AFTER TAKING PRIOR APPROVAL FROM THE ARCHITECT/BANK**

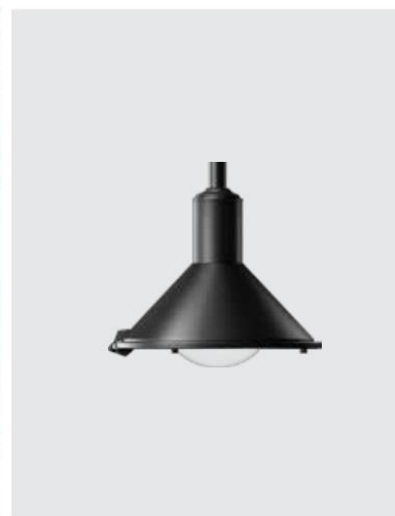










**K-LITE****Karona Fort Mini****Technical Specifications****General**

ID	: 4624
System Wattage	: 50W LED
Driver Integral	: Constant Current
Input Voltage	: 230 - 240Vac
Frequency	: 50-60Hz
Operating Voltage	: 100-277Vac
Operating Temperature	: -15°C~+50°C

**Physical**

Body	: Spun & Extruded Aluminum
Diffuser	: Convex type clear acrylic
Mounting	: Suitable for mounting to internally threaded pipe of designation : M30

Finish	: Powder coated Graphite grey / Jet black Anthracite grey
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**Light Source**

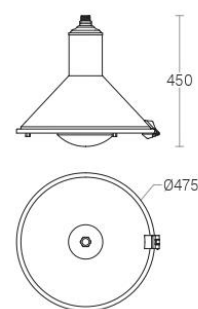
Light Source	: OSRAM / LUMILEDS
CRI (Ra)	: >70
LED Colour Temperature	: 3000K / 4000K / 5700K

**Driver**

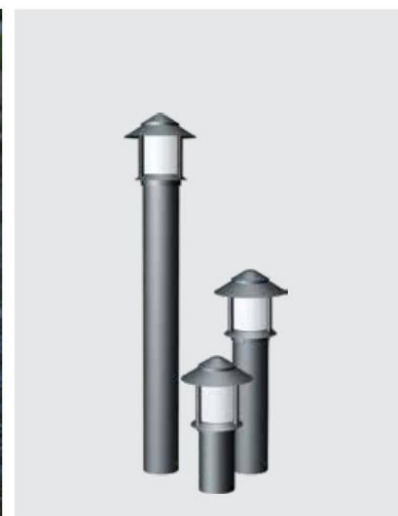
Power Supply	: Integral
Power Factor	: >0.95
THD	: <10%
Surge Protection	: 6KV
Efficiency	: >85%

**Optical Performance**

Light Distribution	: Type IV
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**Note :** It is our constant endeavor to upgrade the performance of our products. For the latest technical information, IES files and product updates please refer to the website at [www.klite.in](http://www.klite.in)

**K-LITE****Mexican Maya - Pyro Top****Technical Specifications****General**

ID	: 4680 / 4681 / 4682
System Wattage	: 8W LED
Driver Integral	: Constant Current
Operating Voltage	: 100-277Vac
Operating Temperature	: -15°C~+50°C

**Light Source**

Light Source	: NICHIA
CRI (Ra)	: ≥80
LED Colour Temperature	: 2700K / 3000K / 4000K 5700K

**Physical**

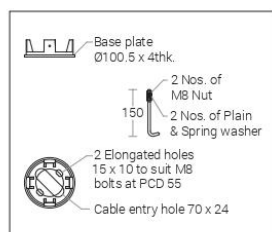
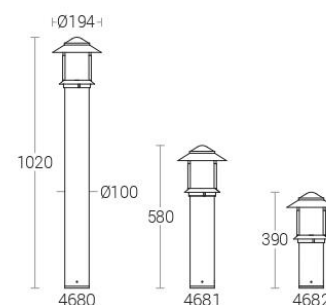
Body	: Die-Cast Aluminium with Extruded Aluminium Tube
Diffuser	: Translucent Polycarbonate
Gasket	: Silicone
Mounting	: Surface
Finish	: Powder coated RAL 9004 Signal black RAL 9007 Grey aluminium RAL 7016 Anthracite grey Graphite grey

**Driver**

Power Supply	: Integral
Input Voltage	: 230-240Vac
Frequency	: 50-60 Hz
Power Factor	: ≥0.95
THD	: <10%
Surge Protection	: 2.5kV
Efficiency	: >80%

**Optical Performance**

Light Distribution	: Symmetrical
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**Note :** It is our constant endeavor to upgrade the performance of our products. For the latest technical information, IES files and product updates please refer to the website at [www.klite.in](http://www.klite.in)