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SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA

TENDER DOCUMENTS
FOR ANNUAL OPERATION & MAINTENANCE CONTRACT (AMC)
OF ELECTROMECHANICAL INSTALLATIONS AT
MSME INTERNATIONAL TRAINING INSTITUTE , BHUBANESWAR

PART-I (Technical)

The General Manager [SITI],
Small Industries Development Bank of India
4th floor, OCHC Building,
Near Ram Mandir, Janpath,
Bhubaneswar
ODISHA- 751001
Phone No. 2395278 / 2394854

Tender No.	Tender No. 2014 / 974 / SITI / Premises dated 18 /11/2013
Tender issue Date	November 19, 2013
Last Date for bid Submission	December 04, 2013, 15:00 hrs
Date of Opening of technical bid	December 04, 2013, 15:30 hrs
Earnest Money Deposit	20,000/-

Annual Operation & Maintenance Contract of Electromechanical Installations at SIDBI MSME International Training Institute, Bhubaneswar

Sealed quotations are invited from reputed agencies / consultants / professionals interested in providing Annual Operation & Maintenance Contract (AMC) of Electromechanical Installations for the Training Institute of the Bank at Plot No. L-3 , Jayadev Vihar, Bhubaneswar. The institute has total constructed area of about 37,000 sft with basement, ground and four floors containing one conference/meeting room, two training sessions' rooms, one computer lab, one library, Director's cabin, 2 faculty rooms, one server room, one kitchen, one dining room, 22 guest rooms on third and fourth floors, etc. **Detailed nature and scope of work given at Annexure- I & II.** The brief scope would be primarily as under:

A	SCOPE OF WORK	
1	Lift Maintenance	Operation of elevator, handle emergencies and not to allow heavy items to prevent damage to lift.
2	Electrical Installation Works	Earthing Requirement & Maintenance
3	Transformer & Sub-station	Electrical Installations & Maintenance
4	Emergency Lights	Maintenance
5	Switchgears, Cables & Fixtures etc	Bus bar chamber, fittings, cables & cable joints, trouble shooting chart etc.
6	DG Set	Operation and maintenance of DG set
7	Fire Protection System	Wet-riser System – periodical maintenance
8	Sprinkler System	Periodical maintenance
9	Fire-brigade Inlets, fire fighting pump installations, fire extinguishers, fire alarm and public address systems.	Periodical maintenance
10	Air condition systems.	Operation, monitoring and Periodical maintenance
11	Solar Equipment Systems	Operation, monitoring and Periodical maintenance
12	Water Pumps	Operation, monitoring and periodical maintenance
13	Repair & Replacement of Switches, Sockets (power/telephone/data), Indoor/External light fittings, lift lights including chokes, capacitors, fuse, lamps, distribution board fittings	

Note: The contractor is advised to visit the site, with prior notice and thoroughly understand the nature and scope of work and be familiar with the site conditions before submitting the tender. It may be noted that the nature of work as indicated above is indicative and may vary at the discretion of SIDBI. It is the sole responsibility of the Contractor to ensure that the Operation, Monitoring, Maintenance and Repairs are performed to the highest standards. The contractor shall maintain a proper schedule as well as records / registers / quality management forms with approval of the institute.

The pre-qualification criteria along with terms and conditions are furnished in the **Annexure I and Appendix to Annexure I** respectively. The same are also available in the branch office of SIDBI at OCHC building, 4th floor, Janpath, Bhubaneswar between 09.45 hrs to 17.30 hrs on any working day (except Saturday, Sunday & Holidays) from November 19, 2013.

The quotations should be submitted in two parts described as under:

Part I (Technical Bid) in sealed cover, containing details of Constitution of the Agency, experience in electrical and other allied services, empanelled / certified/licensed by electricity board/authority, annual turnover, Income Tax Assessee, etc., duly supported by documentary proof.

Part II (Financial Bid) in sealed cover, containing the financial bid (in prescribed proforma) for providing **Annual Operation & Maintenance Contract of Electromechanical Installation.**

Earnest money deposit (refundable) of Rs. 20,000/- (Rupees Twenty thousand only) by way of Demand Draft/Pay Order drawn in favour of "Small Industries Development Bank of India", payable at Bhubaneswar may be submitted along with Part I. In case the same is not submitted, the technical bid would not qualify for further evaluation.

The quotations to be submitted should be addressed to "The General Manager, Small Industries Development Bank of India, OCHC building, 4th floor, Janpath, Bhubaneswar " and superscribed **Annual Operation & Maintenance Contract of Electromechanical Installations at SIDBI MSME International Training Institute, Bhubaneswar.** The quotations should reach him not later than 1500 hrs. on December 04, 2013. The quotations which are not submitted in the prescribed manner & format will not be accepted. The technical bids would be opened on the same day at 15.30 hours. The Price Bids of eligible bidders will be opened on December 06, 2013 at 17.00 hours or at suitable time/date as may be decided by the Bank after evaluation of technical bids. The interested parties may make it convenient to be present at the time of opening of the bids. The Bank reserves the right to accept or reject any or all quotations without assigning any reasons.

The General Manager,
Small Industries Development Bank of India,
OCHC building, 4th floor,
Janpath, Bhubaneswar .

Pre-qualification Criteria

1. The Agency should be a Property Management company / Registered Technical Man Power Supplier / Industrial Consultant / Electrical Contractor [**Attach copy of registration certificate**].
2. The Agency should have minimum 5 years' experience in providing such services as indicated in the covering note to preferably with reputed organisations like All India Financial institutions, public sector banks / undertakings and large private sector companies
3. The agency should have achieved average turnover of Rs. 50 lakh during the last three financial years. [**Attach copy for the relevant FY**]
4. The agency should be having required license / registered with the Electricity Department (s) of State/ Central Govt. as applicable. [**Attach copy of registrations**].
5. The agency should be an Income-tax assessee having filed its Income tax return for the Assessment Years 2010, 2011 and 2012 [**Attach copy of PAN and copies of return filed during the above assessment years**]. In case the agency is exempted from paying income tax, the exemption certificate received from IT Department may be enclosed.
6. The agency should have a local office at Bhubaneswar atleast from last 3 years.
- 7 The agency should have completed successfully minimum 1 works of similar nature costing Rs. 8 lakh per annum or 2 works costing Rs.5 lakh per annum in last 3 years[**Attach copy of work orders or completion letter from client**].The terms and conditions of the AMC is given in the **Appendix**.

The agencies qualifying the above pre-qualification criteria and agree to abide by the terms and conditions given in the Appendix may submit the “**Technical Bid**” in a separate sealed cover superscribing - “**TECHNICAL BID FOR 'AMC of Electromechanical Installations at SIDBI MSME International Training Institute, Bhubaneswar**”

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General Terms & Conditions of Contract

1. Tenders shall remain valid for sixty days from the date of opening of Price Bid.
2. The EMD of the unsuccessful bidder will be returned after finalization of the tender. The EMD of successful bidder shall be retained and adjusted towards security deposit. The EMD shall not bear any interest. If the successful bidder declines to act on the offer made by the Bank and/or withdraw/amend their quotations after opening of tenders or fail to commence the work, the EMD shall stand forfeited without any notice to the bidder and no claim on this account shall be entertained.
3. The Contractor shall ensure in attending to all emergency calls/co-ordination with other service agencies/OEMs relating to repair works/breakdown promptly.
4. The Contractor shall be responsible for the safety and security of all the electrical and mechanical items as well as internal items such as furniture, equipment, fixtures etc. The Contractor shall maintain submit the relevant reports at a fortnightly to the officer In-charge.
5. The supervisor shall maintain daily log sheets for the work and produce the same along with the bills every month while claiming the payment for the contract.
6. **Contractor's Employees**

For the purpose of this AMC, the Contractor shall engage **Qualified & Experienced employees with minimum experience of three years in** handling operation & maintenance works of Electromechanical installations as under:

- (i) one qualified electrical diploma holder for general shift and on call basis, in case of emergency,
- (ii) two certified/licensed electricians for two shifts (one each) starting from 6 a.m to 2 p.m. and 2p.m. to 10 p.m. and on call basis, in case of emergency.
- (iii) The Contractor is required make cheque payments to his employees towards salary every month and a copy of said cheques /payment should be attached to the bill of subsequent month. He is also required to submit an undertaking (as per Format attached to the tender) alongwith the bill of every month.

Other terms:

- (i) SIDBI may advise the contractor for increase of manpower, if so desired, to complete the works as per schedule. In such case, prorate payment shall be payable.
- (ii) The Contractor should provide identity cards. The personnel employed by the Contractor shall always carry his / her identity cards.
- (iii) The Contractor shall be responsible for the payment of wages / dues to its employees. All liabilities arising out of violation of any local and Central Laws shall be the responsibility of the Contractor without in any manner encroaching upon the rights and liabilities upon SIDBI.

- (iv) The employees engaged by the contractor shall be of good health and character, fit, well behaved, obedient and skillful in their tasks. They shall be accessible at all times on mobile phone, which shall be provided by the contractor at his own cost. SIDBI reserves the right to select/interview these candidates. Also, the Contractor has to substitute the manpower if their performance is not satisfactory.
 - (v) The Contractor shall furnish a detailed duty chart of the employees employed by him at the beginning and keep informed SIDBI of any changes made from time to time.
 - (vi) The workmen of the Contractor should preferably be conversant in Hindi. The Contractor should take all precautionary measures to ensure the safety of the workmen employed by it and SIDBI shall not be responsible in case of any eventuality.
 - (vii) Depending upon the exigencies and the requirements of SIDBI the working hours and days of the workmen engaged by the Contractor will be suitably adjusted.
 - (viii) SIDBI reserves the right to reject any particular workmen/staff placed/employed under the contract with SIDBI without assigning any reason.
 - (ix) The Contractor shall remove any employee who in the opinion of the Bank is guilty of misconduct or is in any manner unfit or unsuitable for service. The Contractor shall at all times indemnify SIDBI against all claims which may be made under the Workmen's Compensation Act, or rules there under or under any law or rules of compensation payable in consequence of any accident or injury sustained by any person in its employment for the purpose of Housekeeping arrangements. The Contractor shall be solely responsible for the remuneration and other dues of its employees as also for omissions / commissions done by them.
 - (x) In case of lapse on the part of the workmen staff of the Contractor, the Contractor should take proper action against such staff. In case the Contractor fails to take such action against the defaulter, the Bank reserves the right to take any suitable/legal action against the Contractor and the workmen staff concerned.
 - (xi) Residential accommodation shall not be provided by SIDBI to the workmen of the Contractor.
 - (xii) In case of theft of any material takes place from the office on account of the negligence on the part of the staff employed by the Contractor, the Contractor would be liable for such lapse and the amount, if any, would be recovered from the Contractor while settling the bill.
 - (xiii) If any incident of disobedience, misbehaviors or theft occurs, the Contractor shall remove from service such persons notified by the Bank immediately and fill up such vacancy with a suitable person.
 - (xiv) Every effort must be made by the contractor to deploy staff of known antecedents only and it may be noted that the contractor shall be held responsible for all misdeeds of his staff.
 - (xv) Permanent addresses of all his staff members along with references about their conduct from two persons residing in his area of living shall be produced by the contractor to SIDBI , before deployment so as to enable SIDBI to locate them as and when required.
7. There shall be no escalation in cost during the period of the contract. The contract would be for a period of one year and shall be extendable up to one more year on the same terms and conditions with increase of 10% of Contract cost subject to satisfactory performance of the contractor.

8. The contractor is required to carry out additional minor repair / replacement works. No labour payment for the same shall be made as it is deemed to be included in the quoted rates. The cost of material, if any, shall be paid to the contractor on reimbursement basis subject to production of pucca bills / cash memos and after verification from market. Contractor shall take up such works only after obtaining due approval of SIDBI. SIDBI's decision in all such matters shall be final and binding on the contractor.
9. Contractor shall provide necessary tool kit and measuring / testing tools/ equipment(s) to its employees.
10. Contractor shall provide two pairs of uniform and shoes to its each employees.
11. **Contractors Responsibility-Licenses and Registrations**
 - (i) The Contractor should possess the requisite license under Contract Labour (R&A) Act issued by the concerned Labour Department & Electrical Dept. for running the establishment at its own cost. SIDBI shall not be responsible in any way for any breach by the Contractor of the rules and regulations governing the running of such establishments. The Contractor shall register with the Registrar of concerned State Body and shall abide by State Labour/Government of India (ministry of Labour) rules and regulations and all other Statutory Acts/Regulations and rules relevant to this contract including Works Contract Act, Minimum Wages Act, Provident Fund Act, ESI etc. and shall indemnify the principal employer (SIDBI) against risks and damages arising out of the default on the part of Contractor due to negligence or non-compliance of any of the aforesaid rules, regulations etc. laid down by the Government and other Statutory authorities from time to time.
 - (ii) Contractor shall cover all the men/women deployed by him on this work with all risk policy, workmen compensation insurance (minimum Rs. 2 lakh per person). Such insurance policies shall be in joint names and copy of the same will have to be submitted to the Bank before taking up the work.
 - (iii) It may be noted by the Contractor and brought to the notice of his workmen that this is purely a work contract and the workmen employed by him are carrying out an annual contract and it does not entail them to seek employment / job opportunity for him or his workers in SIDBI .
12. **Tenancy rights**
 - (i) The Contractor shall be given a suitable place during the contract period for storing the material required to provide the service to SIDBI as per the contract. The place so provided should be used only for the performance of the duties under the contract and not for any other purpose. Storage of materials at site would be at agency's risk.
 - (ii) Nothing herein contained shall be construed to create any tenancy in Contractor's favour of the Premises at the Bank Offices and other service areas at SIDBI may of its mere motion effect the termination of this contract, re-enter and retake and absolutely retain possession of the Premises at SIDBI and other areas being serviced by the Contractor under this contract. The Contractor shall not assign or transfer howsoever the benefit or burden of the contract to any person or concern. Workers of the contractor would not be permitted to stay at the site.

13. **Standard of Service**

Whenever the quality of the service/maintenance rendered are below standard, the Bank at its own discretion may make a deduction of suitable amount (including penalty, if required) in the bill after informing the Contractor and SIDBI's decision shall be final. In the event of consistent unsatisfactory service or failure at any time on the part of the Contractor to carry out the terms of this contract to the satisfaction of SIDBI, SIDBI may forthwith terminate this contract without any prior notice to Contractor and Contractor shall have no claim whatsoever against SIDBI or any of its Officers in consequence of such termination.

14 **Contractor to vacate the SIDBI Premises on termination**

Immediately on the termination of this contract, the Contractor & its employees shall peacefully vacate the premises and handover to SIDBI all articles, equipment, furniture and other fixtures belonging to SIDBI and other material entrusted in its custody and shall remove all its stores and effects. In case of default SIDBI shall be entitled to enter into and take possession of the Bank's Premises block and lock up the same or remove its stores or their effects wherever lying and to dispose of the same by sale or otherwise without being liable for any damage. Failure to exercise the Bank's rights, any omission on the part of the Bank at any time to exercise any of its rights under the terms of the contract shall in no way impair or effect the validity of the terms and the rights of SIDBI to enforce its rights at any time subsequently.

15. **Summary Termination of the Contract**

In the event of instances of gross misbehavior, theft, burglary, moral turpitude, misuse of the Bank's premises etc. by the Contractor or by any staff of the Contractor, SIDBI may forthwith terminate this contract summarily without any prior notice to Contractor and the Contractor shall have no claim whatsoever against SIDBI or any of its Officers in consequence of such termination.

16. **Settlement of Bills**

The Contractor shall submit the bills for every month separately. The payments shall be made, as far as possible, within 10 days from the date of submission of the bills, subject to the bill being in order. While making such payment SIDBI shall make the following deductions.

- i) Income-tax deduction at source shall be made as per the Govt. rules.
- ii) The amount equivalent to any damages/loss etc. caused to SIDBI by the workmen employees of the Contractor.
- iii) Any other charges (penalties and other deduction etc.)
- iv) SIDBI reserves right to correct arithmetical errors or other errors in the matter in which the Bank consider suitable and deem fit. This adjustment shall be acceptable to and binding upon the contractor.

17. Dispute resolution

All questions, disputes and / or difference arising under or in connection with this contract or in any way touching or relating to or concerning the scope of work, meaning or effect or the terms herein, shall be referred to the Director, Training Centre and his decision shall be final and binding.

18. Fines and Penalties

- (i) If the monthly reports (work done) is not submitted by the stipulated time i.e., 5th of every month, a penalty of 5% will be recovered from the bill. The Contractor should claim his bills timely.
- (ii) In case of absenteeism of workmen staff provided by the Contractor, penalty as per twice daily rate in the minimum wage act will be recovered out of the monthly charges at its discretion. SIDBI reserves the right to check the Muster Roll as well as wages sheet maintained by the Contractor at any point of time.
- (iii) Penalty towards non-attentiveness**

(a) Contractor shall maintain a proper Record / Register indicating reasons for not attending to any particular complaint within time schedule, failing which appropriate penalty shall be levied.

(b) The expected period of completion of the various items should not be more than 24 hours

(c) Further, a sum of Rs.500/- (minimum) per incidence shall be chargeable as penalty towards non completion of the routine activities indicated in the scope of work. General Manager ,Training Centre shall be the final authority for decision in such matters which can not be challenged.

(d) In case of emergency of work, extra payment beyond working hours will be made at the quoted rates on pro-rata basis.

(e) The cost of replacement wherever applicable shall be paid for only on sanctioned work slips issued by the Bank to the Contractor. If any replacement is done without proper sanction the same will not be considered for payment.

(f) Need for replacement of any particular item, shall be decided by the nominated Bank's Staff and the Contractor should carry out the work without any dispute.

(g) Contractor shall follow the prescribed formats / procedures for receiving complaints, receiving the work slips duly sanctioned and preparation of bills etc., as stipulated by the Bank from time to time.

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Appendix to Annexure I

**Terms and conditions for providing Annual Operation and Maintenance Contract
of Electromechanical Installation at SIDBI Training Institute Bhubaneswar**

**P A R T - I
THE FORMAT FOR TECHNICAL BID**

From,

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To,

The General Manager,
Small Industries Development Bank of India,
SIDBI MSME International Training Institute (SITI)
OCHC building, 4th floor,
Janpath, Unit-3
Bhubaneswar

Sl.No.	Particulars	Details to be filled in by the Agency
1	Name of the Agency / Contact Person	
2	Regd. office/Business address at Bhubaneswar of the Agency / mobile or telephone number.	
3	Date of Incorporation/Constitution	
4	PAN No. of the Agency	
5	Service Tax Registration No.	
6	Whether registered with Registrar of Companies? Date of Registration (<i>Attach copy of registration</i>)/ <i>If it is a partnership firm then attach the partnership deed.</i>	
7	Whether the agency has 5 years' experience in providing such Services preferably to reputed organisations like All India Financial institutions, public sector banks / undertakings and large private sector companies	

8	Whether registered with Labour Department? Date of Registration (Attach copy of registration)	
9	Whether registered with Central and Excise Department for Service Tax? (Attach copy of registration)	
10	Whether the agency has achieved average turnover of Rs. 50 lakh during the last three financial years. (Attach copy of P&L A/c of relevant year)	
11	Whether the agency is an Income Tax Assessee having filed its Income Tax return for the Assessment Years 2010, 2011 and 2012 (Attach copy of Income Tax Returns for all the three assessment years)	
12	Whether the agency have completed successfully minimum 1 works of similar nature costing Rs. 8 lakh per annum or 2 works costing Rs.5 lakh per annum in last 3 years[Attach copy of work orders or completion letter from client].	

I / We agree to abide by all the terms and conditions stipulated by the Bank and mentioned in the **Appendix** to Annexure I.

Date:

SIGNATURE
Name and Seal of Agency

(This format shall be sent in a separate sealed cover superscribing - **“TECHNICAL BID FOR AMC of Electromechanical Installations at SIDBI MSME International Training Institute, Bhubaneswar”**)

P A R T - II

THE FORMAT FOR FINANCIAL BID

From,

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To,

The General Manager,
Small Industries Development Bank of India,
SIDBI MSME International Training Institute,
OCHC building, 4th floor,
Janpath, Unit-3
Bhubaneswar

1. Name of the contractor/firm: _____

2. Address for communication: _____

3. Name of the contact persons and telephone numbers:

Sl. No.	Description	Amount (₹)
1	Lump-sum monthly charges for Annual operation and maintenance Contract of Electromechanical Installations at Training Institute for attending Scope of Work as described in the covering note (including all taxes)	

Total monthly amount in words Rupees _____

Note:

- a. The contractor shall make the payment to personnel engaged by him as per minimum wages notified by the Central Government from time to time.
- b. The quoted amount shall be inclusive of applicable statutory payments viz. PF, ESI, Gratuity, Bonus, Service Tax, all other taxes etc. The contractor shall take into account the likely revision of minimum wages and all taxes, during the contract period, while quoting the amount.
- c. The Contractor should provide proper uniform with safety shoes , routine tools & tackles , checking instruments to his staff to carry out the regular works satisfactorily.
- d. During the contract period, the quoted amount shall not be subjected to any variation in price.

- e. The personnel to be posted for AMC work at the institute should not be less than 18 years and not more than 50 years of age.
- f. In case of extra manpower (Helper) , the contractor will be paid an amount of Rs. 300/- per day, subject to prior approval of the Bank.
- g. Conditional tenders shall be summarily rejected.

I/We have examined the scope of work and terms & conditions of the tender for the said works. If this tender is accepted by SIDBI, I/We hereby agree to execute the works in accordance with terms and conditions of the tender. We are aware that all the payments shall be subject to TDS, as applicable, at the time of payment.

Date:

**(Signature and Name of the authorized person
of the firm/contractor with office seal)**

(This format shall be sent in a separate sealed cover superscribing - **“FINANCIAL BID FOR Annual operation and maintenance Contract of Electromechanical Installations at SIDBI MSME International Training Institute, Bhubaneswar”**)

ANNEXURE – II

It is the sole responsibility of the contractor to ensure that the operation, monitoring, Maintenance and repairs are performed to the highest standards. The scope of the work shall be as under:

- Depositing Payments to local statutory authorities and service provider namely CESU, BSNL, etc.
- Coordination for smooth operations of the lift and coordination with M/s Schindler
- Operation & Monitoring of air-conditioning system of the building during working hours (from 6.00 am to 10.00 pm.) Monday to Saturday or otherwise instructed as well as coordination with M/s. Blue star / AMC Agency.
- Monitoring of Electrical panels, Capacitor Panels and other installations.
- Operation of diesel generator set, water pumps, related set up, of the building by appointing experienced and qualified staff including testing etc. and coordination with M/s. Mahindra / AMC Agency
- Operation and Monitoring of Solar Power panels / installation and Solar Water Heaters
- Scope of work also includes replacement of switches, sockets (power/telephone/data), indoor / external light fittings, lift lights including chokes, capacitors, fuse, lamps, Distribution Board fittings viz. MB / ELCB / MCB (All capacities) for internal lightings in case the same are not in serviceable conditions at the discretion of SIDBI. Cost of unserviceable electrical fittings such as lamps/ tubes, ELCB, MCB, switches, sockets replaced shall be reimbursed on actual basis on production of bill/ invoice and after verification of the rates in the market plus reasonable amount towards transportation. No other charges such as labour, handling etc. shall be payable. However, the contractor required to obtain necessary approval from SIDBI, before proceeding with the replacement. The contractor shall bear the charges of consumable such as tapes, capacitors, fuse, drilling bits etc., costing up to Rs.100/- per one job.
- to maintain a proper schedule as well as record / quality management forms / work register with approval of SIDBI for the above activities. All the stationery / photo copying etc., for the purpose, the contractor has to arrange on his own. Contractor shall provide necessary tools and equipment's to his workers for performing their work.

- **SCOPE OF SERVICES**

(A). Lift-Operation

1. Operate the elevators whenever required
2. Monitor movement of visitors
3. Monitor movement of goods & ensure that the goods cause no damage to the elevators.
4. Handle emergencies.
5. Ensure that the elevators are not misused by carrying heavy items.

(B) ELECTRICAL INSTALLATION WORKS

EARTHING

A.1 REQUIREMENT

- i) It shall be ensured that the following equipment's are earthed:
 - 1) All metallic conductor enclosures.
 - 2) Under any of the following conditions, exposed non-current-carrying metal parts of the fixed equipment which are liable to be earthed.
 - a) Where the equipment is supplied by means of metal clad wiring
 - b) Where equipment is located in a wet location and is not isolated
 - c) Where equipment is located within reach of a person who can come in contact with any earthed surface or object.
 - d) Where equipment is located within reach of a person sending on the ground
 - e) Where equipment is in a hazardous location
- ii) All metal enclosures of electrical equipment in sub-stations shall be effectively earthed.
- iii) Before starting work on underground cables, all its conductors shall be discharged effectively and its both ends are earthed. Dead cables shall be identified by available means and the adjacent cables, if any, shall be provided suitable protection.
- iv) Static condensers shall be disconnected from the source of supply, discharged and then earthed before starting work on them. If they are charged, heavy sparks will be drawn from them. To discharge them completely, earthing rods shall be used and contact made with each terminal in turn and the same shall be repeated until no spark is observed.
- v) To put water in earthing pits at regular intervals and check its effectiveness / resistance, etc.

A.2 MAINTENANCE

- i) The earthing device shall first be connected to an effective earth provided for the purpose and the other end of the earthing device shall then be connected to the conductors of the apparatus to be earthed. The process of removing the earth device shall be reverse of that adopted for placing the earth.
- ii) The earthing of all electrical apparatus and equipment in sub-station, distribution stations, etc. shall be periodically tested and inspected. Ordinarily a Meggar Test to check continuity of earth will suffice and shall be done once in six months. Earth tester suitable for three electrode method of testing earths shall be used

wherever required or as per local regulations. Where no such regulation is in existence this shall be done once in two years.

- iii) All earthing systems shall, before electric supply lines or apparatus are energized, be tested for electrical resistance to ensure efficient earthing.
- iv) All earthing in systems shall be tested for effectively on a dry day during dry season at least twice a year.
- v) All earthing in systems shall be maintained and if upon testing, resistance is found to be higher than the prescribed values, immediate, steps shall be taken to rectify the faulty earth:

Sl.No.	Installations	Maximum Resistance to earth (in Ohms)
1	Sub-section earthing stations	2
2	Steel poles and supports of low and medium voltage local distribution system	5
3	6.6KV & 11KV transmission lines supports	5
4	U.P.S. / EPABX	1

- vi) In case of pipe / plate electrodes earthing arrangement, three or four buckets of water shall be poured into the sump through the watering funnel once a month to keep the soil surrounding the earth pipe / plate permanently moist.
- vii) Care shall be taken to protect the earth wire against mechanical damage and possibility of corrosion particularly at the point of connection to earth electrode or earth continuity conductor. Remedial measures shall be taken, wherever necessary.
- viii) Periodical visual inspection of all earth, electrode connections wherever available, shall be carried out to ensure their rigidity and to check any other signs of deterioration.
- ix) Where installations are earthed to a metal sheath of the supply cable, it shall be verified periodically that the earth fault loop is in a satisfactory state.
- x) Monthly record of tests carried out shall be maintained as per the proforma given below and these shall be preserved for a minimum period of 2 years from the date of testing.

Maintenance of earthing System

Month	Watering of stations	Visual check of system	Meggar Test	Remarks	Initials of electrician / A.C. & Maintenance Engineer
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

B. TRANSFORMER / SUB-STATION

B.1 Safety precaution and Physical inspection.

Before starting any maintenance work, the transformer shall be isolated from the supply and the terminal earthed. No combustible material shall be kept near the transformer, while any maintenance work is being carried out. The following physical inspection shall be carried out:

- i) Bushings – The bushings both on H.T. and L.T. sides shall be checked for cracks and chips. Slight chip can be ignored but for major cracks, it is desirable to replace the bushings. Stock of the bushings shall be kept in consultation with the manufacturers. Bushings shall be checked quarterly and cleaned periodically.
- ii) External connection – It shall be ensured that all the connections are tight. If the connection strips are observed to be black and corroded they shall be removed, cleaned with emery paper and given heavy grease coating. If the connection strip is bluish it is an indication that it has been hot for some time. This means that either the connection has become loose or the conductor.
- iii) The physical check up of cables may be done on alternative or any peak load condition by touching so as to ascertain the normal or abnormal temperature with due precautions.
- iv) Remove dust from external surface monthly.
- v) Check up winding temperature daily (when indicator is provided).
- vi) Clean the coils and remove any deposits within the ventilation passage through which cooling air flanks.
- vii) General – General superficial conditions of the connecting cable on sides, cables joint box, etc. shall be checked half yearly.
- viii) Earth continuity particularly in case of transformers with neutral earthing and general earthing of the metal structure shall be checked annually. Records of the earth test results shall be kept.
- ix) A Log Book for transformer readings shall be maintained.
- x) The over load if any shall be only for specific duration as per manufacturers standard and remaining period rated load.

C. SUBSTATION AND INTERNAL ELECTRICAL INSTALLATIONS

From the point of view of safety of life and materials, various checks that shall be carried out are tabulated below:-

i)	General Housekeeping of the area to avoid collection of foreign materials like paper, rag waste, oil / grease and other inflammable materials.	Weekly
ii)	Verification of transformer tank, oil circuit breaker and other oil carrying equipments against oil leaks.	Monthly
iii)	Effectiveness of oil drainage system including piping and soak pit, where provided.	Six monthly
iv)	Checking of operation of all trip circuits, relays and instruments like voltmeters and ammeters by stimulating conditions	Six monthly
v)	Checking of internal wiring for control circuits of circuit breakers and tightening all loose connections (ensure that	Six monthly

	none of the controls and safeties (trip) circuits are by-passed at any time).	
vi)	Against physical damage to main boards, switches and distribution boards and rising mains.	Six monthly
vii)	Tightening of all internal connections of cables in DBs, switch boards, rising mains, etc.	Six monthly
viii)	Survey of lighting fixtures against physical damage to chokes, holders, internal wiring, etc.	Six monthly
ix)	Survey of point wiring against physical damage to conduit / batten / wires / supporting arrangement.	Six monthly
x)	Insulation resistance test of wiring system and equipment	Six monthly
xi)	Check against improper sizes of protective fuses	Six monthly
xii)	Check loads on mains, sub-mains, sub-mains and feeder points with long tester to ensure that there is no over-loading.	Six monthly

D. EMERGENCY LIGHTS

i) The power plug points to be checked for proper single phase 230v supply is available.

ii) The manufacturer's standard instruction shall be strictly followed

E. SWITCHGEARS, CABLES AND FIXTURES, ETC.

Whenever any additional load is added to electrical installation, the main switch, bus bar chamber, sub-main cable, circuit main, etc. shall be checked against overload.

The various periodical checks to be carried out in respect of switchgears, cables and fixtures, etc. are tabulated below:

E.1 BUS BAR CHAMBER

i)	Superficial inspection for abnormal temperature rise	Weekly
ii)	Cleaning the bus bar chamber (for dust and other foreign materials)	Half yearly
iii)	Checking the copper bus bars for any carbon deposits	Half yearly
iv)	Tightening the outlet jumper connection including resoldering wherever necessary	Half yearly
v)	Checking the bus bar insulators for breakage / failure	Half yearly
vi)	Megger testing (phase and phase to earth)	Half yearly

E.2 FITTINGS

i)	Physical cleaning of luminaries (Fluorescent, incandescent fixtures) including the lamps	Half yearly
ii)	Checking of choke, etc. for over heating due to failure of insulation, etc. and replacing defective chokes wherever necessary.	Half yearly
iii)	Checking the terminal connections and internal wiring of the fixtures.	Half yearly

E.3 CABLES AND CABLE JOINTS

i)	Superficial checking of the cable and cable joint for abnormal temperature rise and any physical damage	Quarterly
ii)	Checking the condition of the bituminous compound (in case of cable joints for paper insulated cable).	Quarterly
iii)	Megger testing for insulation resistance between phases and phase to earth.	Half yearly

iv)	Check the load on the cable (with Ampere meter / Tong tester).	Half yearly
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TROUBLE SHOOTING CHART (ELECTRICAL)

Control	Trouble	Probable causes	Corrective steps
1. Contacts	Chatter	<ul style="list-style-type: none"> i) Low voltage ii) Poor contact in control circuit iii) Defective or incorrect coil 	<p>Check voltage. Check momentary voltage dip during starting. Check coil voltage rating.</p> <p>Check push button station (stop button contacts), auxiliary switch contacts and over load relay contacts. These can be tested with test lamp. If control circuit contacts are defective the contactor will operate properly when these contacts are by passed. Check for loose connections in control circuits.</p> <p>Replace the defective coil. Coil rating must include system's nominal voltage frequency.</p>
	Welding	<ul style="list-style-type: none"> i) Abnormal in rush of current. ii) Low voltage preventing magnet from sealing iii) Short circuit 	<p>Check for grounds and shorts in system as well as other components such as circuit breaker.</p> <p>Correct the voltage condition</p> <p>Remove the fault and check the fuse breaker size.</p>
	Short push button life and / Dr. over heating of contacts	<ul style="list-style-type: none"> i) Filing for dressing ii) Discoloured contacts, caused by insufficient contract pressure, loose connections etc. iii) Excessive jogging or cycling iv) Dirt or foreign materials on contact surface v) Short circuit vi) Sustained over-load 	<p>Do not file silver tips. Rough pots of discoloration will not harm tips or impair their efficiency.</p> <p>Replace contact springs, check contact carrier for deformation or damage.</p> <p>Clean and tighten connections.</p> <p>Eliminate excessive jogging or cycling</p> <p>Clean it with carbon tetrachloride</p> <p>Check the fuse of breakers and remove fault.</p> <p>Check for excessive motor load current.</p>
2. Coils	Open Circuit	<ul style="list-style-type: none"> i) Mechanical damage <p>Burnt-out coil due to over voltage or defect.</p>	<p>Handle and store carefully. Do not handle coils by the leads.</p> <p>Replace the coil</p>

	Overheated Coil	<ul style="list-style-type: none"> i) Over-voltage or high ambient temperature ii) Wrong coil iii) Shorted turns caused by mechanical damage iv) Under voltage failure of magnet to seal in v) Intermittent duty coil energized too long 	<p>Check application and circuit Check rating (Voltage and frequency), if incorrect, replace with proper coil Replace the coil Correct the system's voltage and install new coil. Check application.</p>
3. Magnets and other mechanical parts	Worn out or broken parts	<ul style="list-style-type: none"> i) Too much cycling. Dust and dirt or mechanical misuse. 	<p>Replace the part and correct the cause of damage.</p>
	Noisy magnet (humming)	<ul style="list-style-type: none"> i) Defective coil ii) Magnet faces not meeting correctly. iii) Dirt, oil or foreign materials on magnet faces. iv) Low voltage. 	<p>Replace the coil. Replace magnet assembly. Humming magnet armature and rotating by 180 Deg. Clean magnet faces with carbon tetrachloride. Check system's voltage and voltage dips while starting.</p>
	Failure to pick-up and / or seal	<ul style="list-style-type: none"> i) Low Voltage ii) Open or shorted coil iii) Wrong coil iv) Mechanical obstructions v) Poor contact in control circuit 	<p>Check system's voltage and voltage dips while starting Replace the coil Check coil voltage rating which must include system's nominal voltage and frequency. With power off, check for free movement of contact and armature assembly. Remove foreign objects or replace the contractor. Check and rectify.</p>
	Failure to drop out	<ul style="list-style-type: none"> i) Gummy substance on pole faces, or in mechanism ii) Voltage not removed from control circuit iii) Worn out or rusted parts causing binding eg. Coil guides linkages, etc. iv) Residual magnetism, due to 	<p>Clean with carbon tetrachloride Check control circuit Replace the contractors</p> <p>Replace the contractors Remount the starter as per installation instructions.</p>

		lack of air gap in magnet path. v) Improper mounting of starter	
4. Overload relays	Tripping	i) Sustained overload ii) Incorrect heater, or ambient temperature varies a good deal iii) Motor and starter in different ambient temperature iv) Loose connection on heater screws on lead wires.	Check for grounds, shorts or excessive motor current. Select the correct size heater. Install motor and starter nearer each other, make temperature same for both or use ambient compensated overload. Clean and tighten.
	Failure to trip	i) Mechanical binding, dirt corrosion, etc. ii) Wrong heater or heaters omitted and jumped wired used. iii) Relay previously damaged by short circuit. iv) Motor and relay in different ambient temperatures.	Replace overload and heater. Check ratings and heater tables and apply proper heater. Replace overload relay and heater. Install motor and relay nearer each other, make temperature same for both or use ambient compensated overloads.

F) DG SET

1) It shall be checked for their proper working condition once a week. Sufficient stock of diesel shall be kept. A log book showing details of weekly inspection / running purchase and use of diesel, etc. shall be maintained. A cross check of quantity of diesel consumed and running time of generator set shall be carried out quarterly.

2) To co ordinate with AMC agency for periodical servicing of DG Set

G) FIRE PROTECTION SYSTEM

TECHNICAL PERSONNEL shall be responsible for observing and maintaining the following:

G-1. WET RISER SYSTEM

- i) Check and clean hydrant valves, hose reels fire shafts and replace parts, if any, immediately. Keep the system in working condition at all times.
- ii) Inspect the system for any leakage with special attention to fittings, valves, pipelines, joints, air valves and set them right immediately, if required.
- iii) Check the fuel tank of diesel engine driven fire pump and maintain log book duly signed by supervisor.
- iv) Check the batteries for proper charge, level of electrolyte and good terminal connections and maintain log book.
- v) Check the level of the water in the static water tank for fire fighting purposes.
- vi) Check the automatic working of all pump and maintain log book.

Weekly

- i) Check the gland pickings
- ii) Check the lever of water in the priming tank and replenish it, if required.
- iii) All metal parts should be cleaned by grass.

Monthly

- i) Check the automatic operation of the hydrant system.
- ii) Operate all the hydrant valves and check washers, plugs, couplings, nozzles, etc.
- iii) Check C.I. Valve gland packing and adjust / replace, if required.
- iv) Check rubber hoses giving special attention to couplings, washers, plugs and canvas jacket and swivel arrangement of the rubber hose reel.

Quarterly

- i) Drain the Wet Riser System thoroughly. Set it to the required pressure. Check the air valves for efficient functioning. Check the operation of various pressure switches by stimulating conditions. Clean all contact areas of pressure switches.
- ii) Unroll the hose reels completely. Allow the water to pass through the rubber tubing / canvas hoses. Check for leakage, wash and dry them without subjecting to the direct sunrays. Re-roll the hose reels properly. French chalk powder to the rubber tubing shall be applied before re-rolling.

Half yearly

- i) Check all contacts and termination points of cables on starter and switches and motor side and tighten all loose connections.
- ii) Check and ensure that all fuses are in good condition and contact surfaces are free from pitting.
- iii) Megger the electrical system for effective insulation resistance.
- iv) Check current drawn by motors to ensure that it is not beyond the rated value.
- v) Check earthing system for its effectiveness
- vi) Service all the valves.
- vii) Inspect suction pipe, intakes and foot valve to ensure that they are free from obstructions, foreign materials, etc.
- viii) clean the static water storage tanks six monthly while doing so sufficient separate storage arrangements or standby arrangements are made during the cleaning operation to meet any emergency etc.

Annually

- i) Test the gauges on the installation by comparing them with a test gauge.

H-1SPRINKLER SYSTEM

Routine:

- i) Check main controlling valve, inspect for any leakages in fittings, valves, pipelines, joints, air valves to get designed water pressure in the system.
- ii) Check the level of water in the static water tanks to ensure that the tanks are full at all times.
- iii) Check the reading on pressure gauges with reference to standard reading and maintain log book.
- iv) Clean and check the piping to ensure that is free from any damage, corrosion, dust and other foreign materials, etc.

Weekly

- i) Check flow – alarm device. The small valve, controlling the water supply to alarm device shall be in open position.
- ii) Test the alarm by operating gang bell.

- iii) Start the pump by opening test valve to ensure dependability of the pump, bearings, stuffing box, suction pipe and strainers.

Monthly

- i) Clean the sprinkler glass bulbs with spirit.
- ii) Inspect and service the installation valve.

Quarterly

- i) Drain the sprinkler system thoroughly and set and set it to the required pressure.

Half yearly

- i) Inspect suction pipe, intakes and foot – valve s to ensure that they are free from obstructions, foreign materials, etc.
- ii) Clean the tanks thoroughly
- iii) Test the system by actuating one of the sprinkler heads
- iv) Test the gauges on the installation by comparing them with a test gauge.

For pressure switches, pumps and other similar gadgets, instructions listed out in the case of wet riser system shall apply.

H-2 FIRE BRIGADE INLETS (BREACHER CONNECTION)

The fire brigade inlets are provided on the external of the compound / building at convenient place for the local fire engines to pump water into the installation / tank by lapping external source.

Routine

- i) Clean and check the water inlets for any damages
- ii) Ensure that the water inlets are covered with blank caps

Quarterly

Pass water under pressure through the inlets. Check for any leakage in the pipe line and the non-return valve. Drain the pipe line.

H-3 FIRE FIGHTING PUMP INSTALLATIONS

In order to maintain the fire pumps in operating conditions it shall ensure that installations are tested periodically keeping in view the following guidelines.

- i) The approach to the fire pump room shall be kept near and clean of debris, etc. The approach shall be adequately illuminated.
- ii) The key of the Fire Pump Room shall be easily available at the time of emergency.
- iii) The Fire Pump Room shall be kept near and clean and shall not be used for any other purpose. No other material except fuel and lubricants, spares for the engine and the pump, shall be stored in this room. An emergency lamp in good working condition shall always be available in the room.
- iv) It shall be ensured that the fuel tank is always full and a stock of fuel equivalent to the capacity of the tank shall be available in the pump room. The engine oil shall be checked periodically and replaced, if necessary. A log book for recording receipt and consumption of fuel engine oil shall be maintained by the person operating the pump.
- v) If the pump-set fails to function on any day, immediate action shall be taken to get it repaired and commissioned, keeping the down time to minimum.
- vi) The person responsible for operating the pump shall maintain a Log Book containing the information about the date and time of operating of fire pump,

- details of defects if any noticed with time and date action taken to set right the defects, the time of which the pump set was put back into operation.
- vii) All Log Books shall be produced before the Assistant General Manager / Deputy General Manager once a month.
 - viii) As far as possible the procedure laid down in the Tariff Advisory Committee's Fire Fighting Manual shall be followed for operation and maintenance of the fire fighting pumps and installations.

H-4. FIRE EXTINGUISHERS

- a) All Fire Extinguisher
Routine Quarterly
 - i) Clean the body, horn and wheel-locking pin
 - ii) Weight the extinguisher. If the weight of the contents is reduced by more than 10% it shall be sent for recharging.
 - iii) Clean and polish the body with wax
 - iv) Check tube, horn, joints, locking pins. Apply chalk powder for the tube externally.

Whenever the extinguisher is sent for recharging, it shall be ensured that the same is pressured tested by the gas charging company by subjecting it to a pressure up to 210 kgs. / cm².

- b) Other Extinguishers if any
Periodical maintenance as per manufacturer's specification
All the fire fighting installations shall be maintained in perfect serviceable condition so that their utility in emergency is availed of

H-5 FIRE ALARM / PUBLIC ADDRESS SYSTEM

S. No.	Description	Daily	Quarterly
	Fire Alarm System		
1	Acknowledge all the alarms	Yes	
2	Check the supply voltages phase neural, phase earth & neutral earth		Yes
3	Check the battery voltage and its backup made operation		Yes
4	Check the fire and other alarm condition		Yes
5	Check functioning of all hooters		Yes
6	Check and ensure that all interlocks with AHU's and access doors are working		Yes
7	Clean detectors depending on the analogue value of detectors		Yes
8	Clean all the detectors in the system		
	Public Address System		
1	Ensure power to amplifier is on	Yes	Yes
2	Check the functionality of amplifiers		Yes
3	Ensure music volume is at desired level		Yes
4	Check the functionality of speakers		Yes
5	Check functionality of CD changer		Yes
6	Clean the lens of the CD changer		Yes

8.0 FORMATS RECOMMENDED FOR USE FOR OPERATION MAINTENANCE & REPAIR RECORDS

Sr. No.	Description of Format	Remarks
1.	Daily Report	To be submitted by Technical Personnel
2	Monthly Consumable / spares Consumption Statement	To be submitted by the Technical Personnel every month
3	Daily Attendance Sheet	To be submitted by Technical Personnel
4	Monthly Assessment of Annual Maintenance Contractor performance for the month	Issued by the Bank Officer

I. . Solar Power and Solar Water Heating System –

To clean all the solar panels periodically. To check the water levels of Batteries and put distilled water as required. To check the Solar water heater / tanks regularly and regulate water supply. To check all the electrical installations / lights etc connected to Solar Power and service them periodically.

J. Water SupplyPumps operation and maintenance –

To operate all the water supply pumps, tube well and check for leakage and any other fault and keep them always in working condition.
