

PART-B

ELECTRICAL

GENERAL TERMS AND CONDITIONS FOR ELECTRICAL AND MECHANICAL SERVICES

1. Work shall be carried out as per CPWD specifications wherever applicable. Safety procedure as indicated in CPWD specification of Electrical work /Lifts Work/Fire Fighting Work/ Wet Riser work/ D.G Set and Sub Station work/HVAC Work and other works should be followed.
2. The rates quoted shall be inclusive of wages of Supervisor/ Electrician/ Fire Operator/ Fireman/ A.C/E&M Operator /Wireman/Khallasi etc i/c relievers, cleaning material, uniform and all taxes and duties etc. as applicable.
3. The contractor shall take all precautions for safety of the workmen. If any accident / mis-happening occurs the department shall not be responsible for the same. If any compensation is to be paid to the victim, the firm shall pay the same and no claim in this account shall be entertained by the department.
4. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of Electrical Installation & fans, Northitch gears, DB, Main control panel, Water supply pump, Fire Alarm System/ Wet Riser System/Lifts/D.G Set/ Sub Station equipment, A.C Units/Pressurization, Ventilation System and others etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
5. In case the departmental staff is posted or due to some other reasons, the department reserve the right to terminate the contract in full or part thereof.
6. The contractor shall furnish name & contact number of the persons, who should be contacted during emergency.
7. No T&P shall be issued to the contractor. Contractor has to arrange all T&P required in site and nothing extra shall be paid on this account.
8. The contractor shall maintain Sub Head wise or as per direction of Engineer-In-Charge “attendance register” in support of the attendance of the staff and the same shall be got periodically checked from JE (E) / AE (E) concern. Failure to which suitable recovery will be made from the contractor bill as decided by the Engineer-in-charge.
9. The contractor shall prepare a Sub Head wise “fortnightly/Monthly” duty chart with name and duty hours stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
10. In case of any damage to any equipment due to negligence of the contractor’s staff the same will have to be made good by the contractor at his cost. Failure to which suitable recovery will be made from the contractor bill as decided by the Engineer-in-charge.
11. Before the start of contract, the contractor is bound to submit the following details of the workers proposed Sub Head wise to be engaged by him. After receipt of confirmation of their suitability from Engineer-in-charge or his authorized representative, they shall be deployed on duty.
 - i). Name & Postal Address with I.D. proof
 - ii. Photograph with specimen signature.
 - iii). Qualification and experience.
 - iv). If the contractor fails to supply list of the workers, the work shall not be treated as started at site.
12. The contractor shall replace the staff, in the event of misconduct by him. The direction of E-In-charge in this regards shall be final and binding.
13. The contractor/ Firm is advised to visit the site of work before quoting the rates, in order to ascertain the quantum and location of works.
14. It shall be entirely the responsibility of the contractor to ensure that no unlawful act is done by his persons while on duty. In case any theft/ loss of departmental property takes place due to the negligence or carelessness of his personnel, the contractor will be held responsible and shall make good the same.

The aforesaid terms and conditions shall be read in conjunction with the general rules

and directions for the guidance of Contract form PWD -7.

- 15 **Terms of payment and other facilities for workers.**
- 15.1 The contractor is bound to distribute the salary/ wages to his worker by 7th of each month, positively, as per current minimum wages and labour laws of the government by cheque or ECS as feasible, however Payment to the contractor shall be made monthly/ quarterly Subject to availability of funds/LOC after receipt of bill complete with all documents. The decision of Engineer-In-Charge in this connection shall be final and binding on the agency.
- 15.2 The payment to the workers shall be made in presence of JE(E)/AE(E) concern.
- 15.3 The contractor shall deduct worker subscription towards Provident Fund and ESI, as per rules, he shall deposit the same along with his contribution into the respective accounts of the worker.
- 15.4 The contractor shall take all precaution for safety of the workmen. If any accident / mis-happening occurs, the department shall not be responsible any way for the same and for any compensation.'
- 15.5 (A)The contractor shall provide two sets of summer uniform (shirt, paint & black shoes) and two sets of winter uniform (shirt, paint and woolen jersey) alongwith badge having name of worker, designation of worker and name of agency within 15 days of start of work. Falling which a recovery @ Rs. 4000/- per worker for summer uniform and @ Rs. 8000/- per worker for winter uniform shall be made from the contractor bill and department will arrange the uniform for the contractor's worker. Colour of the dress shall be decided by Engineer-In-Charge on request of agency.
(B) Worker deputed on duty should be in proper uniform. If any worker found without uniform a recovery @ Rs. 100/- per day per worker shall be made from the contractor's bill.
- 15.6 Minimum labour shall be deployed by the contractor as per BOQ and terms and conditions of agreement.
- 15.7 Electricity shall be provided to the firm free of cost for bonafied use on the work
- 15.8 The rates quoted by the firm shall be inclusive of all taxes and GST and as per Labour bye Laws
- 15.9 **THE ESI and EPF contribution on the part of firm in r/o this NIT shall be paid by him which shall be reimbursed to the firm on actual basis on production of authentic proof.**
- 15.10 **Biometric machines shall be provided by the firm for attendance of the staff employed within the quoted amount for which nothing extra shallbe paid. The attendance of the staff shall be submitted by the firm on monthly basis to the concerned JE(E).**
16. Maintenance work has to be carried out in BSA Hospital, New Delhi which includes Electrical, Mechanical services works.
17. The specialized works shall only be got executed by relevant specialized agency only. The main contractor shall give at least two names of contractors for respective services and Engineer-In-Charge shall decide the name of any one contractor in the category of specialized. The decision of Engineer-in-Charge shall be final & binding on the contractor.
18. The contractor shall have valid Electrical contractor license. The contractor shall obtain all necessary approval from State/Local Body as per law in vogue.
19. The installation shall be handed over by the department to the contractor on, **as is where is** basis and nothing extra shall be paid toward pre-maintenance as the equipments are in running condition. However, in case parts are required, the same shall be arranged by the department free of cost but shall be replaced by the contractor for which nothing extra shall be paid.
20. After the expiry of the contract, the firm shall have to hand over complete installation to the department in proper working order. All defect and deficiencies shall have to be

- rectified by the firm to the entire satisfaction of Engineer-in-charge failing which the work shall be got done at the risk and cost of the firm.
21. The Contractor shall employ their regular staff in the works and related names of employees shall have to be given by the contractor.
 22. The staffs employed for services by the agency are employees of agency only. No claim of their employees/ staff employed for subject work in any form shall be entertained by the department.
 23. The Contractor shall employ supervisors having valid Supervisory License for Electric Works as issued by the Electrical Inspectorate in General shift.
 24. The contractor shall employ Electrician having valid Electrician licence.
 25. The Extra Item work if any, in the contract shall have to be executed by the contractor as and when required as per instructions of Engineer-in-Charge only.
 26. All T&P including ladders, wire drawing equipment, chase cutting, equipment, drilling machine merger insulation earth resistance testing equipment etc. required for the work shall have to be arranged by the contractor .
 27. The Contractor/Agency shall replace the all worn out material with the same make as that of existing installation. If existing installation make is not available, then the make out of the list of approved makes list shall be provided and if that make is also not available in approved makes list, then make as per direction of Engineer-in- Charge shall be provided.
 28. Any prevailing taxes, duties, levies imposed by the NORTH/State government during the contractual period will not be payable but any new such taxes shall be governed by clause 38 of GCC for CPWD work, 2014
 29. Supply of materials have been taken in BOQ for day to day utilization, if any material has not been taken and required at site shall be arranged by the department and replacement shall be done by deputed workmen by the agency.
 30. The contractor and his men shall have to abide by the security instructions of Hospital authorities. No claim of idle labour or any other claim on this account shall be entertained by the department. The normal working time shall be dawn to dusk and the department shall not entertain any claim from contractor for extra payment on account of any changes in working hours
 31. The contractor will make his own arrangements for transportation of his materials up to the site of work and taking the material up to place of installation, the security and watch and ward of the materials brought at site and the work / installation executed by him, safety of his men and materials shall be his responsibility till the work as a whole is completed and handed over to the department for its beneficial use and nothing extra shall be paid by the department on this account.
 32. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or manufacturing of the equipment or by negligence of the staff.
 33. First aid box shall be kept by the contractor at site of work. No extra payment shall be made on this account.
 34. The firm shall furnish certificate/ undertaking from the labour employed by him that he will not claim security of job from the department at any stage of time, as labors are only employee of agency.
 35. If any condition is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
 36. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced within 48 hours. Decision of the Engineer-in-Charge or his authorized representative shall be final and binding on the contractor.

37. Department in no way is involved in any dispute of whatever kind between the contractor and the staff engaged by him Payment against the final bill however would be subject to clearance from labour authorities.
38. The firm has to make minimum wages to its employees as per Delhi Administration Minimum Wages Act 1965 as applicable and advisory issued by additional labour commissioner vide No. F.137/Addl.LC/Lab/Advisory/ Bonus/2018/3082 dt. 18-10-2018.
39. The staff deployed by the contractor shall be purely employee of the agency only. Staff deployed shall not claim for any govt. job or compensation from the department in any way.
40. The contract can be terminated at any time during contract period after giving one month notice to the firm by the department due to either Administrative reason or any other reason for that no any compensation shall be payable to the agency.
41. Contractors shall have to purchase the materials form authorized dealer/manufacturer only and submit the proof of material purchased by them i.e. Challan / Bill for the genuineness of material. However Bill / Challan shall not be prior to date of opening of tender.
42. All screws/ nuts bolts should be galvanized/ cadmium plated only as the case may be.
43. The contractor has to arrange all the material like detergent, cloth, soap bar, duster, fuse wire, PVC tape, glands, gland dory, HRC fuse, insulation tape, screws, nut-bolt, I.C's, diode, battery water, log books, registers and all other similar consumable materials. Nothing extra is payable on this account.
44. Normally general maintenance and operation shall be maintained round the clock on all days of the month including Sundays & holidays and weekly rest of the staff shall be given making alternative arrangement for which no extra payment shall be made.
45. In case of emergency the staff may have to work beyond normal working hours, for which no extra payments shall be made by the department.
46. Inventories shown in the NIT/Agreement are tentative, these may differ from actual installations at site. Hence, agency has to maintained all installations/inventories as per actual available at the site.

TERMS & CONDITIONS FOR SUB HEAD I – EI & FANS

1. The Work shall be carried out as per CPWD General Specifications for Electrical Works Part I Internal – 2013 as amended upto date and as per manual for such works wherever applicable. Safety procedure as indicated in General Specifications for Electrical work as amended upto date should be followed.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates. Their bid shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Wireman/ Operator - Electrical workman permit/ workman's competency certificate electrical workman's/ lineman license (Certificate of competency Class-II or any other equivalent certificates with at least 2 years experience in the line with at least 10th pass and wireman license or ITI
 - b. Khallasi (Electrical) - Physical fitness for unskilled work and who have put in at least three years continuous service and at least 10th pass .
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages shall be imposed on the contractor:-
5. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of Electrical Installation & fans, switch gears, DB, Main control panel, Water supply pump etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
8. Materials for minor repairs such as Gaskets, Gland Dori, Grease, Indicating Lamps, Lamps of Response Indicators, Resistors, Transistors, Fuse Holders, Switches, Fuses, Thimbles, Loose wires, Panel Glass, MS Box, Neon Lamp, Distilled Water, Petroleum Jelly, Battery Acid, Battery Lead, Clamps, Dusters/ Cotton Waste, Soap, Broom CTC, Nuts, Bolts shall be provided by the contractor. Nothing extra shall be paid on this account, hence is advised to quote his rates accordingly.
9. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor at his own cost.
10. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
11. No material will be taken out of premises without written permission of Engineer-in-Charge or his representative field engineer.
12. Watch & ward of installation/ equipments covered in this work in building and cleanliness of all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.

13. The contractor shall prepare a Sub Head Item wise “fortnightly/Monthly” duty chart with name and duty hours of workers engaged stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
14. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/ replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.
15. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced within 48 Hrs. by the contractor. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
16. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm. Consequently any compensation payable shall be at the contractor cost and department shall not give any compensation.
17. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
18. If any worker goes to court for any reasonable or unreasonable issue, which shall be sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any current running bill/ final bill of the contractor.
19. Damage to the building & machinery, if any, will be made good by the contractor at his own cost.
20. Maintain the log books for EI/ Pump Set and keep the installation in working condition. If any deficiency observed, the contractor will immediately inform to Client Deptt./ JE(E)/ AE(E) and will make all efforts to remove the faults immediately.
21. In case the departmental staff is posted or due to some other reasons, the department reserves the right to terminate the contract in full or part thereof.
22. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory, by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning any reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
23. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or malfunctioning of the equipment or by negligence of the staff.
24. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
25. In case of break down of any system the matter has to be reported to the JE(E)/ AE(E)/Engineer-in-Charge immediately. In case of failure of electric supply from BSES, written complaint is to be lodged with BSES and inform to the JE(E)/ AE(E) of the department, immediately.
26. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
27. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contractor.
28. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
29. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account deemed to be included in the items, nothing extra shall be paid on this account, so contractor is advised to quote his rates accordingly.

30. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity on orders of EE(E), AE(E)/ JE(E) for which no additional payment will be made to the contractor. If contractor refuses to do so, then recovery as decided by Engineer-in-Charge shall be made from the bill of contractor.
31. Time and place of duty shall be fixed by the AE(E)/ JE(E) in-charge. This can be changed as per requirement of site/ Sub Division in any building under the Sub-Division & other building as per direction of JE(E)/ AE(E) in-charge.
32. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine on daily basis to AE(E)/ JE(E) in-charge.
33. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work only.
34. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS.
35. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
36. Rates quoted by the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
37. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
38. The contractor has to insure that:
 - a. In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b. In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c. Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
39. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.
40. All equipments except LED Fittings shall be guaranteed for a period of 24 Months and Certificate from the OEM/ Manufacturer of the LED Fittings shall be submitted by the contractor for guarantee for a period of 05 years from the date of acceptance and taking over of the installation by the Department against unsatisfactory performance and/or

breakdown due to defective design, material, manufacture, workmanship or installation. The LED luminaries shall be repaired/ replaced by the OEM/ Manufacturer free of cost within the guarantee/ warrantee period of 05 years. The equipment or component or any part thereof so found defective during the guarantee period shall be repaired or replaced free of cost to the satisfaction of the Engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk & cost of the contractor, the decision of Engineer-in-Charge in this regard shall be final& binding on the contractor.

41. Technical Specification for LED Fittings and other requirements:

- a. Proof of purchase of LED used in the fittings should be submitted with the department by the contractor.
- b. The LED Chip used in all fittings should be from the same binning lot.
- c. The model no. of the fittings are only indicative, the contractor is required to fulfill all the specification of LED fittings mentioned in the NIT.
- d. L70 Report:- No depreciation of light more than 70%
- e. Submission of LM80 and LED Photo biological safety report confirming to IEC62471 from LED source manufacturer & LM79 report from NABL accredited Laboratory is mandatory.
- f. The LED should be mid power chip mounted on metal clad board (MCPCB) with proper heat dissipation.
- g. The make of driver should be the same as that of LED Luminaries make.

ADDITIONAL TERMS AND CONDITION OF E.I FANS

Maintenance of E.I and Fans as specified in B.O.Q and as directed by the Engineer-in-Charge or his authorized representative.

1. The prescribed complaint register and workers diary shall be provided by the contractor and these shall be neatly maintained by contractor and staff. All complaints are to be attended promptly and the complaints not attended in the same day shall be reported to JE(E) and carried forward to next day till these are not attended. The complaint register should be got checked regularly from the JE(E). The completed complaint registers, worker dairy, insulation and earth test register shall be the property of department and shall be deposited with JE(E).
2. The installation shall be handed over on “as is where is” basis and nothing extra shall be paid towards pre-maintenance as the equipments are in running condition. However, in minor electrical case parts are required, the same shall be arranged by the department free of cost but shall be replaced by the contractor for which nothing extra shall be paid.
3. After the expiry of the contract, the firm shall have to hand over complete, installation to the department in proper working order. All defect and deficiencies shall have to be rectified by the firms to the entire satisfaction of Engineer-in-Charge failing which the work shall be got done at the risk and cost of the firm.
4. Material required for repair/replacement shall be supplied by the department free of cost. Contractor shall make arrangement for receiving the material from the store of JE (E). Contractor shall maintain daily issue register & shall submit requisition for material required for day to day maintenance.
5. The contractor shall maintain the register for DB checking, Fan checking & earth checking etc.
6. Earth continuity test and earth electrode resistance test should be conducted during summer season also.
7. Maintenance activities carried out as per this schedule should be noted in the Maintenance Register. When tests are carried out, the test results should be recorded with appropriate identification references. If results are not satisfactory in any part of the Installation, reason should be checked and corrective action should taken immediately.
8. The scope of work includes the external and internal lighting / installation of Hospital/ Complex.
9. The minor complaints should be attended by the workers of the contractor within 6 hrs. after lodging the complaint. In case of the major complaint, the fault must be rectified within 48 hrs. of lodging the complaint/ the time when it comes in the notice of contractor whichever is earlier. If the material required for rectifying the complaints comes in the scope of contractor he shall supply and replace the same.
10. The contractor is required to ensure Organized maintenance based on preventive maintenance is essential to ensure:
 - a. Un-interrupted service
 - b. No break-down
 - c. Safety, no mishaps
 - d. Economic operation
 - e. Lower Energy bills
 - f. Long useful life.

Therefore, due importance is to be given for maintenance.

11. Persons engaged in maintenance works should be competent for the type of work involved and should possess necessary license.
12. Safety procedures as indicated in Chapter 10 of CPWD General Specifications for Electrical Works Part I Internal - 2013 should be followed by the contractor.
 - a. In any building, additions and alterations are bound to occur at any time. When such additions/alterations are to be undertaken, it is very important to check in advance the likely loading of the distribution system and to strengthen the system as necessary before allowing the extra load to be connected, so as to avoid overloading of any part of the system. Even phase balancing may need to be redone so as to keep the neutral current low. To enable compliance to this safety aspect. This may be kept up even in a register form, with different pages for different floors/ wings, for ready reference at any time.
 - b. The number of items to be maintained in a building may be many like fittings, fans, DBs, earth sets etc. In order to achieve compliance to the prescribed periodicities for the various activities on them as per this schedule, each of these items may be divided into convenient numbers, to carryout the respective activities in sub periods, in a cyclic (sequen-tial) order. For example, if DB's are to be checked every month, and there are 50 DBs in a building, these may be checked at the rate of 2 or 3 DBs every day in a sequential order (programmed in advance) so that all DBs are checked in a month.
 - c. Inspection of electrical installations is intended primarily from fire safety considerations. Following points need to be observed as part of inspection, and corrective action as necessary should be taken immediately, including coordination with the client departments concerned, as may be required.
 - i. Check that – there is no sign of heating up, burning smell, decolouration or sparking at any of the boards (SDBs as well as main boards), and Rising Mains. These may occur due to overloading or loose terminations. Highly unbalanced loading may cause heavy neutral currents and consequent heating of neutral conductors and terminals.
 - ii. No temporary wiring exists anywhere in the building.
 - iii. There is no joint in cords connecting the WTAC units/voltage regulators/office equipment like photocopier, PC etc.
 - iv. No bare wiring exists over the flooring without mechanical protection by a metallic conduit / channel.
 - v. There is no misuse of socket outlets, such as connecting power load to light socket, connection of multiple loads to one socket, use of heaters in record room, library etc. In such cases of additional demands of outlets, these should be provided early, after taking approval of the competent authority.
 - vi. The shafts/spaces for electrical services are not misused, for storage or for dumping rubbish.
 - vii. The spaces in front of DB's and sockets are free (without any storage of files/papers etc.)
 - d. While cleaning fittings and fans, the fixing/suspending arrangements should also be checked and attended to as necessary. Care should be taken that the alignment is not disturbed.
 - e. In the case of ceiling fans, remove the blades, and wash the same with detergent, without causing any deformation of blade angle. Check the shackle and replace if damaged. Check that down rod is fully screwed upto the last thread on both ends and that threads are not loose. If so required, replace with new down rod of the same size, thickness and length of threading (not less than 20mm). Check split pins and replace if any strain deformation or damage is ob-served. If any other system of suspension had been adopted,

- check the soundness of the same and tighten as necessary. Fix fan blades tightly to the body. Operate the fan at different speeds; the run should be without wobbling/noise.
- f. As per specifications, lubrication needs to be done as necessary. In such cases, the fan needs to be brought down, after removing the blades. The old grease should be replaced with a fresh one, after cleaning the bearing. If damaged, the bearing should be replaced. When reinstalling the fan, the suspension bolts should be well tightened.
13.
 - a) Insulation test should be done during monsoon season, as per clause 16.2 of CPWD specifications for elect. Works part I internal 2013.
 - b) Earth continuity test and earth electrode resistance test should be conducted during summer season, as per clauses 16.4 and 16.5 of the above specifications.
 - c) Record the test results giving identification references. If results are not satisfactory in any part of the installation, reason should be checked and corrective action be taken immediately.
 14. The recovery on account of non-conducting the periodical checks/ test as mentioned in Annexure –‘D-1’ shall be imposed as under:-
 - a. For not attending the daily complaints @ Rs. 25/- per day per complaint.
 - b. For non-conducting of Monthly checks/ test @ Rs. 2000/- per set of monthly check/ test.
 - c. For non-conducting of Half Yearly checks/ test @ Rs. 4000/- per set of half yearly check/ test.
 - d. For non-conducting of Yearly checks/ test @ Rs. 6000/- per set of yearly check/ test.

PERIODICAL TESTING AND MAINTENANCE EI AND FANS**Monthly Checks**

- a) Cleaning & tightening of connections of SDBs, Main Panels, Main Boards.
- b) Checking of working Conditions of MCB/ MCCB/ Switch gears.
- c) Checking neutral earth connection
- d) Checking cable connection, terminal connections
- e) Phase balancing in case of three phase supply shall be done.

Half Yearly Checks

- a) Checking and Cleaning of fans and fittings

Maintenance activities carried out as per schedule should be noted in the preventive maintenance register. When test are carried out the test result should be recorded with appropriate identification reference.

Yearly Checks

- a) Insulation test
- b) Earth test

TERMS & CONDITIONS FOR :D.G. Set

A – OPERATION AND MAINTENANCE

1. The Work shall be carried out as per CPWD General Specifications for Electrical Works Part I Internal – 2013, Part VIID.G. Set – 2013 as amended upto date and as per manual for such works wherever applicable. Safety procedure as indicated in General Specifications for Electrical work as amended upto date should be followed.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates. Their bid shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Operator (E&M) - Should have passed ITI Diploma or equivalent in the trade.

OR
 10th pass with 3 years practical experience in the trade.
 OR
 Electrical workman's license (certificate of competency Class- II)
 with 3 years practical experience in the trade.
 - b. Khallasi (Electrical) - Physical fitness for unskilled work and who have put in at least three years continuous service.
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages rates shall be imposed on the contractor.
5. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of D.G. Set and equipment etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
8. Materials for minor repairs such as Gaskets, Gland Dori, Grease, Indicating Lamps, Lamps of Response Indicators, Resistors, Transistors, Fuse Holders, Switches, Fuses, Thimbles, Loose wires, Panel Glass, MS Box, Neon Lamp, Distilled Water, Petroleum Jelly, Battery Acid, Battery Lead, Clamps, Dusters/ Cotton Waste, Soap, Broom CTC, Nuts, Bolts shall be provided by the contractor. Nothing extra shall be paid on this account, hence is advised to quote his rates accordingly.
9. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor at his own cost.
10. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
11. No material will be taken out of premises without written permission of Engineer-in-Charge or his representative field engineer.

12. Watch & ward of installation/ equipments covered in this work in building and cleanliness of all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.
13. The contractor shall prepare a Sub Head Item wise “fortnightly/Monthly” duty chart with name and duty hours of workers engaged stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
14. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/ replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.
15. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced within 48 Hrs. by the contractor. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
16. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm. Consequently any compensation payable shall be at the contractor cost and department shall not give any compensation.
17. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
18. If any worker goes to court for any reasonable or unreasonable issue, which shall be sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any current running bill/ final bill of the contractor.
19. Damage to the building & machinery, if any, will be made good by the contractor at his own cost.
20. Maintain the log books for D.G. Sets and keep the installation in working condition. If any deficiency observed in DG Set, the contractor will immediately inform to Client Deptt./ JE(E)/ AE(E) and will make all efforts to remove the faults immediately.
21. In case the departmental staff is posted or due to some other reasons, the department reserves the right to terminate the contract in full or part thereof.
22. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory, by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning any reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
23. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or malfunctioning of the equipment or by negligence of the staff.
24. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
25. In case of break down of any system the matter has to be reported to the JE(E)/ AE(E)/Engineer-in-Charge immediately. In case of failure of electric supply from BSES, written complaint is to be lodged with BSES and inform to the JE(E)/ AE(E) of the department, immediately.
26. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
27. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contractor.
28. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
29. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account

deemed to be included in the items, nothing extra shall be paid on this account, so contractor is advised to quote his rates accordingly.

30. The rates quoted by Firm/ Contractor shall be inclusive of all taxes such as GST or any other tax etc. and nothing extra shall be paid on this account.
31. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity on orders of EE(E), AE(E)/ JE(E) for which no additional payment will be made to the contractor. If contractor refuses to do so, then recovery as decided by Engineer-in-Charge shall be made from the bill of contractor.
32. Time and place of duty shall be fixed by the AE(E)/ JE(E) in-charge. This can be changed as per requirement of site/ Sub Division in any building under the Sub-Division & other building as per direction of JE(E)/ AE(E) in-charge.
33. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine on daily basis to AE(E)/ JE(E) in-charge.
34. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work only.
35. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS.
36. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
37. Rates quoted by the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
38. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
39. The contractor has to insure that:
 - a. In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b. In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c. Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
40. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.

B – COMPREHENSIVE MAINTENANCE

1. The work shall be carried out as per CPWD General Specifications for Electrical Works (Part-I-Internal)-2013 & (Part-II-External)-1995 and for D.G. Set work (2013) as amended upto date, and shall comply with the Indian Electricity Rules 1956/Acts. B.S.I. code of Practice etc. as applicable in force amended upto date.
2. The work has to be carried out at DDU Hospital, Hari Nagar, New Delhi and the contractor shall visit the site, at this own cost, before quoting his rates/ offer shall take all factors into account.
3. The contractor will have to carry out following works in the Routine Maintenance of DG Set.
 - a. A/B/C checks as per schedule and as per norms recommended by manufacturer.
 - b. Diagnosis/Rectification of various faults of Engine, Alternator and AMF Panel.
 - c. Preventive maintenance of alternator & AMF Panel.
 - d. To attend the complaint on priority basis within 48 hrs. of its lodging otherwise a recovery as decided by Engineer-in-Charge will be made from the bill of contractor for each default.
 - e. All required spare parts other than covered in schedule of work will be provided by the department.
 - f. The Contractor shall depute their Electrical & Mechanical Engineer at least once in month during the contract period for routine checking.
 - g. Major repair/ overhauling are out of scope of contract.
4. A recovery as decided by the Engineer-in-Charge for non visit of engineer at site will be made from the bill of contractor for each default/absence.
5. No T&P will be provided to the agency by the department.
6. The contractor has to carry out the following in the scope of work during service.
 - a. Change of Engine oil and filters.
 - b. Cleaning of air cleaner.
 - c. Checking of all air cleaner hoses external pipes of oil cooler etc. for leakages and replacement of the same if necessary.
 - d. Tightening of all the mounting fasteners.
 - e. Checking and readjustment of tappet setting.
 - f. Checking and readjustment of fuel pump timing.
 - g. Cleaning of centrifuge filter at regular intervals (if provided).
 - h. Cleaning of battery terminals and applying petroleum jelly.
 - i. Checking and tightening of all the external fasteners of engine.
 - j. Checking all the fasteners of engine.
 - k. Checking all the instruments/ gauges for proper working and advising for replacement of the same if found defective.
 - l. Checking and advising operator for maintaining log book.
 - m. Testing the engine on load for at least half an hour after every service.
 - n. Attending to the minor faults in AMF Panel/Alternator.
 - o. Changing of carbon brushes on Alternator if required.
 - p. Advising customer if any abnormality found in the loading pattern.
 - q. Advising customer on any of the rectification work to be done to improve the overall efficiency of the machine.
 - r. Checking of MCCB, Contactors, Play Relays, Battery Charger, AMP Meter, Frequency Meter, Volt Meter, Fuses of AMF Panel etc.
7. All the dismantle material shall be returned to the department.
8. All the materials, whatsoever to be supplied and provided by the Contractor should be of standard and approved quality. The materials will have to be got approved, before use,

from Engineer-in-Charge. No payment will be made for unapproved or rejected materials used on the work. The rejected material will have to be removed by the department at the risk and cost of contractor.

9. In case of any hindrance or Suspension of work for any reason beyond the control of this office, no claim for idle labour shall be entertained.
10. Any damage to building/ road while executing the work should be made good immediately to the satisfaction of the department. All scrap/malba should be removed within 3 days. In case of failure to do so, the same will be got done by the department at Contractor risk and cost.
11. The contractor shall be responsible for watch and ward of the installation till the time the installation is handed over to the department after completion of work in all respects.
12. The work is to be carried out in the Existing Building without disturbing the client department and nothing extra will be paid on account of idle labour etc.
13. The contractor shall be responsible for watch and ward of the installation till the time the installation is handed over to the department after completion of work in all respects.
14. The work involves specialized staff in the field. The firm is directed to engage fully trained staff well-versed with the works.
15. Following amount will be recovered from the contractor's bill if the complaint are not attended within the stipulated time as follows:-
 - a) Complaint attended within 48 hours for repairs - NIL
 - b) Complaint attended beyond 48 hours for repairs - Rs. 100/- per hour

ADDITIONAL TERMS AND CONDITION OF DG SET & ALTERNATOR

1. Type of work involve Operation, testing and routine maintenance of D.G. Set, Alternator along with panel, batteries:
2. The maintenance work shall be done as per Rules & specifications of CPWD and as per I.E. Rules and acts as amended upto date.
3. The contractor's personnel will be required to provide maintain the log book and other records as prescribed by the department.
4. All installations and LT Panel Room shall be kept clean and safe from risk of fire/theft/accidents and damage etc.
5. The major repair of following nature are not in scope of work of contract:-
 - a) Major repair of switch gears, cables
 - b) Major repair of installation such as ACB's switch gears, change of HRC Fuses, PT & CT's.

However, the contractor shall intimate immediately without loss of time to site Engineer for occurrence of such fault.
6. Before starting the work the contractor shall take over the inventory any short comings noticed at the time of taking over shall be brought to the notice of JE(E). Failing which it shall be presumed that the site has been taken over in perfect working order.
After completion of the work against the agreement, the inventory shall be handed over as per direction of Engineer-in-charge or his authorized representative. In case any short fall or damage to the installation is noticed, the contractor shall make good the same the same make equipment or as per direction of Engineer-in-Charge, failing to do so, the recovery shall be effected from the bill.
7. The contractor shall make his own arrangement of tools for maintenance of DG Set. Further T&P required at the site shall be arranged by the contractor & following T&P shall always be available at the site of work.
 - a) Tong tester
 - b) Gloves – 2 Sets
 - c) First Aid Box
 - d) Crimping Tool Kit
 - e) Megar (500 volts LT)
 - f) Spanner Set
 - g) Screw Driver set
 - h) LN Keys set
 - i) Earth Tester
 - j) Blower

Before start of contract these T&P materials must be kept in a lockable box, otherwise contract can't be considered started.
8. The routine preventive maintenance of DG set shall be carried out during holiday/ Sunday without disturbing the office working of client department.
9. The following work should be carried out once a year through special technical staff, general servicing of AMF Panel & LT Panel.
10. Diesel Mobil oil etc. for operation of D.G. Sets will be issued by the department. Contractor will maintain diesel consumption record and consumption of diesel shall be checked by JE(E) & AE(E) monthly. If diesel issued to the contractor does not tally with the consumption statement. Necessary recovery shall be made from the bill of contractor for balance diesel.

11. a). The D.G. Set operator shall test the D.G. Set on no load daily in the morning for 5 minutes run and D.G. Set shall operate in case of failure of normal electric supply from supply company.
12. The recovery on account of non-conducting the periodical checks/ test as mentioned in Annexure E-1 shall be imposed as under:-
 - a. For non-conducting of Daily checks/ test @ Rs. 200/- per set of daily check/ test.
 - b. For non-conducting of Weekly checks/ test @ Rs. 500/- per set of weekly check/ test.

PERIODICAL TESTING AND MAINTENANCE DG SET & ALTERNATOR**Daily Checks**

- a) Generator operated on no load
- b) Generator operated on connected
- c) Radiator filled/ no leakage
- d) HSD oil tank level check
- e) Mobil oil check
- f) Battery charging check
- g) Terminal check
- h) Distilled water of battery check
- i) Checking of working of instruments, meters etc.
- j) Physical inspection

Weekly Checks

- a) Change-over switch operated checked
- b) Cable terminals connection checked
- c) Cleaned/ check all terminals
- d) AMF Panel-relays contacts, terminals Checked and for its operation
- e) Driving/ V – belt check
- f) Filters clean
- g) Checking of neutral and earth connections

TERMS AND CONDITIONS FOR SUB HEAD – III – HVAC

1. The Work shall be carried out as per CPWD specifications for electrical works & Air Conditioning – 2017 as amended upto date and as per manual for such works wherever applicable.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates/ offer shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Mechanic (AC&R) -
 - a). Should have passed ITI Diploma or equivalent in the trade.

OR

 - a). Pass in Matriculation
 - b). Must have undergone 12 (Twelve) Months refgn. Mechanics or equivalent courses in a recognized Technical Institute and must have served one year apprenticeship in reputed firm or organization of A/C and Refgn. Engineers.

OR

2 years apprenticeship in reputed firm or organization of A/C and Refgn. Engineers.

OR

A minimum of two years experience as in A/C or Refgn. Serviceman or as a Jr. Mech. or in any other skilled capacity on the main. & inst. Of water coolers Refgn. Room A/C and small A/C and cold storage plants.
 - b. Khallasi (Electrical) - Physical fitness for unskilled work and who have put in at least three years continuous service.
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages rates shall be imposed on the contractor.
5. The contractors shall maintain the log book with daily entry of operation & satisfactory state of ACs/ Systems. The log book shall be duly signed by the staff on duty put up for checking on each day to the JE(E)-in-charge and to the Assistant-in-charge at least weekly.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor.
8. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
9. No material will be taken out of premises without written permission of Engineer-in-Charge.
10. Damage to the building & machinery if any will be made good by the contractor at his own cost.
11. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
12. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
13. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/ replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.

14. Watch & ward of installation in building and its cleanliness all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.
15. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning and reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
16. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced within 48 Hrs. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
17. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm. Consequently any compensation payable shall be at the contractor cost and department shall not given any compensation.
18. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
19. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity only for attending to some urgent nature of work in the building on order of JE(E), AE(E)/ EE(E) for which no additional payment will be made to the contractor. If contractor refuse to do, then recovery as decided by Engineer-in-Charge per instruction shall be made from the bill.
20. If any worker goes to court for any reasonable or unreasonable issue, which is actually the sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any bill current or otherwise.
21. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
22. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contractor.
23. The contractor shall take all precaution for safety of the workmen. If any accident / mis-happening occurs, the department shall not be responsible for the same. Consequently any compensation payable shall be at the contractor cost.
24. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
25. The installation shall be handed over on "as is where is" basis and nothing extra shall be paid towards pre-maintenance as the equipments are in running condition. However, in minor electrical case parts are required, the same shall be arranged by the department free of cost but shall be replaced by the contractor for which nothing extra shall be paid.
26. After the expiry of the contract, the firm shall have to hand over complete, installation to the department in proper working order. All defect and deficiencies shall have to be rectified by the firms to the entire satisfaction of Engineer-in-Charge failing which the work shall be got done at the risk and cost of the firm.
27. Material required for repair/replacement shall be supplied by the department free of cost. Contractor shall make arrangement for receiving the material from the store of JE (E). Contractor shall maintain daily issue register & shall submit requisition for material required for day to day maintenance.
28. Maintenance activities carried out as per this schedule should be noted in the Maintenance Register. When tests are carried out, the test results should be recorded with appropriate identification references. If results are not satisfactory in any part of the Installation, reason should be checked and corrective action should taken immediately.

29. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account deemed to be included in the items, nothing extra shall be paid on this account.
30. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine daily basis to JE(E).
31. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work.
32. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS.
33. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
34. Rates quoted be the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
35. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
36. The replacement of compressor shall be done in the presence of Assistant Engineer (E)-in-charge and the certificate in this regard shall be given to the concerned Assistant Engineer (E).
37. Serial No. of compressor shall be mentioned in the measurement book & challan of purchase of material shall be kept in the sub division office.
38. WTAC Kit shall be replaced in the presence of Assistant Engineer (E)-in-charge and the certificate in this regard shall be given to the concerned Assistant Engineer (E) & challan of purchase of material shall be attached with the bill.
39. The contractor has to insure that:
 - a. In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b. In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c. Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
40. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.

41. Persons engaged in maintenance works should be competent for the type of work involved and should possess necessary license.
42. The recovery on account of non-conducting the periodical checks/ test as mentioned in Annexure – 'F' shall be imposed as under:-
 - e. For non-conducting of Daily check/ test @ Rs. 200/- per set of daily check/ test.
 - f. For non-conducting of Weekly check/ test @ Rs. 500/- per set of weekly check/ test.
 - g. For non-conducting of Monthly check/ test @ Rs. 2000/- per set of monthly check/ test.
 - h. For non-conducting of Half Yearly checks/ test @ Rs. 4000/- per set of half yearly check/ test.
 - i. For non-conducting of Yearly checks/ test @ Rs. 6000/- per set of yearly check/ test.

PERIODICAL TESTING AND MAINTENANCE AC PLANT

Daily Checks

- a) Checking of motors and starters for overheating.
- b) Checking of water level and ensure flow of makeup water (Condenser and Chiller Water System)
- c) Checking of temperature in Cooling tower, condenser in Air Conditioning area.

Weekly Checks

- a) Checking of refrigerant leak with Halide torch
- b) Checking of water distribution/ cooling water nozzles
- c) Checking of float valve operation in water tank and expansion tank
- d) Checking and cleaning of Air Filters, pot strainers basket.
- e) Checking of belt tension and alignment
- f) Checking of Pump gland
- g) Checking of solenoid valve
- h) Cleaning of water strainers
- i) Cleaning of drain and overflow points
- j) Draining, flushing, water tank and troughs
- k) Checking of oil ring/ oil level (for all lubricated bearings).

Monthly Checks

- a) Blowing out motor dust.
- b) Checking of all settings and test operation of all safety controls
- c) Checking/ cleaning of contracts points in straters.
- d) Cleaning of spray nozzles.

Half Yearly Checks

- b) Descale/ clean of water tubes in condensers and if necessary in chillers.
- c) Removing of grease from all bearing/ clean/ repack
- d) Checking all strainers
- e) Cleaning of cooling coil fins
- f) Cleaning/ Washing of Air filters
- g) Cleaning of stand pipe and spray headers in Air washers/ C.T.
- h) Checking of Hardness of Water.

Yearly Checks

- a) Checking of tighten hold down bolts and anchorages
- b) Checking of dampers/ damper operators
- c) Checking for obstruction/ loose boards/ fallen insulation on air ducts and R.A. passages.
- d) Checking of cabling for loose contracts.

B. SCOPE OF WORK FOR COMPREHENSIVE MAINTENANCE SERVICE (SPARES & LABOUR)

Contractor will provide labour & spares as detailed in this offer, to carry out the following, maintenance visits

A. PREVENTIVE MAINTENANCE

The following inspection items ensure your unit is operating reliably and efficiently through the cooling season.

PUMPS

Inspect pump seals and adjust if necessary. Check for any leaks.

If pressure gauges fitted, check operating pressures to ensure strainer clean and pump vented.

Check pump coupling, vibration & footing.

Check pump-motor bearings

Check starter operation.

To check that vent passages are not blocked.

MOTORS

Check and record the motor running current on all three-phases/ single phase.

Lightly lubricate motor bearings.

Check all connections and associated wiring.

To check the earthing conductor for continuity.

To clean motor. To make motor free from oil, dust and moisture.

To check the insulation resistance between respective terminals and frame.

COOLING TOWER

Checking of spray nozzles and float valves for water level.

Checking of Fan assembly for oil level, cleanliness, vibration and noise.

Checking splashing of water.

Checking of sump.

Checking of Nozzles.

Checking of water quality. pH should be between 6 & 8. NaCl- Below 750 ppm, SO₄- Below 1200 ppm, NaHCO₃- Below 200 ppm, Chlorine- Free residual not to exceed 1 ppm.

To flush & clean cooling tower to minimize the growth of bacteria including Legionella Pneumophila to avoid the risk of sickness or death.

Cleaning of louver, drift eliminators & easily accessible fill surfaces by moderate pressure water nozzles.

To observe, touch and listen to the tower.

To observe the operation of the motor, drive shaft, gear reducer and fan.

To check gear reducer oil level. To add oil if reqd.

Check operation of the float valve. Depress the operating level to make sure the valve is operating freely.

Check for any build up of silt on the floor of the cold water basin.

To re-lubricate motor.

To check to see that all bolts are tight in the fan and mechanical equipment region.

To visually inspect the drift eliminator. To remove any accumulated debris or scale.

Checking condenser for the following items:

a) Checking the water pressure drop.

- b) Checking flow switch operation.
- c) Cleaning of Condenser tubes. (Chemical will be provided by CONTRACTOR)

Checking the cooler for the following items:

- a) Checking the water pressure drop.
- b) Checking flow switch operation.
- c) Cleaning the refrigerant level.

Checking the system for the following items:

- a) Conducting a leak check and identifying leak sources.
- b) Recording the condition of sight glasses.
- c) Checking the refrigerant cycle to verify the proper operating balance.
- d) Checking condenser water and chilled water heat transfer.

Comprehensive maintenance of WTAC Units, Split Type AC units, Water Coolers VRVF units, Desert Coolers

- a. Servicing of WTAC Units, Split Type AC units, Water Coolers VRVF, Desert Coolers units shall be carried out before start of summer season and as when required as per direction of Engineer-In-Charge.
- b. Scope of work includes replacement of all worn out/damaged parts including compressors and motor, cooling coil, condenser coil, grills, supplying and filling refrigerant etc.

(C). SPARES & CONSUMABLES INCLUDED

1. Sensor.
2. Transducer.
3. Micro board.
4. Power supply board.
5. Input/ Output board.
6. Switch Keypad.
7. EPROM.
8. Display board.
9. H P Cut out Switch.
10. Transformer.
11. Contactor.
12. Current Transformer.
13. Relief Valve.
14. Motor.
15. Sensor Level.
16. Heater immersion.
17. Valve Solenoid.
18. Valve Assy. Control.
19. Oil filter & Driers.
20. Nitrogen for Pressure Testing.
21. Chemical for Descaling.
22. Rewinding of Compressor Motor.
23. Compressor Parts, Replacement of Compressor parts.
24. AHU Motor Bearings, Belts, Pulley.
25. Pump Motor Bearings
26. Rewinding of pump/ AHU/ Cooling Tower Motor.

27. Refrigerant, Compressor Oil.
28. Supply and Replacement of cooling Tower Fills.
29. Supply & Replacement of Motorised Valves, Actuators, Thermostat.

(D). SPECIALLY EXCLUDED

- 1- Chilled water and condenser water treatment.
- 2- Supply, repair/ replacement/ Maintenance of Air Circuit Breaker/ MCCB
- 3- Tube Plugging
- 4- Supply and Replacement of Cooling Coil
- 5- Supply of Air Filters.
- 6- Replacement/ Repairing of water line valves.

(E). VALUE ADDED SERVICES

Besides the above, Contractor will also carry out following services-
Contractor will submit the Daily Report having the details regarding energy consumption, complaints during the day and action taken, spares consumed, maintenance carried out etc.

Contractor will submit the Monthly Report incorporating the detail regarding energy consumption during the month, monthly cost comparison, complaint summary, Preventive maintenance detail, work done during the month, areas of concern, AMC management, breakdown till date, modification and upgrade required, material/ spares required etc.

Contractor will submit the Quarterly Report incorporating all above data on Quarterly basis and detail of event for next quarter.

Contractor will submit the Annual Report having consolidated data for entire year including, comparison for energy consumption, energy cost, spares consumption/ cost, complaint/ breakdown analysis, maintenance work analysis and recommendation for repairs/ modification/ up gradation.

TERMS AND CONDITION:-

- | | |
|----|---------------------------------------------------------------------------------------------------------------|
| 1 | To review previous operation log records and alarm history. |
| 2 | To check oil & refrigerant levels, pressure and temperatures. |
| 3 | To check for sign of refrigerant leakage i/c top up, filling of refrigerant as and when required. |
| 4 | To check proper loading/ uploading operation of compressors i/c make proper repair if required. |
| 5 | To check operation of safety controls/ microprocessor i/c repair/replacement of parts |
| 6 | To check and repair the compressor, motor, starter and associated interlocks i/c cooling tower, AHU etc. |
| 7 | To check the all terminals, tighten it and to clean electrical panel of machine. |
| 8 | To de-scale the condenser when found necessary. |
| 9 | To replace the contractor, relay, push button, single phase preventor and starter i/ wiring of control panel. |
| 10 | Make regular inspection visits and check the proper operation of machines. |

Preventive maintenance of the AC plant

- 1 To replace the oil filters, driers & compressors oil if found necessary based on OEM recommendations.
- 2 To replace the cooling tower fins i/c repair/replacement of all moving components of cooling tower.
- 3 To cleaning the filters i/c replacement of defective filters of all AHU
- 4 To operate the machine for 24 hours and set/ adjust the controls for optimum operation via a vis design parameter.
- 5 Test for leaks at point of oil traces and rectify the same.
- 6 Inspect starter contact point, transformer and motor terminals. Clean contacts, tighten motor terminals and control circuit terminals.
- 7 Check motor winding i/c repair the same.
- 8 Inspect, calibrate and adjust to original specification all safety and operating controls i/c low temperature and high pressure cutouts, motor protector and oil pressure controls.
- 9 Instruct operating staff and review daily logs.

Exclusion

- 1 Any kind of atmospheric/normal wear and tear, corrosion, chemical pollution or rusting/pitting of the plant/ heat exchangers
- 2 Painting of the equipment.
- 3 Any kind of modifications including masonry work carpentry work/ rewiring/ ducting/ insulation/ rewiring of panel etc.
- 4 Any item or equipment as are recommended or required by insurance companies, government, states, municipal or other authorities.
- 5 Replacement of any equipment (Compressor, cooler, condenser) as a whole after completion of useful life
- 6 Any civil work like breaking/making of the walls, foundation etc.
- 7 Any work related to building management system
- 8 Any modification of plant.
- 9 Any civil/ masonry work.

General condition for operation and preventive maintenance

1. The contractor will execute the work i.e. "Comprehensive Annual Maintenance Contract for preventive and Breakdown Maintenance of Different rating and Types of Air conditioning units (Split ACs, Window ACs, air and water cooled Packaged Units, Fridge & water cooler etc. installed at various locations in Hospital, New Delhi. **The indicative inventory of installation is part of tender.**
2. Servicing of WTAC Units, Split type AC units, Water Coolers, VRVF, Desert Coolers, Refrigerator, Cassette Type AC, Tower AC units shall be carried out before start of summer season and as when required as per direction of Engineer-In-Charge.
3. Scope of work includes replacement of all worn out/damaged parts including compressors and motors, cooling coil, condenser coil, grill starting capacitor, Running Capacitor, blower, Blower motor, refrigerant gas, PCV Board, remote, Diverter Valves small submersible Pump, nitrogen cylinders, LPG & Oxygen, Copper pipe, Capillary tube, PVC Copper wire, Profilters of AC units, Pumps and other accessories of Desert Air Coolers etc. Supplying and filling refrigerant etc.
4. Ac's units and plants shall be handed over to agency in working condition in the start of agreement and after expiry of agreement agency shall have to handover the same in working condition to the Department, otherwise same shall be repaired/rectified on the cost of agency and shall be recovered from their dues towards the Govt. The decision of Engineer-In-Charge shall be final and binding on the agency.

Additional Terms & Conditions-

Comprehensive Maintenance of AC Plant (High Side)

1. The place of the installation comes under protected areas. Contractor shall intimate the Junior Engineer (E) in charge about all the antecedents of workers employed by him in writing.
2. Contractor shall generally act as per the direction of the department official. However, he may also have to accept the instruction from the client dep't. In the interest of works.
3. Contractors intending are strictly advised to visit the site so to ascertain the exact location and scope of work to be done and the method to be adopted him in carrying out the maintenance.
4. The electricity and water shall be provided free of cost by the deptt. For any maintenance/ repair work to be done by the contractor on AC plant.
5. The inside conditions to be maintained in the air conditions rooms/ areas connected to this plant during operation shall be as below

	Temperature	- humidity :-
a). Summer & Monsoon	23 to 25 degree C	45% to 55%
b). Winter	21 to 23 degree C	45% to 55%

The Contractor/Firm has to maintain the temperature & humidity as mentioned above and also maintain the records of the temperature of each rooms / area. If above temperature & humidity in any room/ area is not maintained within above limits then a non refundable recovery @ Rs 1000 per room/ per day shall be made from the contractor.
- c). All the prescribed checks as mentioned in NIT (maintenance) of CPWD general specifications for HVAC works (2017) and amended upto date are to be carried out within the scope of work of this contract & within tendered rates. Any default from it will attract penalty/ non refundable recovery @ Rs 1000 per default per day.
6. All spars and materials required beyond the scope of work shall be supplied by the department free of cost. However incase of any loss or misuse of any spare or material on account of negligence of the contractor's staff. Suitable recovery shall be effected from the contractor's bill for which Engineer-In-Charge decisions will be final and binding.
7. The contractor shall arranged for the spare or emergent work not in scope of work if asked to execute & shall arrange for the spares on Market Rates. In no case contractor shall suspend the work & will have to complete the work.
8. Plants shall be handed over to agency in working condition in the start of agreement and after expiry of agreement agency shall have to handover the same in working condition to the Department, otherwise same shall be repaired/rectified on the cost of agency and shall be recovered from their dues towards the Govt. The decision of Engineer-In-Charge shall be final and binding on the agency.
9. The AC mechanic, operator employed by the firm shall check the general safeties for the plant of every days as per CPWD specifications and recommendation of OEM's as per the format decided by Engineer-In-Charge.
10. Engineer shall visit the site every fortnightly and ensure the proper functioning of the system.
11. Replacement of cable is not covered in the work, however if these found defective contractor will inform it to the department for taking suitable action to rectify the same in time.
12. The following staff employed should have qualification as under:-

13. The Qualification and experience of operator/Technician/Electrician/AC mechanic should be as give below:-
- a. ITI passed in E&M trade or equivalent with 1 year experience in operation of AC plant and in attending control room functions.
- Or
- c. 10th passed with 3 years experience in operation of AC plant and in attending control room functions.
14. The agency shall comprehensively maintain technically throughout the execution of contract for high side of this existing Central AC plant so that entire system works satisfactory. The lowest bidder shall submit an undertaking to the department that OEM shall provide all the spares required for healthy functioning of the equipments throughout the contract period on payments basis by the lowest bidder.

1. SCOPE OF WORK

(I) Comprehensive maintenance of the AC Plant: - Preventive maintenance shall be done and all break down **calls** shall be attended and the following shall be included:-

- a) Checking the functioning of chiller units/Air Handling units/pumps/cooling towers/controls and all such equipment covered under the contract.
- b) Free replacing of defective/worn out parts with new or repaired parts.
- c) Repairing of equipment at site/service station as the case may be.
- d) Descaling of condensers/ chemical cleaning of evaporator coils/ replacement of pre filters based on working parameters of the plants.
- e) Replenishing Refrigerant gas and compressor oil in the system arising out of system defect.
- f) Checking of compressor for its proper working.
- g) Annual pumping down and restarting as and when required.
- h) Checking of microprocessor control panel, control boards, transducers of packaged chillers/ condensing unit for their correctness and replace if necessary.
- i) Replacing of parts due to normal wear and tear.

(II) Operation of the AC Plants:-

i) Daily Checks and services included:-

- a) Wherever applicable, operators shall register operating status of the system, condenser chilled water temperature and pressures at the inlet outlet of heat exchangers, voltage and current on hourly basis during operating hours in log sheets.
- b) Keeping all equipment externally cleaned.
- c) Checking water level and float valve operations in cooling towers, make up water and expansion tank, check compressor oil level wherever applicable.
- d) Checking all the rotating machines for smoothness of drive, vibration and noise level.
- e) Checking and adjusting belt tension of all V belt drives, if required.
- f) Checking of starters for smooth operations.
- g) Daily logging of operating parameters.

(ii) Monthly checks and services include:-

- a) All bearings will be checked and lubricated if required.
- b) Alignment of driven machine with driving machine will be checked and rectified if required.
- c) Evaporator coils will be inspected and cleaned with compressed air or water if required.
- d) Refrigeration piping and shaft seal wherever applicable will be inspected for sign of external leak.
- e) Checking gland leakages of the pump/valves.

In addition to above monthly checks the below mentioned checks monthly and yearly will also be done by the contractor.

Chiller	Monthly Inspection And Service	<ol style="list-style-type: none"> 1. Check refrigerant level, leak test with electronic leak detector. If abnormal, trace and rectify as necessary, inform department in writing on the rectification. 2. Inspect level and condition of oil. If abnormal, trace fault and rectify as necessary. Inform department in writing on the rectification. 3. Check the liquid line sight glasses for proper flow.
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		<ol style="list-style-type: none"> 4. Check all operating pressure and temperature. 5. Inspect and adjust, if required, all operating safety controls. 6. Check capacity control, adjust if necessary. 7. Lubricate vane/linage/bearings. 8. Visually inspect machine and associated components, and listen for unusual sound or noise for evidence of unusual conditions. 9. Check lock bolts and chiller spring mount. 10. Review daily operating log maintained operating personnel. 11. Providing written report to Department, outlining services carried out, adjustment made³, rectification carried out and if the deficiency is of a major nature, arrange with department for shut-down to rectify equipment.
Chiller	Annual Inspection prior to expiry of comprehensive maintenance contract	<ol style="list-style-type: none"> 1. Perform all functions for monthly check 2. Check all flanges for tightness 3. Change oil in oil sump 4. Replace filter 5. Check oil temperature control 6. Check motor terminals 7. Check connections in starter <p>Please note that oil filter gasket replacement shall deem to be included in the contract</p> <ol style="list-style-type: none"> 1. Check motor earthing, magger motor and connection wiring on each leg. 2. Check motor temperature cut-out, tighten motor terminals. 3. Check starter contacts, arc shield, transformer. 4. Check dashpot oil, clean dashpot and replace oil when necessary. 5. Test and calibrate overload setting. 6. Inspect, calibrate and adjust to original specifications all gauges, safety and operating controls including low temperature and high pressure cutout, oil pressure switch, load limit relay and electrical interlocks. 7. For water cooled condenser systems, inspect condenser tubes contractor shall carry out cleaning of the tubes at his own expense. 8. For air-cooled condenser coils, dust should not be allowed to accommodate on the condenser coil surfaces. Cleaning should be as often as necessary (approximately every three months) to keep coil clean. Exercise care when cleaning the coil, so that the coil fins are not damaged. Under no circumstances this unit be cleaned with acid based cleaner.

Water pumps	Monthly inspection	<ol style="list-style-type: none"> 1. Inspect all water pumps. 2. Check all seals, glands and pipelines for leaks and rectify as necessary. 3. Re-pack and adjust pump glands as necessary. 4. Check all pump bearings and lubricate with oil or grease as necessary. 5. Check the alignment and condition of all rubber couplings between pumps and drive motors and rectify as necessary. 6. Check all bolts and nuts for tightness and tighten as necessary.
Water pumps	Annual Inspection prior to expiry of comprehensive maintenance contract	<ol style="list-style-type: none"> 1. Perform all function for monthly checks 2. Check motor earthing, meggar motor and connection wiring on each leg. 3. Tighten motor terminals. 4. Check starter contacts 5. Test and calibrate overload setting.
Air handling units and fan coil units	Monthly inspection	<ol style="list-style-type: none"> 1. Inspect all air handling and fan coil units. 2. Check all air filters and clean or change filters as necessary. 3. Check all water coils, seals and pipelines for leaks and rectify as necessary 4. Check and re-calibrate modulating valves and controls. Adjust and rectify as necessary to ensure compliance to the original specifications. 5. Purge air form all water coils. 6. Check all fan bearings and lubricate with grease as necessary. 7. Check the tension of all belt drives and adjust as necessary. 8. Check and clean all the condensate pans, trays and drains. 9. Check measure and re-calibrate all sensors if necessary. 10. Check, clean and service smoke detectors. Carry out a system test to ensure that the smoke detector will trip the AHU's 11. Check spring vibration isolators for abnormal vibration. Rectify if necessary. 12. Coil to be cleaned by (a) spray of high-pressure clean water (not exceeding 30psi (b) with chemical spray, if necessary.)
Air handling units and fan coil units	Annual Inspection prior to expiry of comprehensive maintenance contract	<ol style="list-style-type: none"> 1. Perform all function for monthly checks 2. Tighten motor terminals. 3. Check starter contacts 4. Test and calibrate overload setting.

Air cooled packaged units and precision computer air-condition equipment.	Monthly check	<ol style="list-style-type: none"> 1. Check condenser fan motor load ampere. 2. Check fan and motor mounting brackets. 3. Check shafts and bearings. Lubricate with grease as necessary. 4. Check the tension of all belt drives and adjust as necessary. 5. Check for refrigerant leaks with electronic leak detector. 6. Check electrical terminals and contactors operation and connections for tightness. 7. Check compressor motor current. 8. Check refrigerant line driers and moisture indicators.
Air cooled packaged units and precision computer air-condition equipment.	Annual Inspection prior to expiry of comprehensive maintenance contract	<ol style="list-style-type: none"> 1. Perform all functions listed in the monthly checks

Just before the expiry of the contract, the contractor shall carry out a complete system operability test on all the systems or sub-systems.

(III) EXCLUSIONS:-

- a) Repairs and / or replacement of any spare or equipment due to ageing and damage due to external factors to the equipment. All requirements arising out of normal wear and tear and/or normal break down shall be covered under the contract.
- b) Repairs or replacement of AHU coils and bottom trays.
- c) Repairs or replacement of water piping / gate valve/ globe valve modulating and mixing valve, make up water and expansion tank, insulation, ducting, sheet metal, outdoor condenser coils, refrigerant piping, back cover, front grills, dampers, grills, diffusers, false ceiling, doors, locks, gasket, heating elements, auto defrost system, hinges door bell, light fixtures and bulbs.
- d) Any kind of masonry, structural and carpentry Work.
- e) Cooling tower structural, fills, louvers and air washer internals.
- f) Painting of plant and associated equipment.
- g) Main electrical panel for the system with all components.
- h) Repairs to or replacement of, electrical installation like cabling, switch boards, isolators, panels, strip heaters, ammeters, voltmeters and other such instruments external to the equipment.

(IV) Before the start of work and taking over the comprehensive maintenance of the AC Plants thorough inspection shall be carried out and any spares or repairs required shall be intimated.

- 2) The work shall be carried out as per CPWD specifications for HVAC work as amended upto date.
- 3) Electrical and mechanical works shall be carried out in accordance with the CPWD specifications.
- 4) The general condition of the plant should be maintained to the entire satisfaction of the Engineer – in – charge.
- 5) A site order book shall be maintained and will be available with the JE (E) in- charge at site. All the instructions to carry out the works, defects to be attended by the contractor shall be recorded in the site order book and the contractor shall note and sign the entries time to time and should take action accordingly.
- 6) The contractor shall maintain a register of attendance of staff and produce the same for inspection by deptt. Officers as and when required. If any operational staff found absent the recovery shall be made as follows.

- | | |
|----------------|------------------------|
| a) Operator | - Rs. 1500 per Shift |
| b) Electrician | - Rs. 1500/- Per Shift |

- c) Mechanic/Supervisor -Rs. 1500/- Per Shift
- d) Khallasi/Helper -Rs. 1000/- Per Shift

- 7) The log book and maintenance register of the plant shall be filled up regularly. The blank log book and maintenance record book shall be arranged by the contractor as required.
- 8) Watch and ward & safe custody of all the equipment shall be the responsibility of the contractor.
- 9) Any loss or any damage to machinery due to faulty operation / mishandling shall have to be made good by the contractor at his risk and cost. In the event of failure, suitable recovery shall be affected from the contractor's bill for which Engineer-in-charge decision will be final and binding on the contractor.
- 10) The contractor shall have to arrange for issue of identity cards to all the staff member deployed on the work and contractor shall submit bio-data of all the staff members within one week of the start of the work to the Engineer –in – charge.
- 11) In case of major break down in Ac unit (i.e. compressor, Chiller), the same shall be repair within one month failing which thereafter Rs. 3000/- Per day per AC unit shall be recovered from the contractor's bill.
- 12) The contractor will depute well experienced Technical qualified & professional staff at site.
- 13) The department will not be responsible for any kind of human injury / loss of life during duty hours.
- 14) The contractor staff will have no claim for permanent employment in the department.

Comprehensive Maintenance of Audio Visual system & Event Management.

1. The work included the repair/ replacement & check up of all the system and equipment installed and at auditorium of microphone cell and attending all type of faults in system within 24 Hours of call.
2. Proper records should be maintained for servicing etc.
3. The contractor should attend the system twice a month for preventive maintenance/routine maintenance.
4. The contractor shall depute one engineer for important VIP function free of cost for rectification of fault immediately.
5. Inventory includes audio amplifier, projector, sound mixer, light panel, speakers, Podium mike, cordless mike, stage lights.
6. Agency participate in the bid are advised to visit the site before unloading the tender and satisfy themselves on the fitness & functioning of system once taken over for operation & maintenance no complain shall be entertained and work have to carried out within the quoted rates. Also should submit the authorization from manufacturer of the item installed, for spare backup during the entire period of agreement.
7. Availability of all the spares required for day to day maintenance of above system shall have to the ensured by agency at all the time. Times not covered under the scope of the agreement byt required to keep the system functional, will have to be conveyed by agency to department in wiring & well in advance.
8. All consumable like log books, batteries for microphones, cleaning materials shall be arrange by the agency.
9. Staff deputed shall be well qualified & experienced. An interview shall be taken of the staff proposed by the controlling officers of the department & they shall be selected on the merits of their qualification & experienced. No staff shall be deployed without permission of the Engineer-In-Charge.
10. The contractor shall maintain “ **attendance register/biometric system**” in support of the attendance of the staff and the same shall be got periodically checked from JE(E)/AE(E) concern. Failure to which suitable recovery will be made form the contractor bill as decided by the Engineer-In-Charge.

TERMS & CONDITIONS FOR SUBSTATION

1. The Work shall be carried out as per CPWD General Specifications for Electrical Works Part I Internal – 2013, Part IV Sub Station – 2013 as amended upto date and as per manual for such works wherever applicable. Safety procedure as indicated in General Specifications for Electrical work as amended upto date should be followed.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates. Their bid shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Operator (E&M)/ Wireman - Should have passed ITI Diploma or equivalent in the trade.

OR

10th pass with 3 years practical experience in the trade.

OR

Electrical workman's license (certificate of competency Class-II) with 3 years practical experience in the trade.
 - b. Khallasi (Electrical) - Physical fitness for unskilled work and who have put in at least three years continuous service.
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages rates shall be imposed on the contractor.
5. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of Sub Station equipment etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
8. Materials for minor repairs such as Gaskets, Gland Dori, Grease, Indicating Lamps, Lamps of Response Indicators, Resistors, Transistors, Fuse Holders, Switches, Fuses, Thimbles, Loose wires, Panel Glass, MS Box, Neon Lamp, Distilled Water, Petroleum Jelly, Battery Acid, Battery Lead, Clamps, Dusters/ Cotton Waste, Soap, Broom CTC, Nuts, Bolts shall be provided by the contractor. Nothing extra shall be paid on this account, hence is advised to quote his rates accordingly.
9. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor at his own cost.
10. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
11. No material will be taken out of premises without written permission of Engineer-in-Charge or his representative field engineer.
12. Watch & ward of installation/ equipments covered in this work in building and cleanliness of all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.

13. The contractor shall prepare a Sub Head Item wise “fortnightly/Monthly” duty chart with name and duty hours of workers engaged stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
14. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.
15. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced within 48 Hrs. by the contractor. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
16. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm. Consequently any compensation payable shall be at the contractor cost and department shall not give any compensation.
17. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
18. If any worker goes to court for any reasonable or unreasonable issue, which shall be sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any current running bill/ final bill of the contractor.
19. Damage to the building & machinery, if any, will be made good by the contractor at his own cost.
20. Maintain the log books for Sub Station and keep the installation in working condition. If any deficiency observed in Sub Station, the contractor will immediately inform to Client Deptt./ JE(E)/ AE(E) and will make all efforts to remove the faults immediately.
21. In case the departmental staff is posted or due to some other reasons, the department reserves the right to terminate the contract in full or part thereof.
22. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory, by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning and reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
23. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or malfunctioning of the equipment of by negligence of the staff.
24. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
25. In case of break down of any system the matter has to be reported to the JE(E)/ AE(E)/Engineer-in-Charge immediately. In case of failure of electric supply from BSES, written complaint is to be lodged with BSES and inform to the JE(E)/ AE(E) of the department, immediately.
26. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
27. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contractor.
28. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
29. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account deemed to be included in the items, nothing extra shall be paid on this account, so contractor is advised to quote his rates accordingly.
30. The rates quoted by Firm/ Contractor shall be inclusive of all taxes such as GST or any other tax etc. and nothing extra shall be paid on this account.

31. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity on orders of EE(E), AE(E)/ JE(E) for which no additional payment will be made to the contractor. If contractor refuses to do so, then recovery as decided by Engineer-in-Charge shall be made from the bill of contractor.
32. Time and place of duty shall be fixed by the AE(E)/ JE(E) in-charge. This can be changed as per requirement of site/ Sub Division in any building under the Sub-Division & other building as per direction of JE(E)/ AE(E) in-charge.
33. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine on daily basis to AE(E)/ JE(E) in-charge.
34. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work only.
35. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
36. Rates quoted by the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
37. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
38. The contractor has to insure that:
 - a) In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b) In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c) Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
39. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.

ADDITIONAL TERMS AND CONDITION OF SUB-STATION

1. Type of work involve Operation, testing and routine maintenance of sub-station equipment comprising of transformers, HT Panels, LT Panels emergency panel, APFC panels, by pass panels etc.
2. The maintenance work shall be done as per Rules & specifications of CPWD and as per I.E. Rules and acts as amended upto date.
3. The contractor's personnel will be required to provide maintain the log book and other records as prescribed by the department.
4. All installations and LT Panel Room shall be kept clean and safe from risk of fire/theft/accidents and damage etc.
5. The major repair of following nature are not in scope of work of contract:-
 - a) Major repair of switch gears, cables
 - b) Major repair of installation such as ACB's switch gears, change of HRC Fuses, PT & CT's.

However, the contractor shall intimate immediately without loss of time to site Engineer for occurrence of such fault.
6. All minor repairing works shall be carried out by the contractor to make the Sub Station functional within the quoted rates.
7. The recovery on account of non-conducting the periodical checks/ tests as mentioned in Annexure –G-1 shall be imposed as under:-
 - a. For non-conducting of Daily check/ test @ Rs. 200/- per set of daily check/ test.
 - b. For non-conducting of Weekly check/ test @ Rs. 500/- per set of weekly check/ test.
 - c. For non-conducting of Quarterly check/ test @ Rs. 3000/- per set of quarterly check/ test.
 - d. For non-conducting of Half Yearly check/ test @ Rs. 4000/- per set of half yearly check/ test.
 - e. For non-conducting of Yearly check/ test @ Rs. 6000/- per set of yearly check/ test.

PERIODICAL TESTING AND MAINTENANCE SUB STATION

Daily Checks

- a) Cleaning of Panels
- b) Functioning of Meters in panels
- c) If trickle charger is provided, state of the same and battery and maintenance of Batteries
- d) Testing of alternate source of supply
- e) The programme/ function should be informed in advance to BSES
- f) Checking of Voltage and supply and frequency within limits of IE Rules
- g) No. and capacity of transformers
- h) Status check of working of transformers
- i) Checking the functioning of power factor correction equipment/ panel.

Weekly Checks

- a) General Conditions of transformer i/c oil leakage
- b) Tap Changers to be checked
- c) Cleaning of Transformers
- d) Oil level check
- e) Silica Gel Check
- f) Bucholtz relay check
- g) Heating/ Temperature rise

Quarterly Checks

- a) Cleaning of Cubical LT & HT panel with the help of bower & other materials.

Half Yearly Checks

- a) Tightening of all LT connections of cubical panel, bus trunking, APFC panel etc.

Yearly Checks

- a) Insulation Test
- b) Earthing Test

TERMS & CONDITIONS FOR : FIRE FIGHTING & WET RISER SYSTEM

1. The Work shall be carried out as per Fire-fighting (wet riser system) as amended upto date and as per manual for such works wherever applicable. Safety procedure as indicated in General Specifications for Electrical work as amended upto date should be followed.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates. Their bid shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Operator (E&M) - Should have passed ITI Diploma or equivalent in the trade.
OR
10th pass with 10 years practical experience in the trade.
OR
Electrical workman's license (certificate of competency Class-II) with 5 years practical experience in the trade.
 - b. Khallasi (Electrical) - Physical fitness for unskilled work and who have put in at least five years continuous service.
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages rates shall be imposed on the contractor.
5. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of Fire Fighting/ Fire Alarm equipment, etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
8. Materials for minor repairs such as Gaskets, Gland Dori, Grease, Indicating Lamps, Lamps of Response Indicators, Resistors, Transistors, Fuse Holders, Switches, Fuses, Thimbles, Loose wires, Panel Glass, MS Box, Neon Lamp, Distilled Water, Petroleum Jelly, Battery Acid, Battery Lead, Clamps, Dusters/ Cotton Waste, Soap, Broom CTC, Nuts, Bolts shall be provided by the contractor. Nothing extra shall be paid on this account, hence is advised to quote his rates accordingly.
9. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor at his own cost.
10. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
11. No material will be taken out of premises without written permission of Engineer-in-Charge or his representative field engineer.
12. The contractor shall maintain Sub Head Item wise "attendance register" in support of the attendance of the staff and the same shall be got periodically checked from JE (E) / AE (E) concern. Failure to which suitable recovery will be made from the contractor bill as decided by the Engineer-in-charge.

13. Watch & ward of installation/ equipments covered in this work in building and cleanliness of all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.
14. The contractor shall prepare a Sub Head Item wise “fortnightly/Monthly” duty chart with name and duty hours of workers engaged stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
15. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/ replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.
16. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced with in 48 Hrs. by the contractor. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
17. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm Consequently any compensation payable shall be at the contractor cost and department shall not give any compensation.
18. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
19. If any worker goes to court for any reasonable or unreasonable issue, which shall be sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any current running bill/ final bill of the contractor.
20. Damage to the building & machinery, if any, will be made good by the contractor at his own cost.
21. Maintain the log books for Fire Fighting System/ Fire Alarm and keep the installation in working condition. If any deficiency observed, the contractor will immediately inform to Client Deptt./ JE(E)/ AE(E) and will make all efforts to remove the faults immediately.
22. In case the departmental staff is posted or due to some other reasons, the department reserves the right to terminate the contract in full or part thereof.
23. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory, by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning and reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
24. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or malfunctioning of the equipment of by negligence of the staff.
25. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
26. In case of break down of any system the matter has to be reported to the JE(E)/ AE(E)/Engineer-in-Charge immediately. In case of failure of electric supply from BSES, written complaint is to be lodged with BSES and inform to the JE(E)/ AE(E) of the department, immediately.
27. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
28. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contactor.
29. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
30. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account

deemed to be included in the items, nothing extra shall be paid on this account, so contractor is advised to quote his rates accordingly.

31. The rates quoted by Firm/ Contractor shall be inclusive of all taxes etc. and nothing extra shall be paid on this account.
32. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity on orders of EE(E), AE(E)/ JE(E) for which no additional payment will be made to the contractor. If contractor refuses to do so, then recovery as decided by Engineer-in-Charge shall be made from the bill of contractor.
33. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine on daily basis to AE(E)/ JE(E) in-charge.
34. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work only.
35. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS.
36. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
37. Rates quoted by the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
38. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
39. The contractor has to insure that:
 - a. In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b. In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c. Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
40. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.

**ADDITIONAL TERMS AND CONDITIONS FOR WET RISER/ DOWN COMER SYSTEM
& SPRINKLER SYSTEM**

1. Scope of Work: The following activities are intended to be covered under the contract:-
 - a. Operation and Maintenance of installation as specified in BOQ or as directed by the Engineer-in-Charge or his authorized representative.
 - b. Performing the daily/ weekly/ half yearly/ yearly checks as detailed in Table A-I.
 - c. **Healthiness of System:**
 The healthiness of the system in Automatic Mode shall be checked through daily testing and weekly testing. During the weekly testing a particular block shall be taken up and all internal hydrants and adjoining yard hydrants of the same block shall be operated and checked, for automatic functioning of jockey and main electric pump.
 During the subsequent week different blocks shall be selected so as to ensure that all the internal hydrants and yards hydrants of a block is checked once in every month.
 The details of such weekly testing shall be conducted in presence of JE(E) and AE(E) in-charge to the extent feasible and shall be recorded in register along with date, timing and findings.
 - d. The Control Room shall be manned & operated round the clock by the contractor.
 - e. Operator shall check the yard hydrants internal hydrants system daily and take care of the installation for watch & ward purpose.
 - f. All dismantled material shall be deposited to the JE (E) in charge at his site store.
 - g. The diesel oil for running the engine pump shall be arranged and supplied by the department at site store ‘free of cost’, which will be filled in service tank by the staff deployed by the firm. Nothing extra shall be payable on this account. Contractor shall maintain diesel consumption register at site.
 - h. Remarks and observations regarding malfunctioning of wet riser, yard hydrant, fire fighting pump and panels, accessories recorded in the log book shall be got rectified by the department, if not attended by the contractor, at the risk and cost of the firm without entering into any correspondence and necessary recovery shall be made from the bill of the contractor.
2. The contractor shall ensure that the water storage tanks meant for fire fighting system must be kept full all the times. In case of any shortage of water from the source, it must be immediately informed to the department in writing.
3. The contractor must ensure that the Wet Riser System/ Down Comer System/ Sprinkler System should always be kept in pressurization mode to keep the system fully functional, in case of any eventually due to fire. It should also be ensure that the pressure in the line must stand at least for 8 hours, infact in general conditions it should stand for 48 hrs. In case if the pressure releases in the line due to leakage in less than 8 hrs., all efforts should be made to repair the leakage point in 48 hrs. in addition to informing the department in writing, to make the system functional, or otherwise the recovery @ Rs. 2000/- per day shall be imposed on the contractor.
4. The log book & preventive maintenance/ test records register shall be supplied and maintained by the contractor within the quoted rates. The contractor should ensure that all records shall be filled by his staff after conducting of test of any activity.
5. The Fire drill shall be conducted every month in presence of AE(E) & JE(E) in-charge and client department, for which a prior notice shall be given by the AE(E) & JE(E) in-charge.
6. The recovery on account of non-conducting the periodical checks/ tests as mentioned in table ‘H-1’ shall be imposed as under:-
 - a. For non-conducting of Daily check/ test @ Rs. 200/- per set of daily check/ test.
 - b. For non-conducting of Weekly check/ test @ Rs. 500/- per set of weekly check/ test.
 - c. For non-conducting of Monthly check/ test @ Rs. 2000/- per set of monthly check/ test.
 - d. For non-conducting of Quarterly check/ test @ Rs. 3000/- per set of quarterly check/ test.
 - e. For non-conducting of Half Yearly check/ test @ Rs. 4000/- per set of half yearly check/ test.
 - f. For non-conducting of Yearly check/ test @ Rs. 6000/- per set of yearly check/ test.

TABLE 'H-1'
PERIODICAL TESTING AND MAINTENANCE CHART OF WET RISER/ DOWN COMER
SYSTEM & SPRINKLER SYSTEM

S.No.	System Component	Activity	Duration
1	Water Tanks	Level Check	Daily
2	Pumps	Running	Daily
		Test Flow	Annually
		Lubrication	Quarterly
3	Engine	Running	Daily
		Lubrication	Quarterly
		Battery	Weekly
		Fuel Tank	Daily
		Servicing	As per engine manufacturer's recommendations
4	Motor	Running	Daily
		Starter	Weekly
		Insulation Resistance	Annually
5	Piping	Pressure	Daily
		Flushing	Annually
6	Valves (Landing and Isolations)	Operation	Monthly
7	Control System	Operation	Monthly
		Connection and system components	Quarterly
8	Hose Reel and Hose Pipes	Physical Check	Monthly
		Operation Check	Annually
		Replacement	Depending upon physical conditions.
9	Fire Brigade Connections/ Inlet	Physical Check	Monthly
		Operation Check	Annually
10	Instantaneous Coupling	Physical Check	Monthly
		Lubrication	Half Yearly
11	Painting	Outdoor	Annually
		Indoor	Once in two years
12	Cleaning & Dusting	Fire Pump House	Daily
		Exposed part of Wet-Riser/ Down Comer/ Sprinkler System	Monthly
13	Sprinkler Head	Physical inspection	Weekly
14	Fire Drill	Wet-Riser System/ Down Comer	Monthly

TERMS & CONDITIONS FOR SUB HEAD – VI : FIRE ALARM SYSTEM

1. The Work shall be carried out as per Fire-fighting (wet riser system) as amended upto date and as per manual for such works wherever applicable. Safety procedure as indicated in General Specifications for Electrical work as amended upto date should be followed.
2. The contractor shall depute qualified and experienced staff. The contractor shall visit the site, at his own cost, before quoting his rates. Their bid shall take all factors into account. Normally working hrs. of an employee should not exceed 9 hrs. a day. In case of unavoidable conditions on any day it shall not spread over more than 12 hrs. a day. Before starting the work, the contractor will submit list of worker with their credential to the department.
3. The following staff employed should have qualification as under :
 - a. Operator (E&M) - Should have passed ITI Diploma or equivalent in the trade.
OR
10th pass with 10 years practical experience in the trade.
OR
Electrical workman's license (certificate of competency Class-II) with 5 years practical experience in the trade.
 - b. Khallasi (Electrical)- Physical fitness for unskilled work and who have put in at least five years continuous service.
4. In case of any staff found absent from the duty the recovery @ double the current prevailing minimum wages rates shall be imposed on the contractor.
5. The Agency has to give a mobile phone to their staff and the number of which is to be given to the Engineer-in-charge at site.
6. The contractor shall maintain compliant register to record complaints and to get them attended on daily basis, worker's diaries for recording and disposal of complaints. Log books and complaint register shall be checked by JE(E) regularly as per CPWD norms.
7. All the cleaning material i.e. soap, duster etc. shall be arranged by the contractor at his own cost for cleaning of Fire Fighting/ Fire Alarm equipment, etc. If cleaning of installation is not found satisfactory at any time, a recovery of Rs. 200/- per occasion noticed per Sub Head shall be made from the bill of contractor.
8. Materials for minor repairs such as Gaskets, Gland Dori, Grease, Indicating Lamps, Lamps of Response Indicators, Resistors, Transistors, Fuse Holders, Switches, Fuses, Thimbles, Loose wires, Panel Glass, MS Box, Neon Lamp, Distilled Water, Petroleum Jelly, Battery Acid, Battery Lead, Clamps, Dusters/ Cotton Waste, Soap, Broom CTC, Nuts, Bolts shall be provided by the contractor. Nothing extra shall be paid on this account, hence is advised to quote his rates accordingly.
9. All T&P etc. required for day-to-day maintenance shall have to be arranged by the contractor at his own cost.
10. The system should be kept neat & clean by the staff deputed by the contractor. Supply of log books, cleaning materials/ petty spares shall be arranged by the contractor within the quoted rates.
11. No material will be taken out of premises without written permission of Engineer-in-Charge or his representative field engineer.
12. The contractor shall maintain Sub Head Item wise "attendance register" in support of the attendance of the staff and the same shall be got periodically checked from JE (E) / AE (E) concern. Failure to which suitable recovery will be made from the contractor bill as decided by the Engineer-in-charge.

13. Watch & ward of installation/ equipments covered in this work in building and cleanliness of all installation shall be the responsibility of the contractor during the period of the contract for which nothing extra shall be paid.
14. The contractor shall prepare a Sub Head Item wise “fortnightly/Monthly” duty chart with name and duty hours of workers engaged stated therein. The same shall be submitted to the JE (E) / AE (E) concern at least seven days in advance.
15. In case of breakdown of any equipment, the contractor shall report to concerned JE/ AE or his representative and shall locate the fault and arrange for repair/ replacement of the faulty part if reqd. He shall be paid for the work done as per the BOQ items or extra items on the prevailing market rates.
16. The staff has to maintain good behavior at site. Any person found discourteous or misbehaving shall have to be replaced with in 48 Hrs. by the contractor. Decision of the Engineer in charge or his authorized representative shall be final and binding on the contractor.
17. The contractor shall take all precaution for safety of the workmen. The firm shall be fully responsible for any liability/ compensation in case of any accident or otherwise any untoward incident at his own risk for the staff deputed by firm Consequently any compensation payable shall be at the contractor cost and department shall not give any compensation.
18. The contractor shall submit labour report in time otherwise Department shall not be responsible for delay in payment.
19. If any worker goes to court for any reasonable or unreasonable issue, which shall be sole responsible of the contractor only, the department shall enforce complete recovery of amount incurred to fight the case in court from any current running bill/ final bill of the contractor.
20. Damage to the building & machinery, if any, will be made good by the contractor at his own cost.
21. Maintain the log books for Fire Fighting System/ Fire Alarm and keep the installation in working condition. If any deficiency observed, the contractor will immediately inform to Client Deptt./ JE(E)/ AE(E) and will make all efforts to remove the faults immediately.
22. In case the departmental staff is posted or due to some other reasons, the department reserves the right to terminate the contract in full or part thereof.
23. The department shall be at liberty to discontinue/ cancel the contract/ agreement, if the performance of the contractor found unsatisfactory, by without giving any notice in accordance with the above terms and conditions or otherwise, without assigning and reason thereof. Decision of Engineer-in-Charge shall be final and binding on the contractor for which no claim on any account shall be entertained by the department.
24. Department shall not be responsible for any injury partial or permanent or death of any worker at site due to accident or malfunctioning of the equipment of by negligence of the staff.
25. First aid box shall be arranged by the contractor at site of work. No extra payment shall be made on this account.
26. In case of break down of any system the matter has to be reported to the JE(E)/ AE(E)/Engineer-in-Charge immediately. In case of failure of electric supply from BSES, written complaint is to be lodged with BSES and inform to the JE(E)/ AE(E) of the department, immediately.
27. If any condition's is put by the contractor, which is not as per CPWD specifications/ terms and conditions of NIT, his tender is liable to be rejected.
28. Malba shall be removed from the site daily and site kept neat and clean failing which the same is liable to be got removed by the department at the risk and cost of contactor.
29. Contractor will provide vehicle & mobile phones to the staff and number shall be intimated to the Deptt.
30. Contractor shall provide complaint diaries to the staff for entering the complaint & shall take the signature of client after attending the complaints with date & time. The cost on this account

deemed to be included in the items, nothing extra shall be paid on this account, so contractor is advised to quote his rates accordingly.

31. The rates quoted by Firm/ Contractor shall be inclusive of all taxes etc. and nothing extra shall be paid on this account.
32. The services of the staff deputed by the contractor can be used occasionally at other sites in case of dire necessity on orders of EE(E), AE(E)/ JE(E) for which no additional payment will be made to the contractor. If contractor refuses to do so, then recovery as decided by Engineer-in-Charge shall be made from the bill of contractor.
33. Contractor shall make a complaint register & preventive maintenance register within the quoted rates. The Contractor shall put up these register to Deptt. at the time of submission of bill as well as in routine on daily basis to AE(E)/ JE(E) in-charge.
34. Workers engaged by the contractor/ firm cannot claim for permanent Job/ Regularization as this is a Job Oriented Work only.
35. Contractor has to pay not less than minimum wages to the staff employed by him on this work. As per minimum wages Act. The contractor shall pay prescribed monthly wages to his staff regularly up to 7th day of each preceding month through ECS or RTGS or Cheque and the proof of the wages paid must be submitted by 8th of every month. In case, the contractor fails to submit the proof of wages paid of previous month to his workers at most by 10th day of the month, the penalty @ Rs. 100/- per day per worker shall be imposed on the contractor and shall be deducted from the running/ final bill of the contractor. The contractor shall maintain wages register indicating name of the staff & their receipt acknowledgement & verified by the representatives of the Engineer-in-Charge & copy of the same shall be provided along with the bills for the respective months. No payment shall be made without the copy of wages register for the respective months. The contractor shall make payment to his staff through ECS/RTGS.
36. The staff deputed by the contractor shall mark their attendance. The stationary required for attendance register etc. shall be supplied by the contractor free of cost within the quoted rates. The decision of Engineer-in-Charge in this respect shall be final and binding on the contractor. The contractor has to provide the Aadhar Card, Passport size photograph and mobile no. of the worker deputed by him on the work.
37. Rates quoted by the firm will be inclusive of all wages, taxes and duties. Firm should submit the proof/ challans of submission of EPF & ESI at the time of payment.
38. EPF & ESI contribution from employers part will be reimbursed on submission of proof of deposition of EPF & ESI amount submitted with the competent authority.
39. The contractor has to insure that:
 - a. In terms of Clause 19 of the GCC, a valid labour license is obtained by the contractor before start of work in terms Contract Labour (Regulation & Abolition) Act-1970.
 - b. In terms of Clause 19L of the GCC, ESI & EPF contributions are to be paid by the contractor, for which contractor is to get registered himself with EPFO and ESIC.
 - c. Record prescribed in 'CPWD Contractor's Labour Regulations' laid down in GCC are maintained. These include registers for workmen employed by the Contractor, Muster Roll, Register of Wages, Wages Slip, Employment Card, Service Certificate, Register of Fines, Register of Deduction for Damage of Loss, Register of overtime and Register of Advance.
40. The contractor shall provide uniform comprising shirt, pant, jersey & black shoes along the badge within 7 days of start of work. The workers should be in uniform during duty hours failing which the recovery @ Rs. 25/- per day per worker for shall be made on account of non-coming of uniform.

ADDITIONAL TERMS AND CONDITIONS FOR FIRE ALARM SYSTEM

1. Scope of Work: The following activities are intended to be covered under the contract:-
 - a. Operation and Maintenance of installation as specified in BOQ or as directed by the Engineer-in-charge or his authorized representative.
 - b. Performing the daily/ weekly/ monthly/ quarterly checks as detailed in Annexure – I-1 and take remedial action for proper maintenance.
 - c. **Healthiness of System:**
The healthiness of the system in Automatic Mode shall be checked through weekly testing. The details of such weekly testing shall be conducted in presence of JE(E) and AE(E) in-charge to the extent feasible and shall be recorded in register along with date, timing and findings.
2. Before starting the work, the contractor shall take over the inventory and any shortcomings noticed at the time of taking over shall be brought out specifically. Failing which it shall be presumed that the site has been taken over in perfect working order. On completion of the work against the agreement the inventory shall be handover as directed by Engineer-in-charge or his authorized representative. In case any short fall or damage to the installation is noticed, the contractor shall make good the same with same make equipment or as directed by the Engineer-in-charge, failing to do so, the recovery shall be affected from any payment due to the contractor. The decision of Engineer-in-charge shall be final and binding.
3. The log book & preventive maintenance/ test records register shall be supposed and maintained by the contractor within the quoted rates. The contractor should ensure that all records shall be filled by his staff after conducting of test of any activity.
4. The Mock drill shall be conducted in presence of AE(E) & JE(E) in-charge and client department, for which a prior notice shall be given by the AE(E) & JE(E) in-charge.
5. The contractor must ensure the testing of all the points in fire alarm system viz. Smoke Detector, Heat Detector, Hooters, Manual Call Points, Public Address System/ Talk Back System and other related points quarterly in such a manner that proportionate point should be checked on daily basis so that the testing of all points get covered in 03 months time and the record of such testing shall be entered in the test record register. If all points could not be tested by the contractor in the given 03 month's time than a recovery of Rs. 500/- per day shall be imposed for the time beyond initial 03 months.
6. The recovery on account of non-conducting the periodical check/ test as mentioned in Annexure – ‘I-1’ shall be imposed as under:-
 - a. For non-conducting of Daily check/ test @ Rs. 200/- per set of daily check/ test.
 - b. For non-conducting of Weekly check/ test @ Rs. 500/- per set of weekly check/ test.
 - c. For non-conducting of Monthly check/ test @ Rs. 2000/- per set of monthly check/ test.
 - d. For non-conducting of Quarterly check/ test @ Rs. 3000/- per set of quarterly check/ test.

PERIODICAL TESTING AND MAINTENANCE FIRE ALARM SYSTEM**Daily Checks**

- a. Clean all control panels, sounders and call boxes.
- b. While cleaning each panel verify whether the fault indication lamp is ON. If it is ON, with or without alarm, investigate and rectify the fault.
- c. Check whether all panels lamps are healthy by the “panel lamp test button”.
- d. Check that the system operates under main failure condition, by switching of the main supply to the C&I panel and testing any zone for fault/ fire condition from the zonal panel. Confirm also that the visual alarm comes up in the C&I panel. Restore the main supply after the test.

Weekly Checks

- a. If lead acid batteries are used in system, check the electrolyte level and specific gravity.
- b. All zonal, repeaters panel and C&I panels should be check.
- c. Confirm the operation of each zonal panel and C&I Panel.

Monthly Checks

- a. Through test button i/c audio/ video indication and check the talk back system from both ends and also PA system of C&I Panels.
- b. Check that the air conditioning/ ventilation blower are automatically switched off, when fire condition is simulated by the test button in zonal panel. (if AC system is not interconnected in the fire alarm system get the interconnection with the consent of department).
- c. Check the batteries condition, charger, battery terminals. Replaced old grease with the fresh grease on the terminal of battery.

Quarterly Checks

- a. All the detectors should be cleaned. Cleaning of the detectors in rotation so as to ensure that the last detector is cleaned not later than 6 months. Restore the zonal panel, if it was switched off for this purpose.
- b. Check the satisfactory operation of the system by an artificial fire in a bucket. Keep necessary extinguishers with you, before the test as abundant precaution.
- c. Cleaning of exit signboard.

SCOPE OF WORK – LIFT MAINTENANCE CONTRACT

The scope of work covered by Schedule includes:

1. The work is to be carried out as per CPWD General Specification for Electrical works (Part 1 & 2) & (Part III- Lifts & Escalators) wherever applicable.
2. The scope of work comprises the running and operation of the lifts as per inventory the maker of Lifts are “JHONSHON make”, “THYSSEN KRUPP make”, “Hi-Tech” make” SCHINDLER make”, “OTIS make”, “ECE make” etc.
3. The contractor has to depute following staff in shift duty round the clock for operation of the lifts. However, the duty hours can be changed as per discretion of Engineer-in-Charge. Normally the staff will be employed as under.
 - i) 6:00 AM to 2:00 PM/10:PM to 6:00 AM = 8Hrs.(1 Shift)
 - ii) 6:00 AM to 10:00 PM =16Hrs.(2 Shift)
 - iii) 6:00 AM to 6:00 AM = 24Hrs.(3 Shift)
 - iv) When the lift is stuck-up, or on the alarm calls of the passengers from any of lifts connected to lift control room. In case of lift breakdowns, the agency may have to provide the services of extra operator, as and when reqd. for operation of the lift within his quoted rates and nothing extra shall be paid by the Department.
4. During the night the lift which is not in operation as per scope of work or in schedule of work shall be kept OFF and in case of breakdown of lift, breakdown indication shall be show in front of the close lift.
5. The installations shall be maintained on all days of the month including Sundays & holidays and weekly rest of the staff shall be given by making alternative arrangement for which no extra payment shall be made.
6. In case of emergency the staff may have to work beyond normal working hours, for which no extra payments shall be made by the department.
7. The log book, complaint register, maintenance records shall be maintained by the staff of the contractor. All the registers shall be supplied by the firm/ contractor.
8. The watch and ward of the lifts installation and materials will be the responsibility of the contractor.
9. The general cleaning of the lift, machine room shall be the responsibility of the agency.
10. The lift operator should operate the lifts as per operating conditions of the manufacturer. Only those persons are to be employed who have at least 1 (one) year experience in operation of automatic lifts and capable of reading & writing in Hindi/ English.
11. The safe custody of plant & machinery shall be the responsibility of the contractor. The up-keep of the machine room will be deemed to be handed over to the contractor after award of work.
12. Any accident involving damage to human life, lift machinery, equipment etc. due to mal operation of lift, by the staff of contractor, will be the responsibility of the contractor. The firm has to make good the losses, of that by way of replacement of machinery, equipment, compensation to the person etc. Engineer-in-Charge decision in this regard shall be final and binding on the firm.
13. The lifts operator should wear uniforms and name plate, which shall be supplied by the contractor.
14. In case of break down or stopping of lift between the landings on account of any interruption in power supply the rescue operation shall have to be performed by the lift operator.
15. Any loss due to mal operation of the lift shall be the responsibility of the contractor.
16. Any loss/ damages to the lift equipments shall be recovered from the contractor. In this respect the decision of Engineer-in-Charge shall be final, and binding on the contractor.
17. Servicemen will attend to all call backs received during normal working hours free of charges.
18. The firm shall examine periodically all safety devices governors to ensure in proper working condition.

19. Following items are not included in the scope of work. Car enclosure, car flooring, beadings, door glasses, door frames, sills, push box covers in landings and car.
20. The contractor should be in a position to undertake the works which are otherwise outside the scope of work of this contract – subject to the approval of rates by competent authority of the department.
21. The work shall be carried out as per C.P.W.D. General Specification for Electrical Works (Part-III-Lifts and Escalators 2003) as amended upto date, and shall comply with the requirements of the Indian Electricity Rules/Acts, B.S.I. code of Practices etc. as applicable in force amended upto date.
22. The firm has to depute trained maintenance staff/authorized person only for safe operation of lifts & they should have identity cards issued by the firm.

**SPECIAL CONDITIONS TO COMPLY DIRECTIVES OF HON'BLE NATIONAL
GREEN TRIBUNAL**

1. The contractor shall not store/ dump construction material or debris on metalled road.
2. The contractor shall get prior approval from Engineer-in-Charge for the area where the construction material or debris can be stored beyond the metalled road. This area shall not cause any obstruction to the free flow of traffic/ inconvenience to the pedestrians. It should be ensured by the contractor that no accidents occur on account of such permissible storage.
3. The contractor shall take appropriate protection measures like raising wind breakers of appropriate height on all sides of the plot/ area using CGI sheets or plastic and / or other similar material to ensure that no construction material dust fly outside the plot area.
4. The contractor shall ensure that all the trucks or vehicles of any kind which are used for construction purposes/ or are carrying construction material like cement, sand and other allied material are fully covered. The contractor shall take every necessary precautions that the vehicles are properly cleaned and dust free to ensure that enroute their destination, the dust, sand or any other particles are not released in air/ contaminate air.
5. The contractor shall provide mask to every worker working on the construction site and involved in loading, unloading and carriage of construction material and construction debris to prevent inhalation of dust particles.
6. The contractor shall provide all medical help, investigation and treatment to the workers involved in the construction of building and carry of construction material and debris relatable to dust emission.
7. The contractor shall ensure that C&D waste is transported to the C&D waste site only and due record shall be maintained by the contractor.
8. The contractor shall compulsory use of wet jet in grinding and stone cutting.
9. The contractor shall comply all the preventive and protective environmental steps as stated in the MoEF guidelines, 2010.
10. The contractor shall carry out on-Road-Inspection for black smoke generating machinery. The contractor shall use cleaner fuel.
11. The contractor shall ensure that all DG Sets comply emission norms notified by MoEF.
12. The contractor shall use vehicles having pollution under control certificate. The emissions can be reduced by a large extent by reducing the speed of a vehicle to 20 kmph. Speed bumps shall be used to ensure speed reduction. In cases where speed reduction cannot effectively reduce fugitive dust, the contractor shall divert traffic to nearby paved areas.
13. The contractor shall ensure that the construction material is covered by tarpaulin. The contractor shall take all other precaution to ensure that no dust particles are permitted to pollute air quality as a result of such storage.
The paving of the path for plying of vehicles carrying construction material is more permanent solution to dust control and suitable for longer duration projects. The NIT approving authority shall carry out cost benefit ratio analysis of the same

LIST OF MAKE (For Electrical)

Sl. No.	ITEMS		MAKES
1.	PVC insulated FRLS PVC copper wires	:	Havells / Finolex / KEI/ L&T/Polycab/ Batra Henlay / ADHUNIK
2.	L.T. XLPE Power Cables	:	Havells / Finolex / KEI / Gloster/ Universal/ Grandlay/ Polycab/Batra Henlay / Rallison Cable/ ADHUNIK
3.	Steel Conduit (ISI marked)	:	BEC / AKG / NIC / Steel craft/RMCON
4.	Steel Conduit Accessories	:	ISI MARKED
5.	Metal Pole Box	:	STANLEC/ STANDARD OR EQUIVALENT MAKE
6.	Modular Switch/ Socket/ GI Box/ electronic regulator & accessories	:	Legrand (MYRUS)/ MK (Blenze Plus)/ Schneider (Opale)/ABB (TVISHA) / North West (VENIA) / CRABTREE (ATHENA)
7.	Piano type accessories like Switch, Sockets, Plugs, Ceiling Rose (ISI Marked)	:	ANCHOR/ CONA/ HAVELLS
8.	MCBS, Ind. Sockets, Isolators & DBs	:	Siemens (Betagard), / Hager (H3)/ Schneider (Acti9) / Legrand (DX 3)/ABB (SH200M)
9.	MCCBs (ICU=ICS=100%)	:	Siemens(SENTRON3VA) /ABB (T-max)/Schneider (Easy pact CVS)/Legrand (DPX ³)/L & T (D sine)
10.	CAT 6	:	Belden / Siemon / Panduit (Pannet)/ Commscope/ Molex
11.	Changeover Switch	:	SCHNEIDER/ HAVELLS/ C&S/ L&T/ SIEMENS/ LEGRAND/ HPL
12.	Internal / External Lighting Fixture	:	Philips / Wipro/Trilux/Lighting Technology/ OSRAM/Havells / Halonix
13.	Box type LED Batten	:	Philips / Wipro/Trilux/Lighting Technology/ OSRAM/Havells / Halonix
14.	16/ 18 Watt LED Tublight	:	HAVELLS MODEL CRYSTAL 1213T8DSTL18WLED865SGGLASS OR CROMPTON MODEL LTT8/ PHILIPS / Halonix
15.	18-22 watt surface LED down lighter	:	WIPRO MODEL LD81-171-XXX 60 SM OR HAVELLS MODEL ENDURA NEO SURFACE DLS21WLED 857S OR HALONIX MODEL HLDLS-R06-22-CW / Halonix
16.	1200 mm Sweep Ceiling Fan (BEE rated 5 Star)	:	Havells / Orient / Usha/ Crompton Greaves/Khaitan / Halonix
17.	450 mm Sweep oscillating Fan	:	CROMPTON MODEL WMHIFLO LG 18" OR HAVELLS MODEL AIRBOLL HI-SPEED OR ORIENT MODEL 450MM OR 18" WALL FAN-48, Halonix

Sl. No.	ITEMS		MAKES
18.	300 mm (Heavy duty) sweep exhaust fan	:	CROMPTON MODEL EXHD300-6-1 OR ORIENT MODEL INDUSTRIAL HEAVY DUTY OR HAVELLS MODEL TURBO FORCE SP, Halonix
19.	15 watt Recess mounting round down lighter	:	Wipro Model LD90-191-XXX-65-XX or Philips Model DN193B LED12S-6500 PSU WH S1 or Trilux Model AMBIELLA IND G3 LED 1250-857 ET or OSRAM Model KIT LUXSMART LED DL 15W 865 / Halonix
20.	12 Watt LED recess Round down lighter	:	WIPRO MODEL LD90-141-XXX-65-XX OR HAVELLS MODEL ENDURA MODEL HODLR12WLED857S OR OSRAM MODEL LUX POWER LED DL 12W M865 / Halonix
21.	Photo luminescent signage's	:	ADVIK/ GLO-LINE/ PROLITE/ MR. LITE
22.	Hepa/ Pre / Micronic Fine Filters	:	THERMADYNE/ SPECTRUM/ PURAMATIC./ MECHMAARK
23.	Compressor	:	KIRLOSKAR/ USHA SRIRAM/ EMERSON/ TECHOMSHAH/ COPELAND/ HITACHI
24.	Fan Motor for AC	:	CROMPTON/ KHAITAN/ POLAR/ As per requirement at site of existing AC make.
25.	Wireless remote / PCB	:	HITACHI / LG / VOLTAS/ CARRIER / As per requirement at site of existing AC make.
26.	WTAC Kit	:	NAPOLEON/ SKODA/ COMMANDER
27.	Indoor Unit	:	NAPOLEON/ SKODA/ COMMANDER
28.	Outdoor Unit	:	NAPOLEON/ HITACHI/ COMMANDER
29.	Contactors 25 Amp	:	L&T/ C&S/ SIEMENS
30.	Industrial Plug Socket/ Top	:	L&T/ C&S/ HAVELLS
31.	3 Pin 15A/ 16A Plug Top (ISI Marked)	:	C&S/ CONA/ ANCHOR
32.	Stabilizer	:	V-GUARD/ BLUEBIRD/ LOGICSTAT/SKYLAND
33.	Socket	:	ANCHOR/ CONA/ HAVELLS
34.	Various Valves	:	SANT/ ZOLOTO/ AUDCO
35.	18/20 Watt Submersible water lifting pump	:	KHAITAN/ USHA/ CROMPTON
36.	Motor for Ductable AC Unit	:	GE/ ABB/ KIRLOSKAR/ CROMPTON OR AS PER SITE REQUIREMENT OF EXISTING AC
37.	Paint	:	NEROLAC/ SHALIMAR/ BURGER
38.	Belt	:	FENNER
39.	Desert Cooler Motor	:	CROMPTON/ KHAITAN/ POLAR/ USHA

Sl. No.	ITEMS		MAKES
40.	Running/ Starting Capacitor	:	EPCOS/ TIBCON/ HAVELLS
41.	Thermostat/ Starting Relay	:	RENUTROL OR EQUIVALEN MAKE
42.	Single Phase Preventer	:	MINILAC/ L&T/ C&S/ SIEMENS
43.	Mono block Pump Set	:	CROMPTON/ KIRLOSKAR/ GRUNDFOS
44.	Cellulose Cooling Media/ Pad/ PreFilter	:	EDGE TECK/ ZECO/ RAVI AIRCON/ WAVES/ HUMIDIN
45.	Ball Bearing	:	SKF/ NBC/ TATA
46.	Grills/ Diffusers/ Dampers/ Actuator	:	CARYAIRE/ RAVISTAR/ AIRFLOW/ DYNAMICS/ OPELLA/ PINE AIR/ TANUS
47.	Relay	:	L&T/ C&S/ SIEMENS
48.	Voltmeter & Ammeter	:	L&T/ C&S/ SIEMENS/ AE
49.	LED Indicating Light	:	Siemens / L&T
50.	feed water pump	:	GRUNDFOS/ CRUPP/ KSB
51.	Geyser	:	HAVELLS/ RACOLD/ CROMPTON/ A.O. SMITH
52.	Battery	:	EXIDE/ AMARON/ PANASONIC
53.	11KV/110V Pt clause 0.5 accuracy	:	L &T/AE/C&S/GE/CROMPTON GREAVES
54.	Power pack 24 volt DC with battery	:	L & T /AE/C&S/GE/CROMPTON GREAVES
55.	Space Heater 80V	:	L &T/AE/AIREX/DASS PASS
56.	Castel lock	:	L &T/AE/SCHNEIDER/SIEMENS
57.	Universal Charging Motor	:	L &T/AE/SCHNEIDER/ SIEMENS
58.	Closing coil /On delay Timer/Aux.Contact	:	L & T/C &S/SCHNEIDER/SIEMENS/CG
59.	Electrical Panels	:	Tricolite / Adlec / Advance / SPC Electrotech / Ambit / System Power Control/ ADHUNIK /Control Wel Switchgear/Neptune
60.	MS/PVC Conduit Pipe	:	BEC/NIC/AKG/ Surya (ISI mark)
61.	Electrical Motor	:	ABB/ Seimens/ Crompton Greaves/ Kirlosker
62.	All Type of Pump	:	Crompton/ Kirloskar/ KSB/Beacon/ABB (ISI Marked)
63.	GI Sheet	:	Sail/ Jindal/ TATA/ Nippon
64.	PVC Pipe	:	Finolex Supreme/Prakash/Surya/AKG (ISI Marked)
65.	Batteries	:	Panasonic/Okaya/Amron/Exide/HBL/Amaraja
66.	All type of Valves	:	Sant/ Kirloskar/Advance/Audco/ Castle/Zoloto/ Kartar/Leader (ISI Marked).
67.	Ball Bearing	:	SKF / Asian/NBC (ISI Marked).
68.	Air Conditioners & their spare parts/accessories	:	Emersion / L G /Hitachi/Carrier/Voltas/ Tecumseh/Blue star
69.	Elastometric Nitrile Insulation	:	Armaceff/ Armaflex/ K-Flex/ O Flex
70.	Diffusers/Grill/Damper	:	Ravistar/ Caryaire
71.	Actuator	:	Seimens/ L&T/ Belimo

Sl. No.	ITEMS		MAKES
72.	AHU Blower	:	Kruger/ Nicotra/GECO
73.	Expanded Polystrene	:	UP Twinga/ Toshiba/ Paramount
74.	Three way modulating valve	:	Seimens/ Johnson Control/ Honeywell
75.	Fiber Glass	:	UP Twinga/ Owen Corning/ Kimmco
76.	Thermometer	:	H.Guru/ Emerald
77.	Pressure Guage	:	H.Guru/ Emerald/FEBEIG
78.	Geyser Heating Element & Thermostat	:	ISI Marked
79.	Any other item	:	All items shall be as per Engineer-in-Charge approval

**SCHEDULE OF WORK
FOR ELECTRICAL AND MECHANICAL SERVICES**

Name of Work: Comprehensive Maintenance of GTB Hospital Delhi through outsourcing.(SH:- E&M, Civil and Horticulture works relating to day to day maintenance, ARMO and SR works).

Sl. No.	Item Description	Qty		Rate	Unit	Amount
	Sub Head - I : EI & FANS					
A	Maintenance Work					
1	Providing services one shift from 9 AM to 5 PM on all days except Sunday & holidays for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:- College Block (UCMS) & Library Block at GTB Hospital. Staff Required: (1) Wireman - 2 Nos. (2) Khallasi - 2 Nos.	24	Months	82210.00	Per Month	1973040.00
2	Providing services in three shift on all days i/c Sunday and holidays for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:- DEM Building Staff Required: (1) Wireman - 3 Nos. (2) Khallasi - 3 Nos.	24	Months	141912.00	Per Month	3405888.00
3	Providing services in one shift from 8 AM to 4 PM on all working days for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:-					
3.1	Division Block, PAO Office, Drug Store, General Store, MRD Block at GTB Hospital Staff Required: (1) Wireman - 1 No. (in 1 shift) (2) Khallasi - 1 No. (in 1 shift)	24	Months	41236.00	Per Month	989664.00
3.2	Mortuary, Animal House, Goal Canteen, Police Chauki, Nursing School at GTB Hospital. Staff Required: (1) Wireman - 1 No. (in 1 shift) (2) Khallasi - 1 No. (in 1 shift)	24	Months	41236.00	Per Month	989664.00
4	Providing services in one shift from 12 Noon to 8 PM on all days i/c Sunday & holidays for day to day maintenance of street light / security light / compound light in non-residential area at GTB Hospital i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required. (1) Wireman- 1 No. (in 1 shift) (2) Khallasi - 2 Nos. (in 1 shift)	24	Months	68845.00	Per Month	1652280.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
	Non Residential Area					
5	Providing services in three shift on all days i/c Sunday and holidays for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:-					
5.1	Ward Block, GTB Hospital Staff Required: (1) Wireman - 3 Nos. (round the clock) (2) Khallasi - 3 Nos. (round the clock)	24	Months	141912.00	Per Month	3405888.00
5.2	OT Block + Blood Bank, GTB Hospital Staff Required: (1) Wireman - 3 Nos. (round the clock) (2) Khallasi - 3 Nos. (round the clock)	24	Months	141912.00	Per Month	3405888.00
5.3	Casualty + Emergency Block, GTB Hospital Staff Required: (1) Wireman - 3 Nos. (round the clock) (2) Khallasi - 3 Nos. (round the clock)	24	Months	141912.00	Per Month	3405888.00
6	Providing services one shift from 9 AM to 5 PM on all days except Sunday & holidays for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:- Admin Block GTB Hospital. Staff Required: (1) Wireman - 1 No. (2) Khallasi - 1 No.	24	Months	41236.00	Per Month	989664.00
7	Providing services one shift from 9 AM to 5 PM on all days except Sunday & holidays for day to day maintenance of electrical installation, street light, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:- Gynae OPD, Dharamshala Building, Pharmacy at GTB Hospital. Staff Required: (1) Wireman - 1 No. (2) Khallasi - 1 No.	24	Months	41236.00	Per Month	989664.00
8	Providing services of Pump Operator for running, operation of pump set at GTB Hospital in three shifts round the clock on all working days i/c Sunday and holidays i/c cleaning all the pump set accessories & cubical panel in pump house etc as required. (1) Pump Operator - 3 Nos. (1 in each shift) (2) Khallasi - 1 No. (in general shift)	24	Months	99181.00	Per Month	2380344.00
9	Providing assistant for day to day assistance in office working delivering and carrying the letter /documents to /from other offices and other misc. office work etc in all working days of week and as per direction of engineer in charge. (duty hours i.e 9:30am to 5:30 pm) - 1 No.	24	Months	18609.00	Per Month	446616.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
10	Providing services three shift on all working days i/c Sunday & holidays for day to day maintenance of electrical installation, Panel and other electrical accessories at MCH Building i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing the following staff:- (1) Wireman - 3 Nos. (1 in each shift) (2) Khallasi - 3 Nos. (1 in each shift)	24	Months	141912.00	Per Month	3405888.00
11	Providing services one shift from 9 AM to 5 PM on all days i/c Sunday & holidays for day to day maintenance of electrical installation, Panel and other electrical accessories at MCH Building i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing the following staff:- (1) Wireman - 1 No. (In general shift) (2) Khallasi - 1 No. (In general shift).	24	Months	47479.00	Per Month	1139496.00
	EI Work, Residential Area					
12	Providing services in two shift on all days i/c Sunday & holidays for day to day maintenance of electrical installation, Panel and other electrical accessories at under mentioned buildings i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing following staff:- A, B, C, D & E type Quarters at GTBH Complex. Staff Required: (1) Wireman-2Nos (one in each shift) (2) Khallasi -2Nos (one in each shift)	24	Months	94696.00	Per Month	2272704.00
13	Providing services one shift from 12 noon to 8 pm on all days i/c sunday and holidays for day to day maintenance of street light /security light/ compound light in residential i/c cleanliness of equipments, installation & surroundings as per terms & condition as per the direction of Engineer-in-charge etc complete as required by providing the following staff:- (1) Wireman - 1 Nos. (In 1 shift) (2) Khallasi - 2 Nos. (In 1 shift).	24	Months	68845.00	Per Month	1652280.00
14	Providing services of Pump Operators for running, operation of pump set in residential area at GTB Hospital in three shift round the clock on all working days i/c sundays and holidays i/c cleaning all the pump set accessories & cubical panel in pump house etc as required by providing the following staff:- (1) Pump Operator - 3 Nos. (1 in each shift) (2) Khallasi - 1 No. (in general shift)	24	Months	99181.00	Per Month	2380344.00
	Total of A					34885200.00
B	Upgradation/ Repair & Major Maintenance Work					
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.					

Sl. No.	Item Description	Qty		Rate	Unit	Amount
a	Group A	500	Point	635.000	P/Pt.	317500.00
b	Group B	500	Point	757.000	P/Pt.	378500.00
c	Group C	900	Point	938.000	P/Pt.	844200.00
2	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required.					
a	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	3000	Mtrs.	214.000	P/Mtr.	642000.00
b	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	1500	Mtrs.	293.000	P/Mtr.	439500.00
c	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	2500	Mtrs.	338.000	P/Mtr.	845000.00
3	Rewiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel/PVC conduit including dismantling as required.					
a	Group A	1500	Point	262.000	P/Pt.	393000.00
b	Group B	1600	Point	292.000	P/Pt.	467200.00
c	Group C	3000	Point	409.000	P/Pt.	1227000.00
4	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.					
a	3 x 1.5 sq. mm	3000	Mtrs.	45.000	P/Mtr.	135000.00
b	6 x 1.5 sq. mm	3000	Mtrs.	87.000	P/Mtr.	261000.00
c	3 x 4 sq. mm	4000	Mtrs.	100.000	P/Mtr.	400000.00
d	6x 4 sq. mm	3000	Mtrs.	194.000	P/Mtr.	582000.00
e	3 x 6sq. mm	3000	Mtrs.	147.000	P/Mtr.	441000.00
5	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.					
a	20mm	1200	Mtrs.	114.000	P/Mtr.	136800.00
b	25 mm	1000	Mtrs.	133.000	P/Mtr.	133000.00
7	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.					
a	5/6 A switch	1200	Nos.	76.000	Each	91200.00
b	15/16 A switch	600	Nos.	103.000	Each	61800.00
c	3 pin 5/6 A socket outlet	400	Nos.	73.000	Each	29200.00
d	6 pin 15/16 A socket outlet	500	Nos.	138.000	Each	69000.00
8	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.					
a	1 or 2 Module (75 mmX75 mm)	200	Nos.	158.000	Each	31600.00
b	3 Module (100 mmX75 mm)	200	Nos.	167.000	Each	33400.00
c	4 Module (125 mmX75 mm)	200	Nos.	186.000	Each	37200.00
d	6 Module (200 mmX75 mm)	200	Nos.	233.000	Each	46600.00
e	8 Module (125 mmX125 mm)	250	Nos.	269.000	Each	67250.00
f	12 Module (200 mmX150 mm)	200	Nos.	311.000	Each	62200.00
9	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	250	Nos.	22.000	Each	5500.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
10	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	200	Nos.	367.000	Each	73400.00
11	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/ RCCB/ Isolator)					
a	8 way , Double door	250	Nos.	960.000	Each	240000.00
b	12 way , Double door	200	Nos.	1042.000	Each	208400.00
12	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB / RCCB / Isolator)					
a	4 way (4 + 12), Double door	150	Nos.	1989.000	Each	298350.00
b	8 way (4 + 24), Double door	150	Nos.	2870.000	Each	430500.00
13	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.					
a	1 run of cable	100	Mtrs.	31.000	P/Mtr.	3100.00
b	2 run of cable	200	Mtrs.	53.000	P/Mtr.	10600.00
14	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on wall surface as required.					
14.01	Upto 35 sq. mm (clamped with 1mm thick saddle)	800	Mtrs.	23.000	Meter	18400.00
14.02	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	600	Mtrs.	65.000	Meter	39000.00
15	S/F of following capacity ON Load Type Changeover switch in the existing cubical panel board including drilling holes in cubicle panel, making connections, testing etc. as required.					
a	125 A	20	Nos.	6621.00	Each	132420.00
b	400 A	20	Nos.	22450.00	Each	449000.00
c	800 A	35	Nos.	39020.00	Each	1365700.00
16	S/F of 315A capacity ON Load Type Changeover switch in SS Enclosure including making connections, testing etc. as required.	20	Nos.	19233.00	Each	384660.00
17	Supplying & replacement of LED fitting and frame 600mm X 600mm (N.S) with HET Diffuser, Recess mounting white powder coated CRCA housing having minimum 3500 lumens & not more than 30 watt and colour temperature of 6500 kelvin, and CRI of >80, with APFC driver, power factor >0.95, THD <10% and driver efficiency > 85%. luminaire should have minimum efficacy of 120 lumens/watt, (The LED chip should be of Nichia, cree, Lumiled, OSRAM, seoul. The Luminaire shall operate on a voltage range of 1500-270v, with minimum 2.5kv surge protection. Submission of LM80 report with a life of 50000 hours @ L70 and LED Photo biological safety report confirming to IEC62471 and from LED source manufacturer & LM79 report from NABL accredited Laboratory is mandatory.	2400	Nos.	3734.00	Each	8961600.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
18	Supplying, Installation, Testing and Commissioning of 31-36 Watt having approx. dimensions of 1180x280mm, Surface mounted LED fitting white powder coated CRCA Housing with PMAA diffuser, having minimum 3000 lumens and CCT of 5500-6500k, CRI>80, and life of 50000hours @L70, power factor Of >0.95, THD <10% and constant current and constant voltage driver having efficiency >85% LED chip would be Nichia, cree, osram, lumiled, or seoul. Providing of LM79, LM80 report is mandatory complete directly on wall/ ceiling/ surface i/c connection with 1.5 Sq.mm. FRLS PVC insulated copper wire single core cable, earthing the fitting etc. as reqd. (Make: Wipro Model CRCO13S038HP57G1 or Philips Model RC380B LED32S-6500L120W30PSUOD or Trilux Model ENTERIO D IND M46 LED 3600- 857ET E3)	1200	Nos.	4769.00	Each	5722800.00
19	Supplying, Installation, Testing and Commissioning of 16/ 18 Watt 5600K to 6500K LED Tublight with double side connection in the existing T8 tublight fitting with G13 Lamp holder etc. as reqd. (Make: Havells Model CRYSTAL 1213T8DSTL18WLED865SGLASS or Crompton Model LTT8/ Philips)	500	Nos.	373.00	Each	186500.00
20	Supplying, Installation, Testing and Commissioning of 18-22 watt round surface mounted high efficiency LED down lighter with minimum 1900 lumens output and CRI 70, driver efficiency >85%, Color temperature - 5700 to 6000 K, housing in aluminium die casted & powder coated white with integrated electronic driver complete etc as required (Make: Wipro Model LD81-171-XXX 60 SM or Havells Model Endura Neo Surface DLS21WLED 857S or Halonix Model HLDLS-R06-22-CW)	400	Nos.	1743.00	Each	697200.00
21	Supplying, Installation, Testing and Commissioning of 1200mm Sweep Ceiling Fan, without regulator 5 Star rating including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable complete etc. as reqd. (Make: Crompton Model Entrust-50 or Usha Energia ISI 5 Star or Orient Model Smart Saver 50)	1200	Nos.	2189.00	Each	2626800.00
22	Supplying, Installation, testing and commissioning of 450 mm Sweep wall mounted oscillating Fan suitable for 230 V 50 Hz Ac Supply sompete with all accessories on existing wall etc. & dismantling the old existing fan etc. as reqd. (Crompton Model WMHIFLO LG 18" or equivalent in Havells, ORIENT)	300	Nos.	2268.00	Each	680400.00
23	Supply, installation, testing & commissioning of 300 mm (Heavy duty) sweep exhaust fan 900 RPM in the existing opening including making good the damages, connection testing and commissioning etc. complete and dismantling of old existing exhaust fans etc. as required. (Make :- Havells Model No:- Turbo Force SP)	250	Nos.	3036.00	Each	759000.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
24	Supplying, Installation, Testing and Commissioning of 15 watt Recess mounting round downlighter , having pressure die casted housing , which would act as heat sink, with white polycarbonate diffuser having a system efficacy of 95lumen/watt and colour temperture of 5500-6500 kelvin and CRI of >80 and having a life of 50000 burnning hours. with a driver having power factor of >0.9 and efficacy of >85% , having a operating range of 150-270v, with minimun surge protection of 2kv, the LED chip should confirm to binning standard of ANSI Bin C78.377A.Submission of LM80-08 report from LED source manufacturer and LM79-80 Report from luminaire manufacturer is mandatory, complete with connection with PVC insulated copper wire of suitable size etc. (Make: Wipro Model LD90-191-XXX-65-XX or Philips Model DN193B LED12S-6500 PSU WH S1 or Trilux Model AMBIELLA IND G3 LED 1250-857 ET or OSRAM Model KIT LUXSMART LED DL 15W 865)	500	Nos.	1278.00	Each	639000.00
25	Supplying, Installation, Testing and Commissioning of recess mounted Round shape, 12 Watt LED 6000 K - high efficiency down lighter with durable polycarbonate housing using Aluminum heat sink & high brightness LED, with diffuser to give glare free light, with removable driver i/c connection i/c cutting the holes in existing false ceiling and making good the same etc. as reqd..	350	Nos.	994.00	Each	347900.00
26	Supplying & fixing of mounted photo luminescent signage's on 2mm thick aluminium sheet, non toxic. Non-radioactive maintenance free self glowing safety signage's comprising of supplied chargeable crystals to glow in the dark with high intensity luminous 2mm aluminium sheet properties by chemical coated (venial & tap not accepted) and covered with V protection layer printed inmuli language ad graphic symbol as per requirement etc .required (make :Mr. Lite)	5000 0	sq.inch	27.00	sq.inch	1350000.00
Total of B						33802380.00
Total of Sub Head - I : EI & Fans (A+B)						68687580.00
Sub Head -II : Sub Station & D.G.Sets						
A	Operation and Maintenance					
1	Providing services for running, operation & maintenance of Sub Station equipments consisting of HT & LT equipments, D.G. Sets in three shifts on all days round the clock i/c Sunday and holidays i/c cleanliness of equipments, installations & surroundings as per direction of Engineer-in-Charge and as per terms & conditions attached etc complete as required by deputing following staff:					
1.1	Sub - Station no. 1, GTB Hospital Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 3 Nos. (one in each shift)	24	Months	141912.00	Per Month	3405888.00
1.2	Sub - Station no. 2, GTB Hospital Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 3 Nos. (one in each shift)	24	Months	141912.00	Per Month	3405888.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
1.3	Sub - Station no. 3, GTB Hospital Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 3 Nos. (one in each shift)	24	Months	141912.00	Per Month	3405888.00
1.4	Sub - Station no. 4, GTB Hospital Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 3 Nos. (one in each shift)	24	Months	141912.00	Per Month	3405888.00
1.5	Sub - Station no. 5, GTB Hospital Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 3 Nos. (one in each shift)	24	Months	141912.00	Per Month	3405888.00
1.6	Providing services for running, operation & maintenance of D.G. Sets in three shifts on all days round the clock i/c Sunday and holidays i/c cleanness of equipments, installations & surroundings as per direction of Engineer-in-Charge and as per terms & conditions attached etc complete as required by deputing following staff: Behind College Block, GTB Hospital, Staff required: 1) Operator cum Wireman - 3 Nos.(one in each shift) 2) Khallasi - 1 No. (one in General shift)	24	Months	99181.00	Per Month	2380344.00
Total of A						19409784.00
B	Upgradation/ Repair & Major Maintenance Work					
1	Dehydration of transformer oil to get its dielectric strength up to 60 KA i/c Providing of dehydration plant and its operation complete etc. as reqd.	20,000	Liter	11.00	Liter	220000.00
2	Complete Checking and Calibration of following various type of safety relays installed in the LT / HT panel with secondary injunction test set i/c Overhauling, Checking and Removal of minor defects and co-ordination of relay settings as reqd. 3.1 (a) IDMT relay (2 O/C, I E/F) UE	54	Job	2150.00	Job	116100.00
3	Servicing of 11 KV 630 Amp, 350 MVA, 3 phase metal clad Vacuum Circuit Breaker complete with removal from the HT panel board, dismantling / opening the required parts for servicing, checking, cleaning, testing & rectification of defects, oiling, greasing, assembling i/c moisturization of bur bar & CTs with the help of suitable equipment etc. complete as required	18	Job	4473.00	Job	80514.00
4	Servicing of 430V 800/1000 amps. 3 phase 50 Hz air circuit breaker i/c drawing out the ACB, cleaning of components, decarbonising of the arcing chamber, setting right the mechanism, lubricating the moving parts, checking & testing the continuity of control wiring, tightening of connections, measuring the insulation test resistance with LT insulation tester, measuring the contact resistance of moving & fixed contacts, replacement of minor worn out parts like nut bolts & spring washer etc., reinstallation, testing etc. complete as reqd.(Part / component required to be replaced shall be paid extra as per actual)	142	Job	3034.00	Job	430828.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
5	Servicing of 430V 1250/1600/2000 amps. 3 phase 50 Hz air circuit breaker i/c drawing out the ACB, cleaning of components, decarbonising of the arcing chamber, setting right the mechanism, lubricating the moving parts, checking & testing the continuity of control wiring, tightening of connections, measuring the insulation test resistance with LT insulation tester, measuring the contact resistance of moving & fixed contacts, replacement of minor worn out parts like nut bolts & spring washer etc., reinstallation, testing etc. complete as reqd.(Part / component required to be replaced shall be paid extra as per actual)	32	Job	3832.00	Job	122624.00
6	Servicing of 11 KV 630 Amp, 350 MVA, 3 phase metal clad Oil Circuit Breaker (OCB) HT panel board, dismantling required parts for servicing, checking, cleaning, testing & rectification of defects, oiling, greasing, assembling i/c demounturization and polishing of bus bar, heat sink PVC sleeve on bus bar & CTs with the help of suitable equipment etc. complete as required	40	Jobs	3323.00	Job	132920.00
7	Supply and replacement of following defective parts in the existing HT panel i/c control wiring thumbing , connection testing and commissioning and credit/buy back of old etc as required.					
7.01	Power pack 24 volt DC with battery unit suitable for 11/.44 kv HT panel. (Make :- Crompton greaves)	4	Nos.	17819.00	Each	71276.00
7.02	LED Indicating light (Make : L&t)	40	Nos.	163.00	Each	6520.00
8	Complete Servicing of 1250 KVA, 11/0.415 KV 50 Hz dry type transformer complete with cleaning, checking of microprocessor based protection system, Hipot testing of HT winding and maggering of LT winding etc. as reqd. (for 2 year)	4	Job	13606.00	Job	54424.00
9	Supplying and making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required.					
a)	3x240 sqmm	40	Nos.	9629.00	Each	385160.00
10	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminiumconductor cable of 11 kV grade as required.					
a)	3x240 sqmm	40	Nos.	5844.00	Each	233760.00
11	Supplying and making straight through joint with heat shrinkable kit including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					
a)	3½ X 50 sq. mm	38	Nos.	1491.00	Each	56658.00
b)	3½ X 120 sq. mm	42	Nos.	2110.00	Each	88620.00
c)	3½ X 240 sq. mm	40	Nos.	2424.00	Each	96960.00
d)	3½ X 300 sq. mm	42	Nos.	3071.00	Each	128982.00
e)	3½ X 400 sq. mm	40	Nos.	4333.00	Each	173320.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
12	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.					
a)	125 A, 36KA, FPMCCB,	100	Nos	4931.00	Each	493100.00
b)	200 A, 25 KA, TPMCCB,	70	Nos	7207.00	Each	504490.00
c)	250 A, 50KA, FPMCCB,	60	Nos	12393.00	Each	743580.00
d)	400 A, 50kA, FPMCCB,	20	Nos	17276.00	Each	345520.00
13	Supplying & Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 kV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required. (Make : Polycab)					
a)	3x400 sqmm Al. Armoured	100.0	Mtr	2195.00	P.Mtr	219500.00
14	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					
a)	3½ X 120 sq. mm (45 mm)	16	Nos	453.00	Each	7248.00
15	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.					
a)	300 Sq. m	8	Job	5844.00	P.Job	46752.00
16	Supply & filling of New transformer Oil (ISI Make) having Die Electric Strength not less than 40 KV on 4 mm Gap in the existing servo stabilizer/ Transformer complete as required (make power) oil i/c credit buy back of old transformer oil etc as required	10000	Ltr	118.00	P.Ltr	1180000.00
17	Supplying & Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 kV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required. (Make : Polycab)					
a)	3x240 sqmm	40	Mtr	1784.00	P.Mtr	71360.00
	Total of B					6010216.00
	Total of Sub Head - II : Sub Station & DG Sets (A+B)					25420000.00
	Sub Head III : VAC					
A	WTAC & STAC Works					
1	Providing day to day Maintenance & Repair of WTAC, Split A.C. Unit of 1.5TR / 2.0TR capacity and Water Cooler installed at various locations of GTBH i/c Overhauling of machine attending complaint i/c checking & cleaning of condenser, Cooling coil with suitable chemical & all necessary preventive maintenance as and when reqd. by providing experienced & qualified staff as per terms and condition attached & as per the direction of Engineer-in-Charge & site requirement. Following minimum staff shall be provided by the contractor excluding Sundays & holidays:- (1) AC Mechanic - 2 Nos. (2) Khallasi - 2 Nos. (8 Month x 2 Years)	16	Months	95325.00	Per Month	1525200.00
	Total of A					1525200.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
B	Repairing /Servicing of window/split AC in Old Building					
1	Complete servicing of WTAC/STAC unit of 1.5 / 2.0 Tr capacity including dismantling the AC from its existing position i.e. various OPD's, Wards etc, cleaning of evaporative and condensing coil with suitable chemical like coil cleaner, greasing of motor, cleaning of drain pipe and refining the same on its existing position complete etc. as required. (For two years) (1040 Nos. x 2Year)	2080	Nos.	528.00	Each	1098240.00
2	Supplying & Charging of R-410a refrigerant gas in existing following capacity WTAC / STAC unit i/c replacement of capillary tube & strainer, pressure testing, vaccumising, testing etc. complete as reqd. (For two years)					
2.01	In 2 TR capacity	400	Nos.	1923.00	Each	769200.00
2.02	In 1.5 TR capacity	150	Nos.	1473.00	Each	220950.00
3.0	Supplying & replacement of following capacity reciprocating/rotary type hermetically sealed compressor complete in the existing WTAC & STAC unit i/c repairing / rejoining of copper pipes, testing etc. complete as reqd.					
3.01	1.5 TR capacity	200	Nos.	9147.00	Each	1829400.00
3.02	2 TR capacity	100	Nos.	10296.00	Each	1029600.00
4.0	Dismantling of existing WTAC unit i/c cutting the refrigerant piping etc. complete as reqd.	200	Nos.	297.00	Each	59400.00
5.0	Dismantling of existing STAC unit i/c cutting the refrigerant piping etc. complete as reqd.	150	Nos.	438.00	Each	65700.00
6.0	Installation of STAC unit on the existing angle iron support etc. as reqd.	50	Nos.	632.00	Each	31600.00
7.0	Re-installation of WTAC unit in the existing window i/c modification in the window, sealing the gap with ply etc. as required at site of work.	50	Jobs	1199.00	Job	59950.00
8.0	Supplying and replacement of PCB of remote control unit in the existing indoor unit of 2 TR cap. STAC of various makes i/c dismantling existing worn out PCB, connection, testing & buy back the old etc. as reqd. (as per sample)	150	Nos.	1567.00	Each	235050.00
9.0	Supplying and replacement of 1.5 Tr capacity WTAC kit complete with all accessories cooling coil, condensing coil, blower fan motor, chassis and all partition complete with outer cover, grill base, except compressor complete etc. as required with dismantling the compressor from its existing position unit and fitting the same in the new kit, brazing the tube, connections installation of the new unit & buy back the old unit etc. as required.	50	Nos.	13736.00	Each	686800.00
10.00	Supplying and replacement of outdoor unit of 1.5 TR capacity for existing split AC unit including connection with copper pipe, cables i/c buy back for credit of old units i/c testing and commissioning complete etc as required.	72	Nos.	8141.00	Each	586152.00
11.00	Supplying and replacement of indoor unit of 1.5 TR capacity for existing split AC units with remote i/c connection with copper pipe cables i/c buy back for credit of old units i/c testing and commissioning complete etc as required.	68	Nos.	11555.00	Each	785740.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
12.00	Servicing of existing Desert Coolers of 3000 / 2000 cu.m./hr. capacity i/c supplying & fixing superior quality wood wool pad with pad holder, replacement of worn out nut & bolts, greasing of motor & pump etc. as directed by the Engineer-in-Charge.	1050	Nos.	315.00	Each	330750.00
13.00	Spray / Brush painting of desert cooler body of 3000 / 2000 cu.m./hr. capacity with two or more coat of synthetic enamel from inside & outside i/c cleaning the surface, preparing the surface, placing etc. as reqd.	1050	Nos.	590.00	Each	619500.00
14.00	Supplying & replacement of Fan Motor of stater thickness 19mm in Desert coolers (ISI marked) in the existing desert cooler of 3000 / 2000 cum/Hr. capacity i/c connections etc. as reqd.i/c by back old.	200	Nos.	1634.00	Each	326800.00
15.00	Supplying & replacement of submersible type Desert cooler pump (ISI marked) in the existing desert cooler i/c connections etc. as reqd. i/c by back.	500	Nos.	211.00	Each	105500.00
16.00	Supplying & Fixing of following accessories & valves in the existing capacity ETAC after dismantling worn out parts & disposing off the same i/c connections i/c buy back of old etc.as reqd.					
16.01	V-Belt-B-64, set of 2 belts.	40	Sets	496.00	Set	19840.00
16.02	0.50 HP, 1-ph., 230volt AC, self priming monoblock pumpset	26	Nos.	4818.00	Each	125268.00
17.00	Providings & fixing of 200mm thick (NS) cellulose cooling media/ pad in the existing ETAC plant i/c dismantling the existing worn out cooling media & disposing off the same outside from site etc. as reqd.	480	Sq.Fts.	1543.00	Sq. Ft.	740640.00
18.00	Servicing of existing following capacity ETAC Plants i/c opening the filter section, dismantling the worn out cooling media and disposing off the unit & balancing the same in Workshop, of self priming pumpset, cleaning the unit, oiling, greasing, reassembling etc.as reqd.					
18.01	7500CFM (4 x 2 Years)	8	Jobs	2730.00	Job	21840.00
18.02	10000CFM (6 x 2Years)	12	Jobs	2896.00	Job	34752.00
19.00	Dismantalling and shifting of existing water cooler from site to store i/c dismantalling of water connection, providing dead plug etc. complete as reqd.	20	Nos.	582.00	Each	11640.00
20.00	Installation of different capacities water cooler at different location i/c cartage of water cooler from store to site, water connection complete with G.I. pipe , PVC connection, stop cock and other accessories etc. complete as reqd.	10	Nos.	2334.00	Each	23340.00
	Total of B					9817652.00
	Total of Sub Head - III : HVAC Works (A+B)					11342852.00
	Sub Head - IV : RO Plant					
A	Operation and Maintenance					
1	Providing day to day operation & comprehensive maintenance of ION Exchange make water softening plant 500000 LPD near MCH Block & 200000 LPD near AC plant in two shift installed at GTB Hospital, Shahdara, Delhi by providing skilled staff in shifts i/c Sundays & Holidays:(a) Operator – 4Nos (one no. in each shift on each plant) (b) Khallasi -2Nos (9AM to 5PM one no. each plant) (c) Engineer – once in week for ½ day.	24	Months	149218.00	Per Month	3581232.00
	Total of Sub Head - IV : RO Plant					3581232.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
	Sub Head - V : Fire Fighting and Wet Riser System					
A	Operation and Maintenance					
1.0	Fire Fighting and Wet Riser System: Providing services for running, operation & maintenance of fire fighting system at GTB Hospital in three shifts round the clock on all days i/c Sunday & holidays i/c cleanness of equipments, installations & surroundings as per direction of Engineer-in-Charge and as per terms & conditions etc complete as required by providing the following staff:- (1) Operator - 3 Nos. (1 in each shift) (2) Khallasi - 3 Nos. (1 In each shift)	24	Months	141912.00	Per Month	3405888.00
	Total of A					3405888.00
B	Upgradation/ Repair & Major Maintenance Work					
1.0	Refilling of fire extinguisher i/c hydraulic testing and painting by 2 coats of post office red color paint i/c paste the strickers slip & fixing the same at diffirent location & floor various type of fire extinguishers after Collecting from various sites etc. complete as required.					
1.01	ABC fire extinguisher 5 kg capacity (Map 90)	1000	Nos.	496.00	Each	496000.00
1.02	Co2 gas type fire extinguisher 4.5 kg capacity	1000	Nos.	413.00	Each	413000.00
1.03	Water Co2 gas type fire extinguisher 9.0 ltr. capacity	700	Nos.	455.00	Each	318500.00
	Total of B					1227500.00
	Total of Sub Head - V : Fire Fighting and Wet Riser System(A+B)					4633388.00
	Sub Head - VI : Solar Water Heating System					
A	Operation and Maintenance					
1.0	Running maintenance & operation of solar water heating system of following capacities.					
1.1	430 Nos- Solar water panels of 100 ltrs each.					
1.2	43 nos solar water systems consisting of 10 panels					
1.3	Hot water storage tank 43- Nos					
1.4	Cold water storage tank 43- Nos					
	MINIMUM STAFF REQUIRED FOR OPERATION					
	(a)Operator - 12 nos. in three shifts					
	(b)Khallasi - 4 nos.					
	(c) Electrician - 1 no. twice in a week					
	(d) Plumber- 1 no. twice in a week	24	Month	357047.00	P.Month	8569128.00
	Total of Sub Head - VI : Solar Water Heating System					8569128.00
	Sub Head - VII : Supply of material					
A	Sub Station and DG Set					
1	Supply of 150 AH Battery for DG Sets, using existing man power for replacement on day to day maintenance work	30	Nos.	13754.00	Each	412620.00
2	Supply of 180 AH Battery for DG Sets, using existing man power for replacement on day to day maintenance work	30	Nos.	8932.00	Each	267960.00
	Total of A					680580.00
B	AC Plant and Chillers					

Sl. No.	Item Description	Qty		Rate	Unit	Amount
1.00	Supply of following material / accessories for using existing man power for replacement on day to day maintenance work:					
1.01	R22 Gas in the various AC Plants	1200	Kgs.	568.00	Each	681600.00
1.02	150 mm NRV	70	Nos.	4008.00	Each	280560.00
1.03	125 mm NRV	80	Nos.	3042.00	Each	243360.00
1.04	150 mm Butter Fly Valve	60	Nos.	4105.00	Each	246300.00
1.05	125 mm Butter Fly Valve	75	Nos.	3497.00	Each	262275.00
1.06	200 mm Butter Fly Valve	70	Nos.	7539.00	Each	527730.00
2.00	Supplying of following accessories for the existing Desert Coolers of 3000 / 2000 cu.m./hr. capacity and 1.5 / 2 TR. capacity WTAC / STAC unit, using existing man power for replacement on day to day maintenance work:					
2.01	Water distribution piping complete with PVC pipe, distributer & Elbow	250	Sets	61.00	Set	15250.00
2.02	Motor mounting ring	150	Sets	58.00	Set	8700.00
2.03	Motor mounting Legs	250	Sets	115.00	Set	28750.00
2.04	Fan blade	200	Nos.	119.00	Each	23800.00
2.05	4 MFD Capacitor	350	Nos.	32.00	Each	11200.00
2.06	15 Amp 3 Pin plug Top (ISI Marked)	500	Nos.	52.00	Each	26000.00
2.07	5 Amp 3 Pin plug Top (ISI Marked)	450	Nos.	37.00	Each	16650.00
2.08	3core pvc insulated pvc sheathed copper wire 2.5 Sq.mm copper flexible	1800	Mtr	84.00	P.Mtr	151200.00
2.09	36 MFD 440Volt Running Capacitor	150	Nos.	151.00	Each	22650.00
2.10	45 / 50 MFD 440Volt Running Capacitor	300	Nos.	176.00	Each	52800.00
2.11	2.5 MFD Capacitor	120	Nos.	27.00	Each	3240.00
2.12	Condensor Fan (As per sample)	150	Nos.	395.00	Each	59250.00
2.13	Blower/evaporator fan (As par sample)	120	Nos.	363.00	Each	43560.00
2.14	20 Amp. 3 pin industrial type plug top	250	Nos.	127.00	Each	31750.00
2.15	PVC cotton threaded drain pipe	450	Mtr	100.00	Mtr	45000.00
2.16	20 Amp. 3 pin industrial type plug socket	200	Nos.	134.00	Each	26800.00
2.17	1/4 or 1/5 or 1/6 or 1/7 HP condensor fan two / three speed motor WTAC units / Outdoor units STAC / Indoor unit STAC (as per sample)	450	Nos.	1492.00	Each	671400.00
	Total of B					3479825.00
C	EI & FANS					
1.00	Supply of following material / accessories for using existing man power for replacement on day to day maintenance work:					
1.01	5 Amp Piano type Switch (ISI Marked)	800	Nos.	12.000	Each	9600.00
1.02	5 Amp Piano type Socket (ISI Marked)	700	Nos.	18.000	Each	12600.00
1.03	15/16 Amp Piano type Switch (ISI Marked)	800	Nos.	36.000	Each	28800.00
1.04	15/16 Amp Piano type Socket (ISI Marked)	900	Nos.	45.000	Each	40500.00
1.05	5 Amp Modular Switch (ISI Marked)	1200	Nos.	43.000	Each	51600.00
1.06	5 Amp Modular Socket (ISI Marked)	800	Nos.	49.000	Each	39200.00
1.07	15/16 Amp Modular Switch (ISI Marked)	1500	Nos.	67.000	Each	100500.00
1.08	15/16 Amp Modular Socket (ISI Marked)	1500	Nos.	97.000	Each	145500.00
1.09	6 to 32 Amp SP MCB 'C' curve 10 KA breaking capacity	1600	Nos.	106.000	Each	169600.00
1.10	16 Amp DP MCB 'C' curve 10 KA breaking capacity	500	Nos.	331.000	Each	165500.00
1.11	32 Amp DP MCB 'C' curve 10 KA breaking capacity	750	Nos.	331.000	Each	248250.00
1.12	63 amp TPN MCB 'C' curve 10 KA breaking capacity	350	Nos.	470.000	Each	164500.00
1.13	100 amp TPN MCB 'C' curve 10 KA breaking capacity	250	Nos.	611.000	Each	152750.00

Sl. No.	Item Description	Qty		Rate	Unit	Amount
1.14	Modular switch type regulator stepped (2 module)	500	Nos.	195.000	Each	97500.00
1.15	100 A, 16 kA, TPMCCB	150	Nos.	2404.000	Each	360600.00
1.16	125 A, 16 kA, TPMCCB	250	Nos.	2696.000	Each	674000.00
1.17	200 A, 25 kA, TPMCCB	250	Nos.	6072.000	Each	1518000.00
1.18	250 A, 35 kA, TPMCCB	150	Nos.	7788.000	Each	1168200.00
1.19	400 A, 35 kA, TPMCCB	100	Nos.	12056.000	Each	1205600.00
1.20	630 A, 50 kA, TPMCCB	40	Nos.	15574.000	Each	622960.00
1.21	800 A, 50 kA, TPMCCB	15	Nos.	19037.000	Each	285555.00
	Total of C					7261315.00
	Total of Sub Head - VII : Supply of Material (A+B+C)					11421720.00

ABSTRACT OF COST

S. No.	Description	Amount
1	Total of Sub Head - I : EI & Fans (A+B)	68687580.00
2	Total of Sub Head - II : Sub Station & DG Sets (A+B)	25420000.00
3	Total of Sub Head - III : HVAC Works (A+B)	11342852.00
4	Total of Sub Head - IV : RO Plant	3581232.00
5	Total of Sub Head - V : Fire Fighting and Wet Riser System(A+B)	4633388.00
6	Total of Sub Head - VI : Solar Water Heating System	8569128.00
7	Total of Sub Head - VII : Supply of Material (A+B+C)	11421720.00
	Total of All Sub Heads	13,36,55,900.00

Executive Engineer (E)
HMED(East), PWD