Part C
Minor Component
(Electrical work)

Name of the Work: Repair, Operation & maintenance of BARC Townships at Mysuru. SH: Day-to-day Civil Maintenance, including cleaning of water tank & sewer line, rendering services of manpower including materials and Providing housekeeping, sanitation and cosmetic maintenance services by deployment of sweepers/unskilled labourers and supervisors including garbage collection, transportation and disposal, road sweeping, toilet cleaning and upkeep of common areas. Annual Repairs and Maintenance of IEI and fans, DG set, Substation equipments, Street lights, Split AC units etc. for residential colonies of BARC (for 1 year) (Package – II).

THE MINIMUMELIGIBILITY CRITERIA FOR E&M COMPONENTS AND SPECIALIZED WORKS WHEREVER APPLICABLE

The Main contractor shall have to associate other agency(s) for execution of each of the work(s), which fulfils the eligibility criteria as defined after taking prior approval. The main Contractor and the associated specialized agencies shall give required affidavit to confirm their association. Tender accepting authority may approve change of sub agency in case it is required during the currency of contract. However, the main contractor shall also be eligible to carry out himself any or all these works without associating any specialized agency provided:-

a) He fulfills the following prescribed eligibility criteria respectively for these work(s).

Sl. No	Component Of E&M works	ECPT in Lakhs	Eligibility
1.	EI Works, Special Repair of Electrical Installations, Supply of E&M materials, Operation and Maintenance of Sub-Station and DG set and Operation & Maintenance of Split ACs etc.	117	The main contractor shall either himself possesses electrical license of appropriate voltage level issued by competent authority or may associate with contractor registered in Buildings & Roads category of appropriate class in CPWD for execution of this sub head of work, possessing valid Electrical contractor license of appropriate voltage level issued by competent authority.

Note:

The value of executed works shall be brought to current costing level by enhancing value of work at simple rate of 7% per annum calculated from the date of completion to last date of submission of tender. For other conditions, refer special conditions specified in NIT.

The applicant shall either himself meet the eligibility conditions for the respective E&M packages or otherwise, he will have to associate an agency meeting the eligibility requirements as given in this tender document and submit the details as per Form "N" given in this tender document.

The applicant/ main contractor has to submit consent letters as per Form "P", given in this tender document from the eligible associate agency of the respective component of E&M work for each of the component of E& M works by clearly indicating the component of work.

The main contractor will have to submit an affidavit of MOU signed with eligible associated contractor. The MOU in the enclosed Form "Q" shall be signed by both contractors, Main contractor as 1st party and associated contractor as 2nd party, independently for each E&M component.

Completion certificates of the work, TDS documents, valid license, MOU documents, GST registration/approval documents as the case may be, duly attested by the main agency and proposed associated agency shall be submitted within time line duration as mentioned in Milestone under clause 5 or 15 days after the award of the work whichever is earlier.

FORM –N

PROPOSAL FOR ELIGIBLE ASSOCIATING AGENCIES FOR MINOR COMPONENTS OF WORK (as applicable)

I/we hereby propose the following agencies as per mentioned against each for executing corresponding minor components of work. Their consent letter are also attached.

Sl. No	Name of AssociatedContractor	Category and class of registration	Enlistment copy/completion Certificates attached	Monetary Limit of work	Validity of registration	Consent letter attached (Yes/No)
1.	EI Works, Special Repair of Electrical Installations, Supply of E&M materials, Operation and Maintenance of Sub- Station and DG set and Operation & Maintenance of Split ACs etc.					

Note: Self Attested photocopies of enlistment order, valid electrical contractor license, work experience certificates of each agency for each component of E&M work shall be submitted.

Signature of contractor

FORM –P
CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR COMPONENT OF WORK

NAME OF WORK: **Repair, Operation & maintenance of BARC Townships at Mysuru. SH: Day-to-day Civil Maintenance, including cleaning of water tank & sewer line, rendering services of manpower including materials and Providing housekeeping, sanitation and cosmetic maintenance services by deployment of sweepers/unskilled labourers and supervisors including garbage collection, transportation and disposal, road sweeping, toilet cleaning and upkeep of common areas. Annual Repairs and Maintenance of IEI and fans, DG set, Substation equipments, Street lights, Split AC units etc. for residential colonies of BARC (for 1 year) (Package – II).**

1. I / We hereby give my consent to associate with M/s……, for executing the minor component of work of …….…… (Mention category).
2. I / We will execute the work as per specifications and conditions of the agreement and as per directions of the Engineer –in-Charge for the corresponding minor work till the completion of the work.
3. I / We will be responsible for necessary action to handover the installations and for rectification of defects and repair during the maintenance / warranty period.
4. Also I / We will employ full time technically qualified Engineer / supervisor for the minor component of the work as required for the work. I / We will attend inspection of officers of the department as and when required.

Date:
Signature with date of Major component Signature with date of Associate/ Minor Component

Contractor	Contractor
Address	Address

1. Witness with address

(From major component contractor side)

2. Witness with address

(From minor component contractor side)

FORM -Q

MEMORANDUMOFNDERSTANDING(M.O.U)
(to be submitted for each and every E&M component)

1. M/s. (Name of the firm with full address) Enlistment Status Valid Upto:
   (Henceforth called the main Contractor)

2. M/s. (Name of the firm with full address) Enlistment Status Valid Upto:
   (Henceforth called Associated Contractor)

For the execution of E& M components for the work of **Repair, Operation & maintenance of BARC Townships at Mysuru. SH: Day-to-day Civil Maintenance, including cleaning of water tank & sewer line, rendering services of manpower including materials and Providing housekeeping, sanitation and cosmetic maintenance services by deployment of sweepers/unskilled labourers and supervisors including garbage collection, transportation and disposal, road sweeping, toilet cleaning and upkeep of common areas. Annual Repairs and Maintenance of IEI and fans, DG set, Substation equipments, Street lights, Split AC units etc. for residential colonies of BARC (for 1 year) (Package – II).** as per schedule specifications, terms and conditions of the tender.

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act (amended upto date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any dispute, either of us will go for mediation by the Engineer In charge. Any of us may appeal against the mediation to the Superintending Engineer, CPWD, Mysuru. His decision shall be final and binding on both of us.

We have agreed as under:

1. The Associated Contractor will execute all electrical works in the wholesome manner as per terms and conditions of the agreement.
2. The Associated Contractor shall be liable for disciplinary action if he fails to discharge the action(s) and other legal action as per agreement.
3. All the machinery and equipment, tools and tackles required for execution of the electrical works, as per agreement, shall be the responsibility of the Associated Contractor.
4. The site staff required for the electrical work shall be arranged by the Associated Contractor as per terms and conditions of the agreement.
5. Site order book maintained for the said work shall be signed by the main contractor as well as by the Engineer of the Associated Contractor and by Associated Contractor himself.
6. All the correspondence regarding execution of the electrical work shall

be done by the departmentwith the Associated Contractor with a copy to the main contractor. In case of non-compliance of the provisions of agreement, the main contractor, as well as the associated contractor shall be responsible. The action under clauses 2 and 3 shall be initiated and taken against the main contractor.

Signature Of Main Contractor Contractor

Date:
Place:

Signature Of Associated

Date
Place:

1. Witness with address
(From major component contractor side)

2. Witness with address
(From minor component contractor side)

General Information, Requirements & Scope of Work

1. INTENT OF SPECIFICATION: Intent of this part of the specification is to describe all the details of the electrical equipment, systems and installations in dept. townships at BARC, Mysore.

2. SCOPE OF WORK: Detailed scope of work is given in technical specifications and quantities are mentioned in BOQ.

A. NEW WORKS: Design, Preparation & Submission of Technical drawings, Technical Data sheets based on the detailed technical specifications & Guaranteed technical particulars provided and standards applicable, Manufacture on approved Technical drawings & Technical Data sheets submitted, Assembly, arranging pre dispatch inspection & testing at manufacturing facility, packing & forwarding on issue of acceptance & dispatch clearance, arranging freight transit insurance, delivery & unloading at works site, storage & stores management at site, insurance during storage, in-plant transportation to erection site, assembly and erection as per the approved guidelines/Engineer-In-charge's instructions, Testing & commissioning, submission of as built drawings, manuals and records of all the 'Electrical Stores' specified in detail under subsequent chapters and BOQ, as detailed in the schedule of quantities and subsequent sections of specific technical requirements fully complying to the detailed specifications mentioned in the BOQ, Specific Technical requirements and to the satisfaction of EIC.

B. LOCATION AND CLIMATIC CONDITIONS: The BARC project is located at Yelwala, Mysore Taluk and District. This site is accessible by road on the Mysore – Hunsur Highway and 20 kms. from Mysore City.

C. LOCATION OF BARC TOWNSHIP/COLONIES AT MYSORE: Scope of work involved in this tender is to extend maintenance and revamping of electrical works for the dept. electrical installations at the following working places by the contractor as per the BOQ and this specific technical requirement. They are:

1. **YELWAL COLONY**: Located at 19 Kms. From Mysore city on the Mysore – Hunsur Highway near the BARC, project site. This major township contains around 404 nos. of LT electrical installations in residential quarters of various types & sizes (multistorey 1+3 floor apartments and individual houses), School, College, Dispensary, Multipurpose hall, LT DG's, Pump house, Bore wells, Sewage water treatment plant, Security buildings, Street Lighting and 4 pole structure transformer yard etc.

2. **KUVEMPUNAGAR COLONY**: Located at 8 Kms. from Mysore city in Kuvempunagar area of Mysore city. This medium township contains around 109 nos. of LT electrical installations in residential quarters of various types & sizes (9 nos. multistorey 1+3 floor apartments), Dispensary, Multipurpose hall, Pump house, Street Lighting and Bore well etc.

3. **LAKSHMIPURAM APARTMENTS**: Located at 4 Kms. from Mysore city in Lakshmipuram area of Mysore city. This small township contains around 13 nos. of LT electrical installations in residential quarters including Guest house in a multistorey 1+3 floor apartment, Water Pumps, Street Lighting and a 4 pole structure transformer yard etc.

4. **HOOTAGALLI PUMP HOUSE**: Located at 10 Kms. From Mysore city on the Mysore – Hunsur Highway in Hootagalli area. This pump house contains 2 nos. 90 HP water pumps to feed water to BARC project site and Yelwal Township.

For all purposes, **YELWAL COLONY** will be considered as the headquarters for all routine activities and daily reporting. The quoted rates shall be inclusive of transport charges for the contractor's staff for movement from Yelwal colony to other townships or directly to other colonies etc. Dept. will not provide any transport facility for the contractor's staff. Contractor can store necessary tools & tackles and materials in maintenance rooms/maintenance office available at Yelwal colony and Kuvempunagar.

D. The Contractor may note the conditions existing in the regions, particularly transportation and availability of skilled manpower etc.

E. HANDLING AND TRANSPORT FACILITY AT SITE: The Contractor is responsible for handling, transport of all part of equipment and materials (unless otherwise specified) covered in this contract from Departmental stores at BARC, Mysore to various colonies, actual site of work, including loading, unloading of materials as required and specified in subsequent sections. He should make his own arrangements for storage of these materials &equipment before and during erection.

F. STANDARDS AND SPECIFICATIONS: All materials and equipment should confirm to latest IS specifications. Where an IS specification do not exist, the relevant BS specifications shall be applicable. The installation shall also comply with the requirements of the Indian Electricity Act, 2003 as amended up to date.

G. TESTING: Shall include (but not limited to) preliminary acceptance tests, liquidating defects after preliminary acceptance tests, final acceptance tests. The contractor shall carry out tests on different equipment as specified in the subsequent section with the condition thereof in order the Engineer-In-Charge to determine whether the work comply with the specifications. The contractor shall arrange his own testing equipment required for the tests to be carried out at site on any of the equipment.

The Contractor shall ensure that where ever wall, roof, floor, cable trench is chipped for installation of electrical works and the surface shall be finished neatly to the same surface as finished by Civil Contractors. Required quantity of the cement and steel for the work shall be supplied by the contractor. Contractor shall cooperate with civil and other contractors and shall coordinate his work with work of other contractors.

H. WORKMANSHIP: Good workmanship and neat finish are the pre-requisite for complying with the clause of these specifications. With a view to ensure fine workmanship, the Contractor shall employ licensed wireman, with an experience of not less than five years in the type of work they are engaged. The work should be done under the supervision of licensed electrical supervisor with good educational qualification and experience.

I. SUPERVISION: The contractor shall keep a competent, qualified, experienced and approved Electrical Engineer at the works who will be responsible for carrying out all the work in accordance with drawing, specifications and instructions.

J. MATERIALS: All materials shall be new and of the best quality confirming to the relevant IS/BS specifications. They must be the product of reliable manufacturers of many years of standing. Contractor shall supply the material of make and model as per preferred make of materials in annexure. Sample of materials shall be approved by the Engineer In charge before installation. The contractor shall incorporate any reasonable modifications as suggested by Engineer In charge.

K. COMPLIANCE WITH SPECIFICATION: This specification shall be read in conjunction with general conditions of contract and other project requirement provided in other volumes of these specifications.

All the equipment, accessories & services offered under the scope of this tender shall conform to "Technical Specifications" given in this document.

All quotations shall contain a statement that the items offered are in conformity with the enclosed technical specifications and drawings and in case of any exception/deviation from this specification in part or whole the complete nature, description and exhaustive justification thereof on each such exception/deviation shall be brought forward in the bid.

L.STANDARDS AND REGULATIONS: The design, manufacture, performance, testing and installation (including safety, earthing and other essential provisions) of equipment and accessories covered under this specification shall, in general, comply with the latest issue of Applicable Standards and Codes of Practices published by Bureau of Indian Standards, Indian Electricity Act, Indian Electricity Rules and Factory rules as defined in Indian Atomic Energy Act.

Equipment complying with other recognized standards such as IEC, IEEE, BS, VDE, DIN etc. will also be considered if it ensures performance equivalent to or superior to Indian Standards.

Equipment and accessories, for which Indian standards don't exist, shall be designed, manufactured and tested in accordance with the latest issues of other recognized Standards as above.

In case of conflict between the Specifications given herein and that given in applicable Codes and Standards, the latter shall govern to the extent of such difference.

In case of conflicts, if any, arising out of the discrepancies between terms/parameters appearing in different places of these specifications (Viz. Specification/ drawing/ technical data/ BOQ) the stringent of the terms shall be applicable and enforced.

The specifications and BOQ are complementary/ supplementary to each other.

M.MAKE & INTERCHANGEABILITY: The make of major equipment shall be limited to that indicated under "List of Preferred Make of Materials".

Makes of Equipment and accessories, which are not figuring in the "List of Preferred Makes of Materials" shall be subject to prior approval by the EIC.

The equipment and system specified herein shall preferably be from indigenous suppliers who may make use of imported systems / sub—systems / equipment / parts and who have valid collaboration agreement with reputed overseas with experience in design and supply of systems similar to that covered in this package. It shall be the responsibility of the successful bidder, to arrange the import license for equipment of overseas origin and to coordinate the supply schedule of equipment of overseas and Indian origin so as to complete the work within the agreed time schedule.

The vendor shall furnish the item-wise details of sources of supplies of major equipment (as to indigenous/ overseas origin) indicating make/ agency etc. against respective item.

The Engineer-in-Charge has the option to choose a particular make of equipment among the preferred make of instruments and controls and any other specialized items provided in the interest of standardization and the successful bidder is liable to supply items of that particular make.

All identical equipment and corresponding parts, accessories shall be fully interchangeable without any modification.

Components and equipment that are not fully interchangeable are liable for rejection and the supplier shall replace all such items by fully interchangeable ones free of cost.

N.SAFETY: All equipment shall be complete with approved safety devices and with provision for safe access of personnel to and around the equipment for operation and maintenance. The design of plant & machinery shall include not only those usually furnished components but also the additional covers, stairways, ladders, steel structural platforms for operators control panels, handrails, partitions etc. which are necessary for safe operation of the plant.

The Vendor must take sufficient care in moving his construction plants and equipment from one place to another so that those may not cause any damage to the Property of the Purchaser/other contractors particularly to the overhead and underground cables and other service lines.

When the work is carried out at night or in the obscure daylight, adequate flood lighting in the working area shall be made by Vendor at his own cost and got approved by the Purchaser.

The safety posters/regulation for prevention of accidents shall be displayed by the Vendor at appropriate places. Notices and warning signs shall be displayed for all sources of dangers.

All electrical drives and equipment must be equipped with safety devices. The safety provisions shall conform to the recognized standards, safety codes and statutory regulations.

All safety measures as required to be adopted as per the statutory regulations and the safety rules of the plant shall be strictly followed by the Vendor during the execution of the Contract.

Adequate number of first aid boxes shall be provided and maintained at work site.

O.CODING/NUMBERING SCHEME: A coding scheme for identifying the drawings, equipment, structures, spares and shipping shall be adopted by the Vendor in a sequential manner. The objective shall be to provide the following:

Streamlined archives management. Effective control with respect to identification of equipment and drawings to be supplied by different Contractor/sub-Contractors.

Identification of the spare parts for easier inventory control. The scheme will be finalized with the successful vendor during detailed engineering.

P. CONTRACTOR'S LICENSE: The contractor shall possess a appropriate class electrical contractor registration certificate issued by govt. of Karnataka, valid in Karnataka jurisdiction, for carrying out electrical installation of the type and magnitude covered in this document.

Copy of the licenses referred above shall be made available to the owner/consultant for verifications periodically during the execution of work until closure of contract.

Q. STATUTORY RULES, REGULATIONS AND APPROVAL: All equipment / material shall be installed in accordance with the requirements of relevant standards, Indian electricity Rules and Acts. It is the responsibility of the vendor to see that the electrical installation supplied and erected by him shall be to the entire satisfaction of owner and are in conformity with direction and guidelines including modifications suggested during inspection by Chief Electrical Inspector Central Electricity Authority / any other statutory body having jurisdiction in the area at all times.

R. DUTIES FOR THE CONTRACTOR AND HIS STAFF IN DETAIL:

1. **MAN POWER DEPLOYMENT**:

a. Both the revamping and maintenance work shall be undertaken simultaneously and the man power deployment shall be sufficient for executing these works simultaneously always.

b. Based on experience contractor shall depute a minimum of one supervisor with Diploma in Electrical Engineering/BE and Nine ITI Electrical trade technicians or having wireman license / electrical wireman license / Electrician license issued by the competent authority and Five 10^{th} passed out trade helpers on any working day as a minimum crew for maintenance and revamping.

c. Depending upon the nature, volume and work requirement, the contractor shall provide additional man power with qualifications mentioned above as and when required without fail.

d. The contractor shall be well aware of antecedents of his staff before deploying and he is solely responsible for the results of unwanted/unlawful activities of his staff during this tender contract period.

e. The contractor shall obtain necessary Police Verification Certificate for all his staff deputed for this contract work.

f. Contractor shall provide necessary uniform in accepted color with company badge stitched on the shirt and personal protective gear like safety shoe for all his staff deputed for this contract work. No contractor staff shall be allowed to work without uniform at any time during this contract period.

g. Contractor shall maintain a muster roll in Yelwala colony maintenance office for his staff and the staff shall sign on the same without fail.

2. **DAY TO DAY WORKS PROCEDURE**:

a. Contractor supervisor shall report to the EIC every day morning over phone to intimate the plan of that day's work, staff attendance and to receive instruction without fail.

b. Contractor supervisor shall plan regarding requirement of materials either in contractor's scope or from dept. as a FIM for a definite period sufficiently in advance and arrange the same.

c. All materials brought inside dept. colonies either in contractor's scope or from dept. as Free Issue Materials shall be declared at colony entrance security and got endorsed by them either on Delivery challan/bill for contractor's materials or in gate pass issued by the dept. for dept. Free Issue Materials.

d. Materials brought inside any colony shall be declared to the concerned dept. staff before usage in the field and copy of endorsed challan/gate pass shall be submitted to him as a proof which is a must for payment during preparation of bill.

3. **COMPLAINT LOG BOOKS:**

a. Complaint log books are placed in all residential colonies for lodging of electrical complaints by the users and no complaints shall be attended by the contractor's staff at

any cost without verifying the same in the log book or instructed by the ESS staff. No payment will be made for the unregistered complaints attended by the contractor's staff.

b. Even regular maintenance work or revamping work which will not be registered by any users shall also be entered by the contractor supervisor in the log book with all details.

c. In case of maint. Carried out, name of the system/device on which maint. carried out with proper location of the device and date of attending the complaints shall be entered in the log book.

d. In case of revamping works carried out, name of the component/device installed/replaced, its quantity, dept. or contractors supply, proper location and date of installation/replacement shall be entered in the log book.

e. After every maint./revamping/replacement works entered in the log book, it is the responsibility of the contractor supervisor to get it signed by the ESS staff.

4. **CONTRACTOR STAFF MOVEMENTS:**

a. Contractor staff shall not enter in to any residence / office area without permission from the inmates.

b. Contractor staff shall show exemplary courtesy / behaviour while dealing with residents / staff while attending complaints and shall not enter into any unnecessary argument with them. Problems encountered, if any, with residents / staff shall be reported to ESS staff immediately.

c. Contractor staff is prohibited from using mobile phone while engaged in electrical work.

5. **ITEMS REPLACEMENT, MOVEMENT AND SCRAP MATERIALS HANDLING:**

a. All scrap/defective items removed shall be marked with details as instructed by the staff and declared to the ESS staff and stored separately in different bins for disposal.

b. All scrap items accumulated over a period shall be returned to BARC, Mysore ESS periodically.

c. Contractor supervisor shall submit a request letter duly approved by the EIC to take out any items outside colony.

d. Cartons of electrical items used should not be thrown around everywhere and shall be properly disposed in the dust bins.

e. The contractor before making bulk procurement of any item shall submit one no. sample for approval by the EIC. Bulk supply can be carried out only on approval of the make and sample by the EIC.

f. All electrical items before replacement shall be entered with date of their installation over them by permanent marker pen without fail to verify their guaranteed life against premature failure.

g. Removed defective lamps from the area of working shall not be thrown everywhere and on the contrary, they shall be brought back to maint. office, declared to the dept. supervising staff and shall be stored in their respective scrap bins.

h. Wherever electrical items shall be provided by the dept. as Free Issue of Materials for erection, they shall be tested after issue but before use and the same will be provided at BARC Central Stores or ESS Stores at BARC only. Collection and shifting them to the area of location is in the scope of contract.

i. All defective/scrap items replaced with good ones shall be declared to the dept. staff maint. office for accounting purpose and without this declaration of defective materials, newly replaced items will not be measured at all.

j. Wherever the items shall be provided by the dept. as Free Issue of Materials for erection, they shall be tested after issue but before use and the same will be provided at Central Stores only. Collection and shifting them to the area of location is in the scope of contract.

k. Bidder may note that any type of modification for fixing all types and ratings of light fixture accessories as per respective BOQ item nos. to the light fixtures installed at various heights ranging from 4 mtrs. To 12 mtrs. as mentioned above due to change in dimension, size, shape, make, including removal of lighting fixtures, drilling of additional holes, adding mounting

plates/arrangement, fixing with bolts & nuts including supply of bolts & nuts if any, reinstallation of lighting fixture, rewiring and commissioning is part of the scope of work and shall not be measured separately.

l. As the size and shape of lighting fixture accessories of same type varies from one another due to change in make and over a period of time due to continuous development, contractor shall procure similar types of original accessories for all types and ratings of light fixture accessories as per respective BOQ item.

6. **LADDERS**:

Contractor shall bring aluminum ladders and MS stools needed for day-to-day routine maintenance and shall not depend only on dept. ladders.

7. **MATERIALS STORAGE**:

Since a huge volume of supply items are covered under the scope of this work, it is the responsibility of the contractor to store them properly till the erection, testing, commissioning and handing over of systems to the dept. after completion.

8. **REPLACEMENT GUARANTEE:**

a. For newly supplied LED light fixtures with LED lamp driver units a minimum of 5 years' replacement guarantee to be obtained from the manufacturer and certificate for the same shall be submitted to EIC.

b. For all other supplied products, a minimum of one-year replacement guarantee shall be provided.

GENERAL TERMS & CONDITIONS FOR ELECTRICAL

(FOR ALL SUB HEADS)

1. Work shall be carried out as per CPWD General Specifications for Electrical Works-(Internal, External, D.G. Set, Fire Fighting/ Wet-riser, Fire Alarm, Sub Station, Lift, HVAC and Indian Electricity Act 2003 as amended up-to-date) and as per the instructions of the Engineer-in-Charge, CPWD Maintenance Manual wherever applicable and in accordance to the Indian Electricity Rules 1956 and satisfaction of the Engineer-in-Charge.
2. The rates quoted shall be inclusive of wages of man power i/c relievers, material, T&P and all taxes and duties etc. as applicable. However, ESI/ EPF will be reimbursed to the contractor, on production of proof of deposit of the same with respected Govt. department.
3. The contractor shall take all precautions for safety of the workmen. If any accident/mis-happening occur 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, switch gear, DB, Main control panel, D.G Set, Fire Alarm. Fire Fighting, Lift, STP, WTP 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 running bill of contractor.
5. The contractor shall furnish name & contract number of the persons, who should be contacted during emergency.
6. All T&P and special T&P shall be arranged by contractor within scope of the work & nothing extra shall be paid on account of this. Before start of contract T&P items necessary for comprehensive maintenance & day to day maintenance, must be kept in a lockable box, if same is not available at site, then a recovery for the same @ Rs. 100/- per day shall be deducted from the contractor's bill maximum upto Rs.1000/-per month.
7. The contractor shall prepare a Sub Head wise "Fortnightly / Monthly "duty chart/ duty roaster 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. In a case of absence /leave of any labour substitute should be provided by the contractor.
8. Since the operation of various services at site is event based and very important hence the deployed contractor staff can be interchanged as per requirement among these services as per their skill level on the instructions of Engineer- in-charge or his representatives.
9. In case of any damage to existing equipment/ system/ panels etc. during maintenance, the same will have to be made good by the contractor at his cost. Failure to which the same shall be made good by the department at risk and cost of the contractor and suitable recovery will be made from the contractor bill as decided by the Engineer-In-charge.
10. **Aadhar based biometric attendance system setup with Wi-Fi/Hotspot (Communication internet) along with standby arrangement at his own cost (for which nothing extra shall be paid) for the attendance of Manpower to be deployed. In case of any breakdown same shall be restored within 48 hours, else agency shall bear the penalty of @ 10% of the applicable wages for the number of days of breakdown in Aadhar based Biometric system subject to maximum 10% of manpower item.** During breakdown period of biometric machine concerned AE/JE -in charge shall mark / verify manual attendance of the contractual staff deployed at site by the contractor.

    However, during Covid period/any other circumstances if Govt. guideline restricted Aadhar based Biometric Attendance in that case JE / AE in-charge of work shall mark / verify manual attendance of the contractual staff deployed at site by the contractor. In Round the clock shift duty, staff of current shift will relive only when staff of next shift join duty. All engaged manpower should join duty on time failing which a penalty charge @ Rs 50 for delay of every 30 minute or part thereof, after initial delay of 10 min will be imposed for every late attendance. Maximum permissible delay is 70 minutes (or as decided by Engineer-in-Charge) after which it will be treated absent. For early departure from scheduled off time, penalty charge will be imposed @ Rs 50 for every 30 minute or part thereof.

11. Before the start of contract, the contactor is bound to submit the following details along with supporting papers of the workers proposed Sub Head wise to be engaged by him. After receipt of confirmation of their suitability from the Engineer-In-charge or his authorized representative, they shall be deployed on duty.

(a) Name & Postal Address with ID Proof
(b) Photograph with specimen signature
(c) Qualification and experience
(d) Bank accounts details
(e) ESIC/EPF Details

Before start of work the agency has to got approved the detail of workers from Engineer-In-charge & has to take over the site from AE/J.E. in charge of site.

12. The Engineer-in-charge reserves the right to ask the contractor to remove of any staff without assigning any reason what so ever. Decision of the Engineer-in-charge shall be final and binding on the contractor.

13. The contractor/ Firm is advised to visit the site of work before quoting the rates, in order to ascertain the quantum, site condition and location of work.

14. It shall be entirely the responsibility of the contractor to ensure that no unlawful act is done by his staffs while on duty. In case any theft/ loss of departmental property takes place due to the negligence or carelessness of his staffs, 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 from the guidance of Contract form PWD-7 & **General Conditions of Contract (GCC)– Maintenance Work -2023 amended/modified up to last date receipt of tender i/c extension, if any**.

15. **Terms of payment and other facilities for workers.**

15.1. The contactor is bound to distribute the salary / wages to his worker by 7th of every successive month, positively, by ECS or RTGS or any online bank transaction as feasible and contractor is bound to submit the proof of wages 15th of every month to the JE(E)/AE(E) & if the payment is not made by 7th of every successive month to his workers, **then a recovery @ Rs. 500/- per worker per day of delay** shall be done from the bill of the contractor and the decision of Engineer-In-charge regarding this, shall be final & binding on the contractor.

However, department will make payment to the agency/contractor subject to availability of fund/ Budget and fulfillment of terms & conditions of the agreement. The contractor shall pay salary / wages to his staffs every month in time in spite of whether he will get payment from the department or not.

15.2 The contractor has to provide Vehicle / Cycle or other suitable means of travelling to worker for quick movement to various sites within the scope of the work, for which nothing extra shall be paid.

15.3 The contractor shall be registered with ESIC, EPF. The contractor shall deduct worker subscription toward Provident Fund as ESI, as per rules, he shall deposit the same along with his contribution into the respective accounts of the worker and submit the detail to this office for verification before payment of R/A or Final Bill.

15.4 The contactor shall take all precaution of safety of the workmen. If any accident / mis-happening occur, the department shall not be responsible for the same. Consequently, any compensation payable shall be borne by the contractor.

15.5 Recovery shall be made at the following rate if Operator/Wireman/AC Mechanic /Highly skilled / Khallasi etc. found absent from his duty.

15.5.1 Skilled worker/Operator/Wireman/AC Mechanic@ Rs. 1588/-per worker per shift.
15.5.2 Highly skilled @ Rs. 1866/-per worker per shift.
15.5.3 Khallasi/unskilled worker @ Rs. 1130/-per worker per shift.

16. **Terms of payment for the contractor**

16.1 The healthiness of the complete system/installations shall be evaluated on the method details in additional terms & condition of individual Sub Head.

16.2 Submission of E-MB.

16.3 The contractor shall provide his mobile number and the mobile number of his representative to the Engineer-in -Charge for ease in communication. Contractor shall not change the mobile no during the agreement stipulated period. If mobile is found switch off for more than 4 hours, recovery shall be made@ 100/-per day per mobile no.

17. Maintenance of any other minor addition / alternation in the existing installation shall be covered in the scope of the work and operation & maintenance of the same shall be included in scope of the work and nothing extra will be paid on this account.
Regular maintenance of all the equipment's/ installations are to be carried out at appropriate time and recorded in prescribed form as per their respective maintenance schedules or as per instructions of OEM / CPWD Manual / Format as approved by Engineer-in-Charge.

The contractor shall takeover all E&M inventories from the JE(E)/AE(E) before starting of the work and also handover above inventories in good conditions after the completion of work to JE/AE or next agencies.

18. **Safety codes and labour Regulations: -**
(a) In respect of all labour employed directly or in directly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for safety provision as per the statutory provisions, B.I.S recommendations, factory act, workman's compensation act, CPWD code and instruction issued from time to time. Failure to provide such safety requirement would make the tenderer liable for penalty for Rs. 200/-for each violation. In addition, the Engineer-in-charge, shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the contractor.
(b) The contractor shall provide necessary barriers, warning signals and other safety measures while executing the work or wherever necessary so as to arising accidents. He shall also indemnity CPWD against claims for compensation arising out of negligence in this respect. Contractor shall be liable, in accordance with the Indian law and Regulations for any accidents occurring due to any cause. The department shall not be responsible for any accidents occurred or damaged incurred or claims arising there from during the execution of work. The contractor shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the contractor due to the above provisions thereof.

19. No contractor or his staff shall be allowed to stay at site of work i.e. DG Set Room, Fire Alarm/Control Room, Fire Fighting Pump House, Lift Machine Room, STP Room, WTP etc. or other place at site, after duty hours.

20. Inventory in the schedule is for just to have an idea of quantum of work. However, this may differ from time to time. If any additional / alteration in the installed inventory is found/ made after award of work then contractor shall be bound to maintain in the same within the quoted rates under same scope of work and term and conditions, for which nothing extra shall be paid.

21. Contractor would be bound to execute any extra / additional items (If required as per the Engineer-in-charge), the contractor shall be bound to execute the same and payment shall be made as per relevant clauses of the agreement.

22. The materials shall be purchased from Authorized Dealers/Manufacturers only.

23. The contractor shall submit proof for the genuineness of the materials supplied, like copies of cash memos /bills/challan etc. as per requirement of Engineer-in-charge.

24. All the staff deputed by the contractor shall be responsibility of the contractor and Department will not entertain any Liabilities / responsibilities at any stage for staff deployed by the firm /contractor for all purpose for their regularization /absorption in the department.

25. All the minor items such as cotton waste, grease, old dhoti, Gland dori, soot, safeda, grease, petroleum jelly, PVC Tapes, stationary items/ printed stationary like log book etc. shall be arranged by the contractor for which nothing extra shall be paid.

26. The staff of the contractor shall maintain the register, logbook, worker's diary, maintenance records and registers, as per standard Performa, which will be supplied by the contractor within the scope of the work & nothing extra shall be paid. The log book shall be kept at the site, which may be checked any time by JE(E), AE(E), EE(E) and higher officers. The contractor's staff will have to take action as per direction of Engineer-in-charge or his representative time to time.
27. All dismantle materials comes shall be stacked properly and counted by the contractor and all the dismantled material shall be handed over to BARC in the respective premises as per instructions of the of Engineer-in-Charge from time to time.
28. Any damage caused due to negligence of the worker of the contractor during the routine maintenance shall be responsibility of the agency. The agency will made good the same within the scope of works and nothing extra shall be paid on this account.
29. Bad work-man-ship will not be acceptable and defect shall be rectified at contractor's cost to the satisfaction of the Engineer-in-charge.
30. All scaffolding & material the debris of the electrical works shall be removed and the contractor should clear site immediately after the completion of job.
31. The contractor has to intimate the name of his authorized representative, who will be receiving instructions in his absence. The contractor / his authorized representative is bound to sign the site order book as and when required by the Engineer-in-charge and to comply with the instructions therein.
32. The Engineer-in-charge has the right to remove any worker from site without assigning any reason. The contractor shall replace with new worker immediately.
33. The contractor will be fully responsible for the genuineness of material, and if at any stage found defective/duplicate shall have to be replaced free of cost.
34. The department reserves the right to terminate the contactor in full or part there of as required at any stage, without assigning any reason.
35. The Work shall be carried in highly secured residential complexes, so no claim of idle labour shall be entertained. The security procedure as detailed in the Part-A of this bid document shall be followed by the contractor.
36. Sub Head- Supply material items, no minus deviation shall be allowed item of supply shall be supplied within a one Month after award of work otherwise recovery @ 500/- per days shall be recovered from the bill of the contractor. The decision of Engineer-In-charge shall be final & binding on the contractor.
37. All the spares' material /parts required for repair /replacement under all subheads work (Civil, Electrical & Mechanical) shall be repaired / replaced with same make & model of spare material / parts. In case of any deviation the same shall be brought into the notice of Engineer-in-charge along with proper justification & supporting documents and shall be replaced / repaired after getting the approval of Engineer-in-Charge.
38. The work will be executed in an occupied building i.e., Schools, Jawan Barracks and Residential Qtrs. etc., in a manner so that no inconvenience to the occupants. No claim for idle labour on account of this shall be entertained under this agreement.
39. The contractor has to make his own arrangement of the tools for use by his skilled staffs. Further T&P required at site shall be arranged by contractor. Following T&P shall always be available at site of work otherwise recovery at the rate of Rs. 500/- per day for number of days it is not found at site of work: -
    a) Megger, (LV and HV Megger) : 1 Each.
    b) Earth Tester : 1 No.
    c) Crimping tools : 1Set
    d) Spanner set : 1Set
    e) ALAN Keys set : 1Set
    f) Hammer Drill : 1 Nos.
    g) Hacksaw: 1 Nos.
    h) Tong tester : 2 Nos.
    i) Pipe wrench & Chain Wrench (for 2inch to6 inch pipe) : 1 No.
    j) Tachometer/Hydrometer/Lux meter (Digital)/ Vernier; Screw gauge (Digital)/ Dial Gauge – 1 No. Each
    k) Ladder of different size: 2 Set (Suitable for internal and external electrical work)

l) Tool Bags with required tools such as Plier, Tester, Knifes Screw Driver set, Rawl Plug with different size of screws Dhoti & PVC tape etc.: For all wiremen and operators.

40. The Inventory given in Table-I are indicative only. All the equipment's and accessories available at site are deemed to be covered in the scope of operation and maintenance of EI & Fans. Any addition/ alteration shall be included in the operation and maintenance of the installations and nothing extra shall be paid.

41. Guarantee for LED fittings/ fixtures/ Luminaire

a) All the LED Bulbs/ LED fittings/ LED beam light, shall be guaranteed for a period of 5 Years and the agency shall submit guarantee /warranty certificate issued by the competent authority of the manufacturer, specifically issued for this work/ agreement, before payment of final bill.

b) 50% of the Performance Guarantee for tendered amount of LED fittings including LED fittings in extra item, shall be refunded to the contractor soon after the completion of the work and recording of the completion certificate.

c) 50% of the Performance Guarantee for tendered amount of LED fittings, shall be retained as Security Deposit.

d) 50% of the Performance Guarantee retained on tendered amount of LED fittings, as Security Deposit plus 2.5% Security Deposit already deducted from running bills (total 2.5 +2.5 = 5% of tendered amount of LED fittings i/c extra item) shall be refunded year wise proportionately.

42. Following colour coding shall be followed in wiring:
Live : Red (Single phase wiring)
Neutral: Black
Earth : Yellow/Green

43. SECURITY PROCEDURES: GENERAL

The Contractor shall submit the details of any sub-contract awarded by them, with the period of work and all the required particulars of the Sub-Contract Staffs /Labourers (i.e Name, Designation, Father's Name, Aadhaar Card No. and Contact No.) on their letter head.

The contractors and the sub-contractor must submit the details of their staffs /labourers in the prescribed format along with all the enclosures to Security Officer, RMP, BARC, Mysore.

Carrying of mobile phones is strictly restricted inside the BARC Plant. Carrying mobile phones inside the Township may be permitted with the undertaking by the main contractors to Security Officer in a prescribed BARC format. However, the mobile phones for contractor labourers/staffs in townships may be permitted subjected to the nature of works and an undertaking submitted by the contractor, which will be approved by BARC.

Liquor and smoking will be strictly prohibited at BARC colony and BARC Plant site. Contractors shall submit an undertaking to ensure the same.

The contractor may apply for temporary entry permit for BARC Colony workers in the prescribed format duly supported by a copy of Aadhar card, approved by Security Officer. The entry permit along with the copy of a valid ID proof shall be submitted to security staff on-duty at the Main Gate security of the BARC/PLANT Site.

The temporary entry permit for Non-Police Verified contractor staff/ laborers shall be initially valid for 15 days, which shall be renewed only under exceptional cases for the next 15 days. The maximum validity period of the permit shall be of 30 days from the date of first entry and for the submission of Police Verification Certificate for their staff and laborers.

The contractor's staff I laborers will make an entry of time In and time Out, in the appropriate register kept with the Main Gate Security. All the contractor staff/ laborers are subjected to frisking / security check.

Police Verification Certificate (PVC) is mandatory for all the contractors /sub-contractor staffs /labourers including In-camp labourers, engaged in any type of contract work at the BARC/PLANT Site of Mysore. The validity of Police Verification Certificate (PVC) will be considered for three years from the date of issuance of PVC, unless there is any adverse report received against the concerned contract workers or as per guidelines issued from DAE.

A temporary photo identity card shall be issued by the Security Section of BARC/PLANT Mysore, to the staff /labourers of the contractor /subcontractor who have submitted PVC. The photo pass will be valid till the contract period. In case the validity of work contract is extended by the concerned Section, the EIC shall submit a copy of the same along with the letter for extension of validity of labourer's temporary identity card.

The contractor /sub-contractor shall deploy a supervisor to assist security and EiC BARC/PLANT Mysore, related to entry /exit of labourers, movement of contractor's materials and vehicles. The supervisor is also responsible to oversee the activities of their labourers at the work spot during working hours and beyond normal working hours.

The contractors will adhere to the security guidelines issued from time to time by BARC issued through CPWD.

The security services of residential colonies is under the supervision of Departmental Security, BARC/RMP, Mysuru (hereafter refereed as BARC Security)

SECURITY PROCEDURES FOR ENTRY OF CPWD CONTRACT WORKERS IN RESIDENTIAL COLONIES OF BARC/RMP, MYSURU

A.1 Procedure for Personnel Access Control:

(i) On award of the work contract, Contractor should submit bio-data form (Appendix-1) duly completed along with a self-attested copy of Aadhar Card and PVC of workers to Security Section. On receipt of these documents BARC Security will issue a Temporary labours pass (Green colour pass).

(ii) The validity of PVC shall be considered only for 3 years i.e., from the date of issuance of PVC unless there is any adverse report received against the concerned contract workers or as per guidelines issued by DAE.

(iii) For the commencement of work, the contractor should raise a temporary labour entry permit for 15 days in the prescribed format along with a self-attested copy of Aadhar Card and latest photographs of the labour to BARC Security so that labour pass can be issued.

(iv) On requisition only under exceptional cases, further extension of 15 days may be considered after approval from OIC, Civil/ OIC Electrial as the case may be .

(v) If any of the casual labour failed to produce PVC within 30 days, He/ She may not be allowed to work in BARC/RMP residential colonies.

(vi) The contractor /firm are responsible to produce his labourers and themselves in the event of any adversary report/ enquiry from law enforcing authority against their labourers or themselves.

(vii) Every year in the month of January, Contractor should submit an undertaking from the contractors regarding non involvement of their laborers in any criminal activity and/or Police Case. This undertaking shall be endorsed by the contractor who will certify that the undertaking given by the contract worker is true and in case, if the same found false they be held responsible. This certificate shall be provided by the contractor to security for record at the time of annual renewal of labour pass.

(viii) The contractor shall deploy a supervisor to monitor the day to day activities

(x) A Register shall be maintained at the Gate of the colonies and the Contractors Supervisor / representative shall have to make proper entry/exit of all the labourers working in the colonies with all the required data. The name of the laboureres working at any time in the colony will be appended after every 8 hrs from the time of first entry

A.2 Loss of Labour Pass:

(i) Supervisors and Contractors workers shall take utmost care of the temporary labour passes issued by the Security Section.

(ii) In case of loss of any of the labour pass the Individual / Contractor concerned shall give a written complaint through CPWD Engineer - In- Charge & BARC E.I.C to BARC Security.

(iii) Concerned Contractor shall lodge FIR with nearest police station and provide original FIR or copy of Station Diary Entry recorded by the police to BARC Security. On receipt of acknowledgement from local police, Security Section will issue labour pass on completion of all the required procedures.

A.3 Procedure for Vehicle Access Control

(i) Contractors are permitted to bring their vehicles mentioned in their work order for the purpose related to ongoing work. Details of the vehicles and drivers should be pre-submitted on their letter head and relevant entries to be made in the register. Prior permission from BARC Security is required to park Contractor's vehicles inside the colonies (in the designated area) during night time and in any special cases.

(ii) Contractor's vehicles for delivery of materials, etc., shall be allowed on producing original RC Card, Insurance and Valid Driving License of the respective category of vehicle.

(iii) Any vehicle accident inside the Residential area shall be reported immediately to on duty security staff.

A.4 Procedure for Material Access Control:

The movement of all the equipment's and materials of any description that belongs to the Contractors shall be permitted inside the colonies on the strength of the Work Order issued and as per the Delivery Challans, Invoice, Purchase Order or any relevant documents and the following procedures to be adopted:-

(i) All incoming material should be declared to security by the person concerned before carrying material inside the residential area and it will be subject to security check.

(ii) All incoming materials carried on person in Residential area will be permitted based on the authentication letter with the list of tools/equipments/accessories from either the CPWD Engineer-In-Charge or from the Contractor as the case may be. Security Staff after checking the list of the tools and other items shall sign/endorse on the list of the materials.

(iii) If the Contractors tools/equipments/accessories are to be taken on the same day outside the colonies, the same may be permitted on the strength of the list signed/endorsed by the security staff on duty.

(iv) The materials which need to be taken out for replacement /repair need to be entered in the relevant register by the concerned contractor or the CPWD, EIC and same need to be endorsed by the security guard manning the colony gate.

(v) All other outgoing materials from colony premises to be authenticated by the concerned **BARC Engineer In-charge only**.

A.5 General Conditions

I. The CPWD / Contractor staffs will be provided with a space for service centre & storage area inside the colony premises . No labours will allowed to stay inside site/ campus after duty timings. No authorized activities shall be carried out in these areas and CPWD/contractor will be accountable for any breach in safety, security or harmony.

II. All contractors' personnel can work inside the colony 24 x7 with duly registering their entries in the register. The work shall be done under the supervision of the supervisor authorized by CPWD.

III. Contractor will be responsible for safety of their property against any theft of materials. Contractor may exercise police and judicial provisions but with priori concurrence from CPWD and BARC. Any dispute or police case involving contractors / contractor personnel shall be the reasonability of CPWD or their contractors and they only shall deal with completely. BARC shall not take any kind of responsibility or ownership in these matters

IV. Unauthorized entry in to the residential colonies is prohibited. The contractor personnel need to have discipline and good conduct inside the colony premises. It shall be the responsibility CPWD and their contractors to ensure that no person under their supervision indulges in undesirable and unnecessary practices.

V. The BARC Secuirty will reserve the right to carry out surprise security checks of the dwelling units, construction area etc., CPWD/Contractor shall extend full cooperation in this regard.

VI. In case of computer & cyber security, the CPWD/ contractor /contractor staff will come under the information security policy of BARC /DAE and is bidding on them

Verification of Credentials of Contractor's Personnel:

(a) Contractors, their employees, workers and casual labourers:

i. It will be the responsibility of the contractor to produce Character certificate for himself and is employees / workers before seeking permission for entry into BARC area. Contractor shall give ID card to all employees working inside BARC.

ii. The successful bidder, whose tender is accepted, will be required to obtain Police Verification Certificate (PVC) issued by Special Branch of Police at his own cost for all his workmen. i.e for Engineers, Supervisors and labourers to work inside BARC and should quote accordingly. The PVC shall be valid till completion of work.

iii. Original police verification certificate should be attached to the initial application for temporary identity card and in case of further renewals within six months a Xerox copy of the same can be attached.

iv. The contractor shall employ labourers only after due verification of their credentials and track of past record. They should maintain a register showing the particulars of labourers including their residential address and submit the same to the Project Engineer periodically for verification. The contractor shall ensure that no labourer with criminal record in the past is employed on BARC works. If any labourer with undesirable antecedents is found to be employed, the contractor shall forthwith remove such labourers from the work site on demand by the Project Engineer. The contractor shall be held solely responsible in the event of any adverse report / enquiry from the law enforcing authorities. Contractor shall give ID card to all labourers working inside BARC.

v. It will be mandatory on the part of the Tenderer to provide Character Certificate for their Engineers, Supervisors and authorised representative, who are authorised to draw tokens/passes - for day today works inside BARC Campus.

(b) Representatives of firms:

Representatives of firms who are required to visit BARC for supplying materials will not be issued with identity cards. They will be given entry by issuing entry permission on day to day basis.

Security Regulations:

a) As a part of keeping Nation-wide vigil on Government Establishments, the Security set up in BARC also has been beefed up and accordingly the following restrictions are in force till further orders.

b) Any motor vehicle with or without any construction related materials will be given an entry permit to BARC premises after convincing the purpose of entry, if and only if it is; accompanied by an authorised departmental employee throughout its movement within the premises.

c) The movement of contractor's Vehicle within BARC premises is restricted and normally one specified vehicle will be permitted for his personal movement at the discretion of the Project Engineer during the contract period after thorough security verification. The contractor has to apply for such vehicle permit to the department through the Project Engineer- in the standard proforma, after receiving the Work Order.

d) Each Labourer has to give his/her bio-data in the standard proforma to the Department for obtaining the labour entry pass and normally such an entry pass will be issued only after a thorough verification of the bio-data.

e) The Department will make every possible arrangement to minimise the inconvenience to the contractor from security point of view. However, due to any unforeseen reasons, any delay, inconvenience or loss occurred to the contractor no claim for compensation whatsoever in nature shall be entertained by the Department.

f) Contractor has to take separate written permission for labours & vehicles for working on holidays in advance form the BARC security/ EIC.

The above additional regulations are indicated only to make aware the contractor about the latest security set up in BARC premises.

Confidentiality Clauses:

Confidentiality:

I. No party shall disclose any information to any Third party' concerning the matters under this contract generally. In particular, any information identified as" Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.

II. This clause shall apply to the sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

III. "Restricted information" categories under Section 18 of the Atomic Energy Act, 1962 and "Official Secrets" Under Section 5 of the Official Secrets Act, 1923:

Any contravention of the above-mentioned provisions by any contractor, sub-contractor, consultant, adviser or the employees of a contractor, will invite penal consequences under the above said legislation.

IV. Prohibition against use of BARC's name without permission for publicity purposes

The contractor or Sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any public media like press, Radio, TV or internet without the prior written approval of BARC.

ADDITIONAL TERMS AND CONDITIONS

For Electrical Installations

1. The work shall be carried out as per CPWD electrical specifications for Internal, External, lifts, sub-station, wet riser system, and fire alarm system upto date amended and entire satisfaction of Engineer-in-charge.
2. The contractor shall depute the staff as per BOQ.
3. The contractor shall maintain all the installations/equipment in proper working condition.
4. The service is to be provided on all working days i/c Sundays and Holidays.
5. Qualification of Wireman
   Wireman Should have valid Wireman License/electrical workman license/Electrician license issued by the competent authority.
6. Qualification of Khallasi.
   Physically strong/Mentally fit, minimum 5th Pass or above.
7. The contractor will have to depute additional skilled labour to attend to a fault beyond the competency of the staff deployed for which nothing extra shall be paid.
8. The contractor shall keep all safety arrangement site and if any accident occur due to negligence shall be the responsibility of the contractor and nothing extra shall be paid on this account.
9. The contractor will have to maintain log book for operation / running and maintenance and all the checks & faults with date and time of all equipment at site and the firm has to arrange the log book and attendance register within their quoted rates, which will be checked by the Junior Engineer (E)/Asst. Engineer (E)/Executive Engineer (E).
10. The Minor material such as soap, duster, broom, old dhoti, cotton waste, fuse wire, PVC tape, Grease, M. Oil, Test Lamp, Torch etc. shall be arranged by the contractor with in their quoted rates.
11. All the installation/equipment shall be maintained by the firm in neat and clean condition within their quoted rates.
12. The contractor shall hand over all installation/equipment in good working condition to the department after completion of work. The decision of engineer in charge shall be final & binding on the contractor.
13. Replacement of lamp, Ignitor, ballast, pole wiring, fan wiring, fan, regulator, and lamp holder or any other items will be supplied by the contractor as per BOQ or by the department free of cost for the Bonafide use of work. In case of any misuse, the contractor will have to provide the material misused at his cost, failure of which recovery will be made at double the cost of market rates.
14. The minor material such as soap, duster, broom, old dhoti, cotton waste fuse wire, PVC tape, Grease, M. Oil, Test Lamp, Torch etc. shall be arranged by the contractor with in their quoted rates.
15. In case of minor repairs required the contractor shall arrange the same within quoted rate. Major repairing not covered in the scope of work.
16. All the installation/equipment shall be maintained by the firm in neat, clean and proper working Condition.
17. No Contractor or his staff shall be allowed to use or shall stay in service center, pump house, switch room, D G set room and as such other place at site after duty hours.
18. In case of electrical supply failure the contractor or his worker available on duty shall record in brief action taken in this regard with supply agency.
19. The contractor will be fully responsible for the conduct of the staff deputed at site.
20. The contractor will have to depute additional skilled labour to attend to a fault beyond the competency of the staff deployed for which nothing extra shall be paid.

21. The contractor shall hand over all installation/equipment in good working condition to the department after completion of work.

22. The contractor shall submit duty roaster in duplicate within once week from the date of start of work and thereafter two days before the close of every month if staff is changed.

23. Any damage done to the existing equipment / system / panels during maintenance shall be made good by the contractor free of cost failing which the same shall be made good by the department at risk & cost of the contractor.

24. In case of minor repairs/replace required such as gland dori, nut bolt, fuse wire, LED connecting wire distilled water, petroleum jelly thimbles etc. the contractor shall arrange the same within quoted rate. Major repairing not covered in the scope of work.

25. No Contractor or his staff shall he allowed to use or shall be stay in service centre, pump house, switch room, DG set room and as such other place at site after duty hours.

26. In case of electrical supply failure the contractor or his worker available on duty shall record in brief action taken in this regard with supply agency.

27. The contractor shall submit duty roaster in duplicate within once week from the date of start of work and thereafter two days before the close of every month if staff is changed.

28. In case of any problem arises contractor has to arrange the Engineer/ Microprocessor Engineer/Any other assistance required as and when. As per need of site has to provide free of cost for which nothing extra will be paid.

29. The Inventory in the schedule is for just to have an idea of quantum of work. However, this may differ from time-to-time, Contractor has to make sure that all the equipment related to these services are to be maintained in perfect condition

30. After deployment of the labour by the Contractor, interview of all labour shall be taken by the committee of one Executive Engineer, one Assistant Engineer and one Representative form the Client.

31. The firm shall abide minimum wages Act. As notified by the Central Government and the payment to staff shall be made through cheque/ ECS. The payment to the contractor will be released only after giving proof to the department for the same.

32. Detail of the Electrical Installation / Equipment's.

- Brief details of E.I, Fans and Street Lights

  i. Total Electric Points - 6230Nos. (approx.) at Yelwala township
  - 1564 Nos. (approx.) at Kuvempunagar campus.
  - 321 Nos. (approx.) at Lakshmipuram campus.

  ii. Street lights/compound lights pole of associated length - 222 Nos. (approx.)

The quantities of above installations may be varied & new installations may be added, at any stage and nothing extra shall be paid on account of this.

NUMBER OF QUARTERS AT EACH RESIDENTIAL COLONIES OF BARC, MYSURU

Township	Type A	Type B	Type C	Type D	Type D Spl.	Type E	Total Quarters
Yelwala	48	191	72	36	0	0	347
Kuvempunagar	0	0	81	2	12	0	95
Lakshmipuram	0	0	0	0	0	9	9
Total Quarters	**48**	**191**	**153**	**38**	**14**	**9**	**451**

Inventory for E.I. Installation

S. No.	Description of Items	No. of Points	Unit
	Yelwala Colony		
1	MP Hall / Badminton Court	80	Nos
2	PU School	200	Nos
3	School	409	Nos
4	Type- A	616	Nos
5	Type-B	2643	Nos
6	Type- C	1368	Nos
7	Type -D	913	Nos
	Total of Yelwala township	**6229**	**Nos**
	Kuvempunagar Colony		
1	MP Hall	30	Nos
2	CGHS & Dental Clinic	67	Nos
3	Type- C	1063	Nos
4	Type - D	404	Nos
	Total of Kuvempunagar colony	**1564**	**Nos**
	Lakshmipuram Colony		
1	Type - E	261	Nos
2	Guest house	60	Nos
	Total of Lakshmipuram colony	**321**	**Nos**
3	**Maintenance of Feeder Pillar Boxes**		
	MDFP-1 Incomer- 400A, Outgoing Feeder 4x250A Size 1000 mmx600mmx1100 mm	1	Nos
	MDFP-2	1	Nos

	Incomer- 400A, Outgoing Feeder 4x250A Size 1000 mmx600mmx1100 mm		
	Feeder Pillar Boxes Incomer- 250A, Outgoing Feeder 4x100A	9	Nos
4	**Meter Cubicle Panel**		
	Size 1600mmx 600mm x 300mm Panel consists of Meter Cubicle of Size PXQ nos. of cubicles : XXX	9	Nos
	Size 1600mmx 600mm x 300mm Panel consists of Meter Cubicle of Size PXQ nos. of cubicles : XXX	13	Nos
	Size 1600mmx 600mm x 300mm Panel consists of Meter Cubicle of Size PXQ nos. of cubicles : XXX	21	Nos
5	**Maintenance of MCC Panel**		
	Yelwala Pump House Panel	1	Nos
	Yelwala STP Panel	1	Nos
	AECS PCC Panel (2 nos. mention the size)	2	Nos
	3 Phase, 12 way MCB DB Maintenance	12	Nos
	Borewell Starter	1	Nos
6	**Maintenance of Electrical system Earth Pits**		
	Maintenance of electrical system plate earth electrode assembly brick work earth pit chambers of size : 600 mm x 600mm including cleaning of chambers, terminals, application of petroleum jelly, adding of salt and watering, measurement of earth resistance values, repairing of damaged brick work and plastering and PCC if any, replacement of Brass bolts and nuts and Bimetallic clamps and watering etc., as per the following Note : Civil works shall be measured in respective BOQ items.	202	Nos
	Maintenance of Lighting Protection Copper earth Rod Electrode/ Maintenance Free Chemical Earth Rod assembly Brick work Earth Pit Chambers of size : 300mm x300mm	35	Nos
7	**Maintenance of Street Light Poles (2.5/7/8/10 Meter)**	222	Nos
8	**Maintenance of Street Power Cables (10/16/25/35/70 Sq mm AL)**	5000	Mtrs

TECHNICAL SPECIFICATIONS

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING (SITC) OF FOLLOWING ELECTRICAL ITEMS AND ACCESSORIES:-

❖ **Supply and Installation/Replacement or Only Installation/Replacement of various types and ratings of Lamps and Lighting Fixture Accessories**: -

❖ The scope of work under this item includes Supply, Installation, Testing and Commissioning (SITC) of various types and ratings of lamps viz. Compact Fluorescent Lamps (Non-Integral), Cool Daylight Tubular Fluorescent Lamps, Discharge lamps of Elliptical, Tubular shaped, Single and Double Ended as mentioned in the BOQ/list of preferred make of materials.

❖ The contractor before procurement shall verify the wattage rating, operating voltage, type of mounting and other details and got it cleared from the EIC to avoid rejection of the same.

❖ The CFL, FTL lamps and accessories for light fixtures to be replaced in case of failure are installed at various heights ranging from 3 Mtrs. to 6 Mtrs.

❖ Similarly, all types of Discharge lamp light fixtures to which the lamps and accessories are to be replaced in case of failure are installed at various heights ranging from 4 Mtrs. to 8 Mtrs.

❖ Before replacement of any lamps, the condition of ballast MUST be ensured and without verifying the condition of ballasts, no new lamps shall be replaced.

❖ The electronic high frequency ballasts shall be instant start, very low harmonics distortion, with PF
> 0.96, operating voltage 198 – 264 V, automatic restart and constant light output independent of mains voltage fluctuations.

❖ **Supply and Replacement of Various types and ratings of LED Lamp Driver Units**: -

❖ The driver units covered in this item are for replacement for the existing street light fixtures which are mounted in 7.5 Mtrs. height street light poles in service in all colonies.

❖ Hence they shall be fully suitable for the existing one in shape, size, mounting and in performance.

❖ Contractor shall install the same make of drivers only for the defective ones as a replacement.

❖ Contractor can also arrange powered vehicles mounted with street light ladders for speedy replacement.

❖ The drivers shall be supplied in manufacturer's original packing.

❖ Warranty certificate available for the drivers if any shall be submitted to the dept.

❖ **Supply and Replacement of other FTL/CFL Light Fixture Accessories**: -

❖ The scope of work under this item includes Supply, Installation/replacement, Testing and Commissioning of various types and ratings of Lighting Fixture Other Accessories as mentioned in detail in the BOQ.

❖ Various types of CFL and FTL fixture accessories (Item Nos. 3.01 to 3.07) to be replaced in case of failure to the CFL/FTL light fixtures are installed at various heights ranging from 3 Mtrs. to 6 Mtrs.

❖ Bimetallic Fluorescent Tube Light Starter, starter with aluminium case/barrel is preferred than plastic.

❖ **SUPPLY AND REPLACEMENT OF VARIOUS TYPES AND RATINGS OF FLUSH TYPE SWITCHES, SOCKETS, PLUG TOPS, METAL CLAD PLUG TOPS & SOCKETS, CEILING FAN ELECTRONIC REGULATORS AND CEILING FAN CAPACITORS: -**

❖ The scope of work under this item involves, Supply and replacement/installation of Flush Type Switches, Sockets, Plug tops, Metal Clad Plug Tops & Sockets, Ceiling Fan Electronic Regulators, Ceiling Fan Capacitors all confirming to IS: 3854, ISI marked and suitable to work on AC 1 phase 240 V, 50 Hz. P/s system as per the following.

❖ The flush type switches and sockets shall be of White color confirming IS.3854, ISI marked with IP 20 protection.

❖ All supplied items should be as per the make, model/catalog no. and color mentioned in the BOQ/list of preferred make of materials and in suppliers original packing.

❖ The scope also includes making of cutouts in the existing/fresh hylam sheets, drilling of holes for fixing, tapping, fixing with bolts & nuts/screws, aligning and wiring.

❖ Ceiling fan capacitors of ISI marked of makes as per preferred make need to be replaced for Ceiling Fans/Wall Mounting Fans/Air Circulators mounted at heights.

❖ Generally, all lighting and power switch boxes are installed at 1.00 Mtr. Level from FFL with some exemptions. Similarly, all MCB box with metal clad socket are installed nearer to the AC units at height.

❖ Ceiling fan regulators will be fixed to the Hylam sheet with 2/4 nos. screws and not only with the check nut for the operating knob shaft.

❖ Pilot buzzers will be fixed to the wooden round block with wood screws.

❖ **SUPPLY AND INSTALLATION/REPLACEMENT OF VARIOUS TYPES AND RATINGS OF MODULAR TYPE SWITCHES, SOCKETS AND CEILING FAN ELECTRONIC REGULATORS: -**

❖ The scope of work under this item involves Supply and installation/replacement of Modular Type Switches, Sockets and Ceiling Fan Electronic Regulators as per the following.
❖ All items supplied should be as per the make, model/catalog no. and color mentioned in the list of preferred make of materials and in suppliers original packing.

❖ As modular switches' sizes and mounting arrangements are not standardized and not same for all makes, care should be taken to provide the same make for replacement for the defective one.

❖ At present makes viz. LEGRAND, CRABTREE and MK are being used in colonies for modular switch items etc.

❖ **SUPPLY AND INSTALLATION/REPLACEMENT OF VARIOUS TYPES AND RATINGS OF RIGID PLASTIC, SURFACE MOUNTING TYPE HEAVY DUTY BOXES -**

❖ The scope of work under this item involves, Supply and installation of Rigid plastic, surface mounting type plain heavy duty boxes suitable for mounting **flush type switches and sockets** as per the BOQ and as per the following.

❖ The boxes shall be made of ABS plastic and hard enough to mount all types and ratings of flush type switches and sockets on its cover.

❖ The boxes shall be mounted to the wall/wood surface using suitable numbers of wood screws and to metal surface using bolts and nuts.

❖ A sample box shall be supplied and got approved before making bulk procurement.

❖ **SUPPLY AND INSTALLATION OF MODULAR CONTROL GEAR PVC SWITCH BOX WITH FRONT COVER PLATES AND WITH FRAME SUITABLE FOR MODULAR SWITCHES AND SOCKETS AS PER THE FOLLOWING: -**

❖ The scope of work under this item involves, Supply and installation/replacement of Modular control gear PVC switch box with front cover plates and with frame suitable for modular switches and sockets

❖ All items supplied should be as per the make, model/catalog no. and color mentioned in the BOQ, as per the list of preferred make of materials and in suppliers original packing.

❖ The boxes shall be mounted to the wall/wood surface using suitable numbers of wood screws and to metal surface using bolts and nuts.

❖ A sample box shall be supplied and got approved before making bulk procurement.

❖ **SUPPLY AND INSTALLATION/REPLACEMENT OF PORCELAIN FUSE CARRIER WITH BASE SUITABLE FOR REWIRABLE FUSES OF VARIOUS RATINGS AS PER THE FOLLOWING: -**

❖ The scope of work under this item involves Supply and installation/replacement of Porcelain fuse carrier with base suitable for rewirable fuses of various ratings.

❖ As these items are replacement for the existing porcelain fuse carrier units in feeder pillar boxes and DBs, shape, size, rating and mounting arrangement for the new one shall be as same as that of the defective one.

❖ **SUPPLY AND REPLACEMENT OF VARIOUS TYPES AND RATINGS OF MCBs AND MCB ENCLOSURES: -**

❖ The scope of work under this item involves Supply and installation/replacement of VARIOUS TYPES AND RATINGS OF MCBs AND MCB ENCLOSURES as per the following.

❖ The enclosures supplied should be as per the make and model/catalog no. mentioned in the BOQ, list of preferred make of materials and in supplier's original packing.

❖ The scope of installation of MCBs includes, cutting and fixing of dove tail MS plated channel of required length to the switch box by drilling, with bolts & nuts/screws and installing MCBs on the same, making suitable size of cutouts on the switch box cover for operation of MCB dolly and termination of wires to the MCB.

❖ The scope of SITC of MCB metal enclosures includes, either fixing them to the wall/steel structure using wood screws and GI bolts & nuts or embedding them to the wall by chipping the wall, embedment, finishing with cement mortar mix, finishing, curing, installation of MCBs as per the requirement to the enclosures inside, making necessary holes for glanding of cables, entry of PVC conduits, finishing and termination of wires/cables to the MCCB.

❖ **: 2 MM THICK ELECTRICAL GRADE HYLAM SHEET COVERS: -**

❖ The scope of work under this item includes, Supply of 2 mm thick electrical grade with 2 KV Dielectric strength ISI marked Hylam sheets of IVORY/WHITE color of preferred make as mentioned in the list, including cutting to the sizes as and when needed depending upon the field requirement, making different shape & sizes of cutouts on the sheet for fixing Flush Type Switches, Sockets, Ceiling Fan Electronic Regulators, MCB operating dollies, drilling holes for fixing the accessories, edge preparation and installation to the MS/wooden switch boards with screws.

❖ The Hylam switch boards of different sizes assembled with combination of switches & sockets shall be fixed to the existing wall embedded wooden switch boxes with GI passivated machine screws of suitable size.

❖ Before installation of Hylam switch boards with switches & sockets to the existing wall embedded wooden switch boxes shall be thoroughly cleaned and all wires shall be neatly bunched.

❖ High quality of skill must be exhibited in the installation of Hylam switch boards regarding all components alignment, straightness and sheet alignment.

❖ **SITC OF 1-PHASE POWER EXTENSION BOARDS: -**

❖ The scope of installation of 1-phase power extension boards of size: 250 mm (L) X 200 mm (H) X 50 mm (D) made out of 2 mm thick CRCA MS sheet steel is to install boards on RCC/Brick wall/ MS structure using suitable number of wood screws/GI bolts & nuts, testing and commissioning.

❖ **SITC OF 1.5 / 2.5 sq.mm MULTI STRAND COPPER CONDUCTOR, FRLS PVC INSULATED WIRES AND FRLS PVC SHEATHED, MULTI CORE FLEXIBLE CABLES:-**

❖ The scope under these items includes Supply of 1.5/2.5/4 Sq.mm multi strand bare copper conductor, FRLS PVC insulated wires, 3 Core x 1.5/2.5 Sq.mm Multi strand Copper conductor, PVC insulated, FRLS PVC sheathed, multi core flexible cable, with annealed stranded bare electrolytic grade copper conductor, with 1100V grade extruded PVC/FRPVC insulation of standard color, over which extruded FRLS PVC outer sheath, PVC insulation/FRLSPVC outer sheath printed with mfrs. name, symbol, year of mfg., seq. length, voltage grade, no. of core, size, confirming with IS: 5831,8130, 694, amendments up to date.

❖ Wires/Cable to be installed in the existing open / embedded PVC / Metal conduit pipes / Casing & capping / newly installed in RCC roof slab / wall at various heights including shifting of ladders, cables and termination. PVC conduits used for installation of this Multi pair flexible telephone cables if any shall be measured under the respective item.

❖ **PVC CONDUITING:-**

❖ The scope of work under this item includes, Supply and installation of 2.0 mm wall thick Rigid Heavy duty FRLS PVC conduit pipe in GREY / IVORY color confirming to IS:9537 (Part:3-1983) and ISI marked of sizes as mentioned in the BOQ, with suitable conduit accessories suitable for the rigid heavy duty pipe and GI spacer saddle / 3.0 mm thick GI multiway heavy duty spacer and GI / Aluminium saddle clamped on the wall / beam / column surface with wood screws/bolts & nuts, including chasing on the wall and finishing wherever required.

❖ Sample pipe and accessories shall be submitted for EICs approval before bulk procurement. The conduit accessories shall also be of rigid, heavy duty in nature and shall be strictly suitable for the conduit pipes without any modification.

❖ Conventional GI spacer saddle can be used for the conduit route wherever a single conduit runs. On locations where more than one conduit travel/laid together they shall be commonly clamped using 3.0 mm thick GI multiway heavy duty spacer and aluminium saddle made from 2 mm thick aluminium strip.

❖ No conduit accessories will be measured separately and they are part of the conduit running length only.

❖ **GEYSER ACCESSORIES:-**

❖ The scope of work under this item includes Supply and installation/replacement of heating elements, thermostats and thermal cutouts for various types, makes, capacity and ratings of vertical/horizontal/instantaneous/storage type geysers.

❖ The new heating element to be procured shall be same as that of the defective one in shape, size, rating and mounting arrangement.

❖ Replacement of heating element also involves dismantling of geysers from their position, replacement of heating elements, fixing of heating element mounting plate to the geyser with gaskets including replacement of gaskets if any, cleaning of removal of salt sedimentation in the water container, reinstallation of geysers, checking for water leakage if any, testing and commissioning.

❖ The replaced thermostats and thermal cut outs shall be tested for its successful functioning.

❖ **INSTALLATION OF LAN CABLES:-**

❖ The scope of work under this item is to install LAN cable in existing PVC/Metal Conduits/Casing N Capping etc.

❖ LAN cable of required length alone will be provided by the dept. as Free Issue Materials (**FIM**), shifting, installation, termination of cable with RJ11/45 jacks and commissioning is in the scope of contractor.

❖ **SITC OF WALL MOUNTING FANS:-**

❖ The scope of work under this item includes Supply, replacement/installation, testing and commissioning of 300/450 mm sweep wall mounting type exhaust fans in bath rooms and kitchens.

❖ The new exhaust fans to be procured shall be same as that of the defective one in shape, size, rating and mounting arrangement.

❖ **SUPPLY AND INSTALLATION OF VARIOUS TYPES AND RATINGS OF MELAMINE CONNECTORS IN EXISTING/NEW CONTROL GEAR BOXESAS PER THE FOLLOWING: -**

❖ The scope of work under this item to Supply and installation/replacement of various types and ratings of melamine connectors (terminal blocks) in existing/new control gear boxes as a replacement for the defective ones in street lighting and feeder pillar boxes.

❖ As these items are replacement for the existing melamine connectors (terminal blocks) in feeder pillar boxes and control gear boxes, shape, size, rating and mounting arrangement for the new one shall be as same as that of the defective one.

❖ **SUPPLY AND REPLACEMENT OF HRC FUSES OF VARIOUS CURRENT RATINGS AND TYPES AS PER THE FOLLOWING: -**

❖ The scope of work under this item to Supply and installation/replacement of various types and ratings of HRC fuses of various current ratings and types in existing/new control gear boxes as a replacement for the failed ones in feeder pillar boxes, DBs, street light/water pump control/starter panels and MCC panels.

❖ As these items are replacement for the existing HRC fuses, shape, size, rating and mounting arrangement for the new one shall be as same as that of the defective one.

❖ **SUPPLY AND REPLACEMENT OF 4 POLE METAL CLAD ICTPN SWITCHES AS PER THE FOLLOWING: -**

❖ The scope of work under this item includes Supply and installation/replacement of various ratings of 4 pole metal clad ICTPN switches as a replacement for the defective ones in feeder pillar boxes, DBs, street light/water pump control/starter panels and MCC panels.

❖ As these items are replacement for the existing 4 pole metal clad ICTPN switches, shape, size, rating and mounting arrangement for the new one shall be to the extent same as that of the defective one.

❖ **SUPPLY AND REPLACEMENT OF VARIOUS RATINGS OF MOTOR PF IMPROVEMENT CAPACITORS AS PER THE FOLLOWING: -**

❖ These capacitors are being used in pump houses in the motor circuit for power factor improvement.

❖ The scope of work under this item includes Supply and installation/replacement of various ratings of motor PF improvement capacitors as a replacement for the defective ones in water pump control/starter panels and MCC panels.

❖ As these items are replacement for the existing capacitors, shape, size, rating and mounting arrangement for the new one shall be to the extent same as that of the defective one.

MAINTENANCE / REPAIR / SERVICING OF FOLLOWING ELECTRICAL ITEMS / EQUIPMENTS / INSTALLATIONS: -

❖ **MAINTENANCE OF MCC PANELS, BOREWELL STARTER PANELS, 11KV GOS, METERING CUBICLES, METER BOARDS, FEEDER PILLAR BOXES, MCB DISTRIBUTION BOARDS AND STREET LIGHT JB'S AS PER THE FOLLOWING:-**

❖ The scope of work under this item includes taking line clear from the concerned users on the feeder pillar boxes/DBs/MCC panels to be maintained, isolating the incoming power supply, fixing caution boards at the source point, removing the doors/covers, cleaning the panel dust/dirt with hand blower, wiping all parts/surfaces with dry cloth, checking the condition of fuse carriers, wire/HRC fuses, terminal blocks, MCBs/Indicating lamps/Fuses/Handles/Locks and other Electrical Devices, replacement of the defective items with good ones, checking the tightness of all phase/neutral/earth connections, closing of extra holes if any with grommets/dummy plates, refixing the doors/covers, wiping the doors/covers with wet cloth, removal of caution board fixed at the source point and switching ON the power supply checking

1/3 Ph. supply at the incoming/outgoings, after completion of all works and with permission from dept. supervisory staff.

❖ Items covered under the BOQ replaced if any shall be measured under their respective items and other major electrical items replaced if any shall be provided by the dept.

❖ Consumables required for cleaning and maintaining the DBs/panels viz. cotton waste/ brush/hand blower/grommets of various sizes, bolts & nuts are entirely in the scope of contract.

❖ **MAINTENANCE OF ELECTRICAL SYSTEM EARTH PITS: -**

❖ The scope of Maintenance of Electrical Plate/Pipe Earth Electrode Assembly pit of maximum size: 600 x 600 x 300 mm under this item includes removal of earth, debris, vegetation around the earth pits, removal of debris from inside the chamber & Cleaning with running water, cleaning of terminals, tightness checking, application of petroleum jelly to the terminals, watering the pit with 15 ltrs. Of water with 5 kg of ordinary salt through the funnel, measurement of earth resistance values with earth tester before & after maint. after disconnection of wires/strips, repairing of damaged brick work & plastering with cement mortar & PCC if any, replacement of Brass bolts, nuts if any, C.I. top covers, reconnection of wires/strips after cleaning their contact surface, painting with bituminous paint on the C.I. cover top & bottom surface, writing of Pit No., date of maint. On the chamber top surface with black letters over yellow strip with enamel paint etc.

❖ Replacement of any fasteners, bolt, nuts, washers and other consumables like salt, petroleum jelly, cotton waste etc., if any is in the scope of contractor.

❖ C.I earth pit chamber cover shall be provided by the dept. free of cost as FIM. Shifting to the location, installation including chipping, removing the old frame and embedding the frame on concrete and finishing is in the scope of contractor. Replacement of C.I. earth pit cover shall be measured under its respective BOQ item.

❖ Earth tester for measuring earth resistance shall be arranged by the contractor.

❖ Major PCC/brick work if any shall be measured under their respective items.

❖ **MAINTENANCE OF VARIOUS RATINGS OF INDUCTION MOTORS: -**

❖ The scope of Maintenance of various ratings of induction motors under this item includes, identifying the motor, cleaning the motor, checking the terminals tightness, verifying the status of cooling fans, current measurement of all phases, measurement of capacitor currents, closing unnecessary openings/gaps in the terminal box etc.

❖ **MAINTENANCE OF STREET LIGHT JB'S AND SOLAR STREET LIGHT POLES AS PER THE FOLLOWING:-**

❖ The scope of work under this item includes maintenance of Street light JBs including removing the doors/covers, cleaning the JB dust/dirt with hand blower, wiping all parts/surfaces with dry cloth, checking the condition of fuse carriers, HRC fuses, terminal blocks, MCBs, Locks and other Electrical Devices, replacement of the defective items with good ones, checking the tightness of all phase/neutral/earth connections, closing of extra holes if any with grommets/dummy plates, refixing the doors/covers, wiping the doors/covers with wet cloth after

completion of all works and with permission from dept. supervisory staff.

❖ The scope of work under this item includes maintenance of Solar Street light Poles including cleaning the JB dust/dirt with hand blower, wiping all parts/surfaces with dry cloth, checking the condition of fuse carriers, HRC fuses, terminal blocks, MCBs, Locks and other Electrical Devices, replacement of the defective items with good ones, checking the tightness of all phase/neutral/earth connections, closing of extra holes if any with grommets/dummy plates, refixing the doors/covers, wiping the doors/covers with wet cloth after completion of all works and with permission from dept. supervisory staff.

❖ Cleaning the solar street light pole battery units, adding distilled water as and when required if any, measuring the battery voltage, applying petroleum jelly for the battery terminals, cleaning the battery container, solar panel and light fixture etc. New battery as a replacement for the defective one needed if any will be issued at BARC, Mysore Central Stores free of cost, collection, shifting them to the place of work are entirely in the scope of contract.

❖ Items covered under the BOQ replaced if any shall be measured under their respective items and other major electrical items replaced if any shall be provided by the dept.

❖ The measured specific gravity of electrolyte and cell/battery voltage of each battery unit shall be recorded in the register and submitted to the dept.

❖ Consumables required for cleaning and maintaining viz. cotton waste/brush/hand blower/grommets of various sizes, bolts & nuts, battery grade distilled water and petroleum jelly are entirely in the scope of contract.

❖ Similarly tools needed for measurement of cell voltage and cell electrolyte specific gravity viz. digital multi meter and hydro meter are in the scope of contractor.

❖ **MAINTENANCE AND SERVICING OF CEILING / WALL MOUNTING / AIR CIRCULATORS AS PER THE FOLLOWING: -**

❖ **The scope of Maintenance/Servicing of Ceiling fans under this item includes the following**.

❖ Removal of fan from the position.

❖ Removal of blades and canopies, washing them with running water, soap liquid and drying them with dry cloth.

❖ Checking the condition of top rubber bush, tightness of connections, rigid mounting of capacitors, greasing the bearings, replacement of bearings and capacitor if needed, terminal block in case of requirement, cleaning of fan body, down rod with wet & dry cloth, assembling the fan, tightening all screws/bolts & nuts, reinstallation of fans, checking the firmness of split pins and electrical connections, testing the fan at different speeds, replacement of fan regulator if needed and handing over.

❖ Replacement of capacitor, bearing and ceiling fan regulator if any shall be measured under their respective BOQ items. And replacement of other fasteners, rubber bush, split pins, bolts, nuts and other consumables like grease, cotton waste etc., if any is in the scope of contractor.

❖ **The scope of Maintenance/Servicing of Wall Mounting Fans under this item includes the following**.

❖ Removal of fan from the location, dismantling the fan including removal of blade unit and guard, washing them with running water, soap liquid and drying them with dry cloth.

❖ Checking the condition of oscillation unit, tightness of connections, rigid mounting of capacitors, greasing the bearings, gear unit, replacement of bearings, capacitor, terminal block in case of requirement, cleaning of fan body with wet & dry cloth, assembling the fan, tightening all screws/bolts & nuts, ensuring the electrical connections, testing the fan at different speeds if needed, shifting and reinstalling at the location from where it was removed.

❖ Replacement of capacitor and bearing if any shall be measured under their respective BOQ items. And replacement of other bolt, nuts and other consumables like grease, cotton waste etc., any is in the scope of contractor.

❖ **The scope of Maintenance/Servicing of Air Circulators under this item includes the following**.

❖ Removal of fan from the location of installation, dismantling the fan including removal of blade unit and guard, washing them with running water, soap liquid and drying them with dry cloth.

❖ Checking the condition of oscillation unit, tightness of connections, rigid mounting of capacitors, greasing the bearings, gear unit, replacement of bearings, capacitor, terminal block in case of requirement, cleaning of fan body with wet & dry cloth, attending complaints if any in the speed regulator, assembling the fan, tightening all screws/bolts & nuts, ensuring the electrical connections, testing the fan at different speeds if needed, shifting and reinstalling at the location from where it was removed.

❖ Replacement of any fasteners, rubber bush, split pins, bolt, nuts and other consumables like grease, cotton waste etc., if any is in the scope of contractor.

❖ **MAINTENANCE OF LEAD ACID BATTERIES: -**

❖ The scope of work under this item includes cleaning the UPS's flooded type tubular battery units, measuring the specific gravity of electrolyte, adding distilled water as and when required if any, measuring the battery voltage, cleaning the battery terminals, applying petroleum jelly for the battery terminals and cleaning the battery. New battery as a replacement for the defective battery if any will be issued at BARC, Mysore Central Stores free of cost, collection, shifting them to the place of work are entirely in the scope of contract.

❖ Items covered under the BOQ replaced if any shall be measured under their respective items and other major electrical items replaced if any shall be provided by the dept.

❖ Consumables required for cleaning and maintaining viz. hydro meter, petroleum jelly, battery grade distilled water, cotton waste/ brush/hand blower/grommets of various sizes, bolts & nuts are entirely in the scope of contract.

❖ The measured specific gravity of electrolyte and cell/battery voltage of each battery unit shall be recorded in the register and submitted to the dept.

❖ **MAINTENANCE OF TRANSFORMER YARDS: -**

❖ The scope of work under this item includes periodically dusting, cleaning the transformer yard floor, fencing, removing cob webs in Lakshmipuram and Yelwal colony.

❖ **UPKEEPING OF 10KWp SOLAR POWER SYSTEM: -**

❖ The scope of work under this item includes periodical cleaning of solar array panels, panel connectors mounted in the roof top as mentioned in the BOQ with water and dry cloth.

❖ **MAINTENANCE, TRIAL RUN AND UPKEEPING OF 01 NO. 15KVA DG SET**: -

The scope under this item includes, thorough external cleaning of DG set, inside & outside the DG acoustic enclosure, checking the battery electrolyte specific gravity, terminal voltage, cleaning the battery terminals, trial run the DG for few minutes, observing for any abnormalities and giving feedback on its performance to the dept. ESS supervising staff.

❖ Consumables required for cleaning and maintaining the batteries viz. hydro meter, petroleum jelly, battery grade distilled water, cotton waste and hand blower are entirely in the scope of contract.

❖ The measured specific gravity of electrolyte and cell/battery voltage of one battery shall be recorded in the register and submitted to the dept.

❖ Other works like lube oil and filter replacement are not in the scope of contractor.

❖ **: REWIRING OF 1X36W / 2X36W FLUORESCENT TUBE LIGHT LUMINAIRES: -**

The scope under this item includes, rewiring the burnt-out/damaged wiring with 0.5 sq.mm PVC insulated solid copper conductor wires, replacement of burnt-out leatheroid paper, reassembling, reinstallation and testing.

❖ **REPLACEMENT & INSTALLATION OF CEILING / WALL MOUNTING / AIR CIRCULATORS AS PER THE FOLLOWING: -**

❖ The scope under this item includes replacement of existing defective Ceiling / Wall Mounting / Air Circulators with new ones or installation at fresh locations at heights.

❖ All fans will be issued at BARC, Mysore Central Stores free of cost, collection, shifting them to the place of work, assembling them as per the given procedure, mounting of clamps on the wall/concrete surface/steel structure by drilling, fixing the clamps with wood screws in case of wall mounting fans, fixing the base plate with anchor fasteners for air circulators, assembling all loose components and fixing them at ceiling junction box in case of ceiling fans, install them at locations as per the given procedure, mounting them rigidly, testing, commissioning, bringing the defective fans back to BARC, Mysore and handing over to the dept. staff is in the scope of contract.

❖ Defective fans can be repaired and reused by replacing spares/rewinding/servicing/carrying out maintenance and the replacement of spares and rewinding if any shall be measured separately under their respective BOQ items.

❖ New fans will not be replaced until unless the defective ones become beyond repair.

❖ All condemned/irreparable fans removed shall be dismantled and their parts shall be stored in their respective scrap bins.

❖ **REPLACEMENT OF DOUBLE BALL BEARINGS: -**

❖ The scope of work under this item includes dismantling of defective motor from the fan, and/or collection of fan/air circulator motor from the working place, bringing to maint. office, dismantling the fan unit, replacement of defective/noisy bearings with installation of new double ball bearings, cleaning, servicing of all parts, lubricating the moving parts, gears, assembling the fan again with all removed parts, testing and reinstallation on the location from where it was removed.

❖ Servicing of fan motors will be measured under their respective BOQ item.

❖ **ATTENDING OF COMPLAINTS/FUSE OF CALLS: -**

❖ **ATTENDING ELECTRICAL COMPLAINTS IN LIGHTING/POWER DISTRIBUTION /MOTORS/GEYSERS/PANELS/STARTERS: -**

❖ The scope of work under attending electrical complaints in Internal/External/Area/Street Lighting/Power Distribution /Motors/Geysers/Panels/Starters (without replacement of any BOQ items) in all township electrical installations includes identification of fault by referring concerned electrical drgs. if available with dept. or by tracing the circuit physically if needed, replacing a failed HRC fuse, switching ON a tripped an O/G or I/C MCB, switching on a switch put off, attending a failed wire joint, loose contact in the electrical circuit, defect in MCCB/SF unit/isolators etc; if any, where from the DB/Panels/Starters up to the load point including panel/DBs/Feeder pillar boxes/starters etc.

❖ Supply, Installation/replacement of components while attending complaints if any will be measured under their respective items and in that case attending electrical complaints will not be measured under this item and will become part of the component replacement BOQ item.

❖ Attending electrical complaints as mentioned above without replacement of any components but with repair/modification shall alone be measured under this item.

❖ **ATTENDING ELECTRICAL COMPLAINTS IN MOTOR STARTER PANELS/MCCS: -**

❖ The scope of work under attending electrical complaints in Motor Starter Panels/MCCs includes replacement of starter accessories viz. Contactor/Relay/Push button/MCB/Switch Fuse Units/Isolators etc.

❖ Motor starter Panels/MCCs accessories shall be provided by the dept. free of cost and replacement alone is in the scope of contractor.

❖ Type of starters viz. DOL, Star/Delta, Soft starters of various ratings are used alongwith pump motors in colonies/pump houses and maintenance of the same is envisaged in this scope of work.

❖ **ATTENDING FUSE OF CALLS BEYOND OFFICE HOURS AT ALL DEPT. TOWNSHIP ELECTRICAL INSTALLATIONS: -**

❖ Attending fuse of calls during working hours in day time on working days shall be measured under the earlier mentioned BOQ items.

❖ Whereas attending fuse of calls of emergency in nature as instructed by the dept. ESS staff after office hours and on Sundays over phone shall be measured under this item.

❖ Coordination with M/s. CESC staff in case of power failure like single phasing, total power blackout due to fault in the 4 pole structure, cable termination problem in colonies and Hootagalli water pump house which hampers water pumping is also under this scope of work.

❖ Also power failure due to single phasing, total power blackout due to fault in the Feeder pillar boxes, distribution panels and water pump house starter panels which hampers water pumping is also under this scope of work.

❖ The essence of scope of this item is to ensure extension/restoration of power supply even temporarily as early as possible after receiving complaint from dept. ESS staff by putting all efforts even after office hours/night time.

❖ Instruction from the EIC to attend fuse of calls after hours should be taken up on top priority and it must be attended without fail. It is the responsibility of the contractor to arrange proper staff among his regular staff for this work. Failure to attend phone calls after office hours from EIC and failure to attend complaints after office hours will be viewed very seriously.

❖ **PREPARATION OF LINE CLEAR FOR 11KV GOS AND SWITCHYARD IN COORDINATION WITH KEB STAFF: -**

❖ The scope of work under this item is that the contract staff shall contact the KEB, prepare the Line Clear permit and get the line clearance for maintenance works of 11KV GOS and Switchyard in coordination with KEB staff.

REVAMPING OF EXISTING ELECTRICAL INSTALLATIONS: -

❖ **SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF FOLLOWING TYPES AND RATINGS OF LED LIGHT FIXTURES: -**

❖ The scope under this item includes, supply of various types & ratings of LED light fixtures as per BOQ, as per the list of preferred make of materials at various colonies, as a replacement for the existing light fixtures and fresh installations at some locations at various heights.

❖ The LED light fixtures Lumens light output shall comply with the value mentioned in the BOQ but at a most economic lesser wattage consumption available latest in the market of preferred make decided by dept.

❖ The installation work includes removal of existing light fixtures installed at various heights and installation of newly supplied LED light fixtures to the ceiling/wall, testing and commissioning including modification of any mounting arrangement if any viz. drilling of holes and welding of supports etc.

❖ LED light fixtures as per BOQ item Nos. 35.01 to 35.04 will be installed on the RCC ceiling/steel structures/false ceiling/brick wall at heights upto 4 Mtrs. by using the existing ball & socket/wood screws/bolts & nuts.
❖ LED light fixtures as per BOQ item Nos. 35.05 to 35.08 will be installed on the RCC ceiling/steel structures /brick wall at heights up to 4 Mtrs. by using anchor fasteners/coach screws and welding suitable MS strips with bolts and nuts.

❖ LED light fixtures as per BOQ item Nos. 35.09 to 35.10 will be installed on the RCC ceiling/steel structures/ at heights up to 6 Mtrs. by using the existing hooks on the junction boxes with chains, anchor fasteners on the roof and bolts & nuts.

❖ Extending power supply to the newly installed high bay fixtures, if any, through 3C x 1.5/2.5 sq.mm flexible cable is also covered under the scope of this item.

❖ After removal, all old light fixtures/lamps shall be shifted to maint. office, dismantled and respective items shall be stored in the scrap bins.

❖ PVC conduits and PVC insulated copper wires used if any for extending power supply for these light fixtures shall be measured under their respective items.

❖ **SITC OF MOTION CONTROL SENSORS: -**

❖ The scope under this item includes Supply of Motion Control Sensors as per BOQ, as per the list of preferred make of materials, mounted in a minimum 1.2 mm wall thick ABS Plastic enclosure of approx. Size: 125 x 125 x 50 mm, with removable top cover with screws, top cover mounted with motion controlled sensor with bolts & nuts, with knockouts for entry of conduits all around, including installation to wall with wood screws, at various places in all colonies, including conduiting and wiring if necessary to control exhaust fans, light fixtures and ceiling fans, testing and commissioning.

❖ Motion/Movement Control Sensor shall be of Legrand or equivalent make as per Legrand catalog no. 048942, PIR, IP 41,Wall/surface mounting motion sensor, range 8 meter, fixing height 2.5 m, 3-wire with neutral, Light level threshold: 10 to 1275 lux, Adjustable time delay: 10 s to 10 min, Standby consumption: 0.75 W, For direct surface-mounting on wall, Automatic on/off, Manual adjustment of light level threshold and time delay via potentiometer.

❖ Illumination level sensors proposed are for the control of light fixtures installed in stair cases and other location in all colonies. Reputed make Illumination level sensor alone shall be provided by the dept. free of cost, collection, shifting, installation, testing and commissioning is in the scope of contractor.

❖ Integration to the existing internal wiring shall be through PVC conduiting and wiring shall be measured under their respective items.

❖ **SITC OF MAINTENANCE FREE CHEMICAL EARTH PITS: -**

❖ The scope of work under this item includes Supply, installation, Testing and commissioning of molecular bonded copper rod type earthing system with 3.0 Mtr x 14.2 mm dia., with plating thickness 254 microns Copper bonded ground rod threaded, with suitable Threaded coupler, with suitable ground rod clamp rod to conductor bronze, with min. 2 bags of Ground Enhancement Material in the location as instructed by dept. ESS staff by boring with machine, construction of earth pit chamber made out of brick masonry with bottom PCC with a 42mm dia. PVC conduit for earth wire entry and covered with CI lid cover of size 450x450 mm. The system shall confirm to IS - 3043 and IEC – 62561 - 7. Earthing system shall be of ERICO or Equivalent make and also it Includes Bore Cutting for earthing.

❖ **REVAMPING OF STREET LIGHTS: -**

❖ **RELOCATION OF EXISTING STREET LIGHT JUNCTION BOX: -**

❖ The scope of work under this item includes breaking of existing street light PCC coping concrete above ground level, removal of embedded existing MS street light junction box on the coping removed, excavation of soil around the pole, relocation of JB box at a suitable height on the pole with necessary fabrication like making a hole for light fixture cable entry, welding of strips for junction box installation, welding of GI strips for cable clamping, additional cable laying/straight through jointing to the existing cable, cables termination, earthing, minor coping work, testing and commissioning.

❖ Works like, excavation of soil around the pole, additional cable laying, straight through jointing, cables termination, earthing, minor coping work, relocation of JB box at a suitable height with necessary fabrication will be measured under their respective BOQ items.

❖ **SUPPLY OF 260 mm (H) x 200 mm (W) x 125 mm (D) GI COATED MS STREET LIGHT JUNCTION BOXES:-**

❖ The scope of work under this item involves, design, submission of tech. drg., mfg. on drgs. approval by EIC, box surface 7 tanks processed before GI coating as per IS: 4759, box completely GI coated to the thickness of 85 (610gm/m^2) Microns, Supply of Outdoor Pole/Wall Mounting Type Weather Proof IP 55 protected GI coated MS street Light Junction Box of size: 260 mm (H) x 200 mm (W) x 125 mm (D), made up of 1.6 mm thick MS CRCA sheet steel, with 1 no. Swivel type removable front door with 2 nos. door industrial pin type hinges, best quality of gasket all around the door, 1 no. quarter turn door lock with key, required no. of cable entries / knockouts in the bottom, with 1 No. 25 mm dia. nipple on the rear side welded to the box, 1 No. Elmex make KUDF-4 500 mA fuse TB, 6 Nos. Elmex make KBT M5 bolted connection type TBs, 1 no. End plate, 2 nos. screw on end brackets, including internal wiring between TB and Fuse using 2.5sq mm FRLS PVC insulated copper conductor wires, insulated copper end terminals, all mounted to standard DIN rail / C channel welded inside the box, 1 no. M6brass earthing stud with each 2 nos. nuts & 4 nos. washers on both sides, 4 nos. MS clits with M10 hole welded to the box for mounting to the pole/wall/MS angle/Strip, suitable to work on 1100V AC including termination of 3 C x 2.5 Sq. mm PVC insulated Copper conductor flexible cable from the Street light fixture at top as per Drg. No. BARC/GSD/ES/ST LT-REV/JB-1.

❖ The contractor shall supply one no. completely finished and assembled sample box for approval by EIC. Bulk manufacturing can be under taken only after getting sample box approval from the EIC.

❖ The scope of installation work under this item includes, drilling of 25 mm Ø hole on the pole front/rear side at 1.2 Mtr. height to draw flexible cable from the light fixture, welding of 2 nos. 25 mm x 3 mm x 260 mm long GI strips to the pole for St. light JB erection, 4 nos. 25 mm x 3 mm x 100 mm long GI Strips to the pole for Cables clamping, Painting of welded area & GI Strips with red oxide &aluminium paint, installation of JB to the welded GI strips with 4 nos. M8 GI bolts & nuts & 2 nos. GI washers each, levelling, pulling of existing/newly laid 4 C x 10 sq. mm armoured alu. Cable through the already embedded pipes on the bottom concrete pedestal, cables clamping with 2 mm thick Alu. strips to the already welded GI strips on the pole, dressing of cables and earthing, earthing, cables glanding & earth wire termination, testing & commissioning, finishing top of the coping with cement mortar, levelling, consolidating the excavated earth, removal & shifting of surplus earth and concrete debris/scrap boxes to the designated place using tractor.

❖ Covering of extra holes if any on the gland plate with grommets of proper size, checking tightness of all terminals/bolts/nuts/screws, dressing of all wires inside the JB with cable ties, cleaning before testing, commissioning and handing over is also in the scope of this work.

❖ Works like, excavation of soil around the pole, additional cable laying, straight through jointing, cables termination, earthing and minor coping work, will be measured under their respective BOQ items.

❖ **SUPPLY AND INSTALLATION OF FRP WEATHER PROOF BOXES:-**

❖ The scope of work under this item involves Supply and Installation of FRP weather proof boxes of dimension 630 mm x 360 mm x 300 mm approx. with top lid/cover to hold 1 no. 75 AH flooded type tubular battery in existing Solar Street Light Poles at 500 mm height in place of old damaged MS battery container boxes including necessary modification if needed for installation of this box viz. welding of strips, making holes, using bolts & nuts etc.

❖ The contractor shall supply one no. completely finished and assembled sample box for approval by EIC. Bulk supply can be under taken only after getting sample box approval from the EIC.

❖ **SUPPLY AND INSTALLATION OF FRP WEATHER PROOF BOXES:-**

❖ The scope of work under this item involves Supply and Installation of FRP weather proof boxes of dimension 630 mm x 360 mm x 300 mm approx. with top lid/cover to hold 1 no. 75 AH flooded type tubular battery in existing Solar Street Light Poles at 500 mm level in place of old damaged MS battery container boxes at 2000 mm (to shift the battery from 2000 mm level to 500 mm level) height including necessary modification to provide support if needed for installation of this box viz. welding of strips/angles, making holes, using bolts & nuts etc.

❖ The contractor shall supply one no. completely finished and assembled sample box for approval by EIC. Bulk supply can be under taken only after getting sample box approval from the EIC.

❖ **FABRICATION, SUPPLY AND INSTALLATION OF MOUNTING ARM ARRANGEMENT:-**

❖ The scope of work under this item involves, Fabrication as per the drawing enclosed, Supply and Installation of Mounting arm arrangement made of MS pipe, painted to install LED street light fixtures on top of existing street light poles including removal of existing 70 watts post top lantern street light fixtures, disconnection of incoming wires from JB and installation of supplied mounting arm arrangement as per the drawing enclosed.

❖ The contractor shall supply one no. completely finished mounting arm arrangement for approval by EIC. Bulk supply can be under taken only after getting sample box approval from the EIC.

❖ **INSTALLATION OF 45/70 WATTS LED LIGHT FIXTURES:-**

❖ The scope of work under this item involves, installation of LED street light fixture provided by the dept. on the arm, termination of removed wires and commissioning.

❖ 45/70 watts LED street light fixtures shall alone be provided by the dept. as FIM, collection of the same from BARC Mysore, shifting to the location, installation, testing and commissioning is in the scope of contractor.

❖ All removed post top lantern street light fixtures shall be dismantled completely; scrap segregated and handed over to BARC, Mysore.

❖ **RELOCATION OF EXISTING SOLAR STREET LIGHT POLES:-**

❖ The scope of work under this item involves, Relocation of existing 3 mtr. height Solar Street Light poles from the existing location to a new one including excavation around the existing pole, removal of pole with street light fixture, battery, shifting to the new location in the same colony, excavation, painting the pole bottom portion with non-corrosive bitumen paint, reinstallation, testing and commissioning. Note: Necessary excavation and concreting if any needed for this work alone will be measured under their respective items.

❖ **SHIFTING OF FEEDER PILLAR BOX:-**

❖ The scope of work under this item involves, Shifting of MS Feeder Pillar Box of size:1400 mm X 1350 mm X 600 mm from the existing location to a nearby new location (few meters) in the same colony including earth excavation work for laying PCC & construction of brick work pedestal, laying of PCC of ratio 1:4:6, construction of two nos. brick work pedestals of size suitable for the FPBs, plastering, finishing, curing,, bolts grouting for the FPB installation, disconnection of cables & earthing from the existing FPB, excavation for additional cabling, additional length of cables laying, straight through Jointing to extend their length, installation of FPBs over the pedestals, tightening of anchor bolts, leveling, cleaning, complete tightness checking, measuring the IR value, I/C & O/G cables termination, earthing, testing and commissioning. Note: Necessary works involved viz. excavation, cables laying/rerouting, their termination, their straight through Jointing, pedestal construction and earthing will be measured under their respective BOQ items and should not be considered for pricing in this item.

MISCELLANEOUS WORKS: -

❖ **CABLING: -**

❖ This specification covers the methods and procedures for installation of various types/sizes of "**Power Cables "**in underground trenches, ducts, channels, tunnels on racks, trays, in GI pipes along structures or buildings as per site condition and as per the following at BARC, Mysore.

❖ **GENERAL INSTRUCTIONS:**

❖ Laying of cables shall include different types and sizes required for meeting the requirements specified in this document.

❖ Installation of all types of cables shall be carried out in a neat way by skilled, experienced and competent work men in accordance with the standard practice.

❖ The size, physical healthiness, core continuity and IR value of each cable shall be checked and ensured before uncoiling of the same from the cable drums/laying.

❖ Cables shall never be pulled over hard surfaces to avoid damage to their outer sheath or over a second cable already laid. Necessary cable rollers with smooth surface alone shall be used for cable pulling.

❖ All bends in cables shall be made with due consideration to the minimum permissible bending radius of the cables. The maximum bending radius allowed for HT cables is 15D and for LT cables is 12D.

❖ After installation the cables' both ends shall be sealed using suitable end sealing materials to prevent entry of moisture.

❖ Special care to be taken while laying cables to prevent sharp bending, kinking, twisting and any mechanical damage.

❖ Cables are to be unwound from the drum by using proper cable drum jacks of sufficient capacity & size with strong spindle at center.

❖ Each length of cable will be cut after actual measurement of route length at site and after approval of the site engineer they will be identified with stickers at both ends, the day to day usage of cables will be logged and got it approved by the Engineer In charge. Similarly, usage of cables on each cable drum will be recorded with initial and final sequential length markings for better cable management.

❖ All cable drums received at contractor's store shall be stored in a leveled place, elevated from the ground/floor and covered suitably against direct sun light and rain.

❖ Where cables are required to cross under roads, surface drains and pipelines, they shall be taken through RCC Hume Pipe/Double walled corrugated HDPE pipe/GI pipes.

❖ While taking exposed cables along walls or columns, these shall be fixed at a sufficient height for avoiding damage from operation or handling.

❖ All cable openings in the equipment etc. shall be sealed and made vermin proof. All cable openings in walls and floors shall be repaired/sealed after laying of cables.

❖ Cables have to be installed in existing cable trenches along with other cables in service. Arrangements to lift and put back the chequered plates/slabs covered over the trenches are in the scope of contractor.
❖ After laying and termination, all cables shall be tested for following:
i. Continuity
ii. Insulation resistance between cores & core to earth
❖ Wherever cable trench excavation work in progress and trench cover plates/RCC slabs are removed for cable laying, the area shall be barricaded by suitable danger marked red color tapes to avoid accidents.

❖ **INSTALLATION OF CABLES IN EXCAVATED TRENCHES: -**
❖ The scope of work under this item includes excavation of cable trench in all types of soil of depth 800 mm from FGL, suitable width (at 800 mm deep) on ground, laying of cable, covering the cable on all sides with river / M sand, on all three sides with table molded bricks, refilling the excavated cable trench with excavated soil, settling, leveling and disposal of surplus earth. All the tools, equipment and materials required for the excavation and refilling shall be arranged by the contractor.
❖ The table molded bricks used for covering the cables on all three sides shall be as per IS: 1077 of good quality and the sand used for covering the cables on all four sides shall be of river / M sand.

❖ After refilling, the trench's extra earth shall be consolidated by watering and ramming.

❖ On completion of all the cabling works, cable route markers shall be installed at regular intervals as instructed by the Engineer in charge.

❖ **Tests on cables after installation**: Cables shall be tested for Core Continuity, identification and Insulation resistance after laying but before termination.

❖ **INSTALLATION OF CABLES IN RCC CABLE TRENCH: -**

❖ The scope of work under this item includes installation of cables over Cable tray supports in RCC trenches / Master Service Duct / Brick / RCC walls and through RCC Hume pipes / DWC pipes / GI pipes laid across the road, chasing of walls and floors for entry of cables wherever required, plastering with cement concrete and clamping with suitable accessories. All the tools, equipment and materials such as clamps, bolt & nuts, etc., required for the laying and clamping is in the contractor's scope.

❖ The laid cables shall be neatly dressed and clamped before termination. The cables laid directly on the surface of walls / RCC column / Floor / MS structures shall be clamped by using GI spacer saddle / 3mm thick heavy-duty GI spacer (base) and GI / Aluminium saddle at regular intervals.

❖ Wherever more than one cable travels together on wall surfaces, they will not be clamped individually but clamped together with 3 mm thick heavy duty GI spacer (base) & clamps of suitable size made from 19 x 3 mm aluminium/GI strip and the cables will also be held tight together between the clamps by nylon cable ties.

❖ The cables with outer dia. up to and including 25 mm, laid over cable trays shall be clamped with heavy duty nylon cable ties of suitable length at regular intervals.

❖ The cables with outer dia. above 25 mm, laid over cable trays shall be clamped with aluminium / GI strips of size 19 x 3 mm with 2 nos. G.I bolts, nuts and washers at regular intervals.

❖ **END JOINTING:-**

❖ This specification covers the methods and procedures for end termination of various types / sizes of "**Power cables** "as per the following at BARC, Mysore.

❖ **GENERAL INSTRUCTIONS:** All installed cables shall be dressed, clamped and Insulation Resistance measured for their healthiness before their termination. Only that length of cable needed for termination based on the space available at each location for termination & accommodating the loop shall alone be utilized for termination and cables shall not be wasted. Suitable number and size of holes including the number of cables envisaged in that cable alley with additional spare holes for future use shall be drilled on the removable cable gland plates. Holes shall be strictly made for the cable gland sizes as per the cable gland chart by drilling with holesaw cutter of appropriate sizes and not by gas cutting. All cable glanding shall be done by experienced technician using reputed make single compression glands. All unused gland holes shall be covered with blinds/rubber grommets. Cables with cores shall be neatly bunched and secured inside the cable alleys by approved method. Cables shall be terminated with copper terminal ends only by crimping method with proper crimping tool. The material of terminal ends shall be same as that of the cable conductor material. The eye hole on the terminal ends shall be suitable for the holes on the bus bars and hardware. Ring type terminal ends alone shall be used for power cables and pin/ring/fork type terminal ends can be used for the control/signal cables. All cores of control and signal cables shall be identified with printed ferrules at both the ends. All cables shall be identified with its load details by an engraved aluminium tag of suitable size secured to it. Heavy Duty Brass single compression glands and Aluminium/Copper Terminal ends of approved makes shall alone be used for glanding.

❖ Supply of single compression heavy duty brass cable glands, wires dressing, Copper / Aluminium terminal ends, insulation tape, crimping paste and providing necessary hydraulic crimping tool for lugs crimping is also in the scope of contractor.

❖ **STRAIGHT THROUGH JOINTING OF POWER CABLES:-**

❖ The scope under this item covers Supply, Installation, Testing and Commissioning of Tubular Sleeve Version Heat Shrinkable LT cable Straight Through jointing kit of Raychem or equivalent make suitable for Aluminium/Copper conductor, armoured, XLPE insulated power/control cables as mentioned in the BOQ including supply of straight thru' aluminium/copper inline connectors, crimping, testing and commissioning etc. by cable jointer having sufficient experience in this field of power cable st. through jointing.

❖ Supply of consumables like insulation tape, crimping paste and providing necessary hydraulic crimping tool for lugs crimping is in the scope of contractor.

❖ The straight through jointing kits shall be supplied in supplier's original packing and its shelf life shall not be expired.

❖ Before and after the work, the cables shall be measured for their Insulation resistance and continuity.

❖ The straight through jointing of LT power cables need to be done in excavated Cable trench.

❖ **INSTALLATION OF FLEXIBLE TELEPHONE WIRES:-**

❖ The scope of work under this item includes, installation of flexible telephone wires of sizes as mentioned in the BOQ in the existing Metal / PVC Electrical Conduit / Casing & capping. Note: Flexible Telephone Wires alone will be issued by the dept. free of cost at BARC, Mysore, collection, shifting to the location of work and installation is in the scope of contractor.

❖ **EARTHING: -**

❖ The scope of work under this item includes, Installation of electrolytic grade No.8 SWG Copper wire / 25 X 6 mm copper flat in excavated trench and in concrete surfaces/pipes etc. Note: If excavation is carried out exclusively for the installation of copper wire then the excavation will be measured under the respective BOQ item and if the earthing items are laid along with cable in excavated trenches, then excavation will not be paid separately.

❖ **EARTH PIT CHAMBER CONSTRUCTION/ REPAIR WORKS: -**

❖ **TABLE MOULDED BRICK WORK INCLUDING PLASTERING: -**

❖ The scope of work under this item includes, supply of approved brand/make of table molded bricks, port land cement, sand and constructing brick walls of sizes 4½“ or 9“ for earth pit chambers, FPB walls including external/internal surfaces plastering, cleaning and curing etc. as per the instruction from engineer in charge.

❖ **PCC WITH 1:2:4 RATIO CONCRETING: -**

❖ The scope of work under this item includes, supply of approved brand/make of port land cement, sand, stone aggregate and laying PCC in the ratio of 1:2:4 for earth pit chambers, FPB walls including cleaning and curing etc. as per the instructions from engineer in charge.

❖ **ISUPPLY AND INSTALLATION OF RCC COVER SLAB: -**

❖ The scope of work under this item includes, supply of approved brand/make of port land cement, sand, stone aggregate, 6/8 mm steel rods as per standard design and making RCC slab cover for earth pit chambers of size: 600 x 600 x 25 mm including cleaning, curing, shifting and installation over earth pit chambers etc. as per the instructions from engineer in charge.

❖ 2 nos. cavity provision for slab lifting to be provided.

❖ **INSTALLATION OF HEAVY DUTY CAST IRON EARTH PIT CHAMBER COVER: -**

❖ The scope of work under this item includes, collection of chamber covers with frame as a set or only the cover from BARC, Mysore, shifting to the location in any of the colonies, placing the cover over the earth pit chamber where the cover is missing if the cover is found suitable to the existing embedded frame on chamber top plastering.

❖ In case of the chamber cover does not match with the existing embedded frame on the chamber, then replacement of the frame including removal of the existing frame by breaking open the plastering, placement of the new frame, plastering, finishing, curing and placing the new cover is also in the scope of contractor.

❖ **M.S. STRUCTURAL ITEMS: -**

❖ The scope of work under this item includes, Supply and Installation of TATA/JINDAL or equivalent make MS structural items like ISMA Angles, Channels, Flats, Checkered Plates etc. for mounting of Cable Trays / DB Mounting Frame Work over RCC Column / Brick wall including Fabrication, Welding, Painting and Installation with Anchor Fasteners / chipping of pockets on the brick wall and finishing with cement mortar including all consumables like GI Hardware/Cement etc.

❖ **M.S. PAINTING WORKS: -**

❖ The scope of work under this item includes, cleaning of the existing metal surface with fine emery sheet, removal of rust, dirt, oil from the surface, painting of one coat of red oxide and two coats of enamel paint over surfaces of feeder pillar boxes, DBs, panels, junction boxes and street light poles etc. with approved make of paints including all consumables.

❖ **COLLECTION AND SUBMISSION OF ENERGY METER BILLS:-**

❖ All LT installations in all colonies, are being served monthly electricity bills by M/s Chamundeshwari Electricity Supply Company on various dates every month. Among them, bills of qty. 85 nos. in Yelwal Township, 7 Nos. in Lakshmipuram Apartments, 18 Nos. in Kuvempunagar Colony, 1 no. in Hootagalli Pump house and 1 no. for Pump house near KRS are being paid by dept. (Totally 112 nos.). Remaining installations' electricity bills are being paid by the tenants themselves. Also, payments are to be made within 15 days from the date of issue of bills for these installations.

❖ Hence following is the scope of work covered/responsibility of the contractor pertaining to this BOQ item.

a. Collection of all 112 nos. of bills pertaining to each colony dept. electrical installations as mentioned in detail above from the CESC bill issuing field staff by accompanying him for all facilities on that particular but various days as per CESC schedule.
b. To count and submit those bills to dept. supervising staff immediately.
c. If any bills are found missing, contractor staff shall get duplicate bill for that installation by visiting CESC office and submit the same to the dept. supervising staff.
d. All bills will be verified by dept. staff for their correctness.
e. If any error is found, contractor staff shall visit M/s. CESC office, get the correction done and obtain a fresh bill and submit to dept. Staff.
f. Dept. shall make a single consolidated payment for all installations of each colony by RTGS.
g. After this, the contractor staff shall carry a statement of installations for which single payment is made by dept., obtain individual receipts from the CESC office for all installations separately and submit to dept. Staff.
h. So, collection of 112 nos. bills of all colonies & pump houses on various dates from CESC, getting duplicate bills for the missing ones from CESC, getting rectification of corrections done on the bills by CESC, submitting all bills to the dept., getting receipts for all installations and handing over to the dept. regularly every month for all colony dept. electrical installations is in the scope of contractor.

Any delay in payment beyond 15 days will attract penalty/interest which must be avoided at any cost.

ADDITIONAL TERMS AND CONDITIONS

For Pump Sets

1. The work shall be carried out as per CPWD Electrical specifications internal & external amended up to date and entire satisfaction of Engineer-in-charge. Comprehensive Preventive Maintenance & Breakdown Maintenance of Pump houses at Yelwala Colony, Kuvempunagar Colony Pump House, Lakshmipuram Pump House and Potable water pump house at RMP site which consists of Electrical Pumps, Borewell Pumps, Diesel Engines and Diesel Engine operated Pumps, Pipelines, fittings, valves, electrical panel, electrical motors, sand filters, bag filters, Underground sumps and water tanks. Scope of work includes comprehensive preventive maintenance, routine inspection, testing, servicing, breakdown maintenance, emergency repair works, and associated allied activities for all pumps (electrically operated pumps, borewell pumps, diesel engine operated pumps) and associated Equipment's installed in Pump houses. The contractor shall provide all required skilled manpower, supervision, tools & tackles, consumables, lubricants, testing instruments, safety equipment, and minor spares required for satisfactory operation and maintenance of the pumping systems. The maintenance work shall ensure uninterrupted and reliable operation of the complete water pumping system including electrical, mechanical, hydraulic, and diesel engine-driven systems.

2. The contractor will have to depute the staff as per BOQ.

3. Qualification of Operator - Operator should have passed ITI in relevant trade or shall have valid electrical license from competent authority or 10th pass with 2-year experience in similar type of work.

4. In case of minor repairs/replace required such as gland dori, nut bolt etc. the contractor shall arrange the same within quoted rate. Major repairing not covered in the scope of work.

5. The minor material such as soap, duster, broom, old dhoti, cotton waste fuse wire, PVC tape, Grease, M. Oil, Test Lamp, Torch etc.

6. All the installation/equipment shall be maintained by the firm in neat, clean and proper working condition.

7. No Contractor or his staff shall he allowed to use or shall be stay in service center, pump house, switch room, D.G. set room and as such other place at site after duty hours.

8. In case of electrical supply failure, the contractor or his worker available on duty shall record in brief action taken in this regard with supply agency.

9. The contractor shall submit duty roaster in duplicate within once week from the date of start of work and thereafter two days before the close of every month if staff is changed.

10. It will be the responsibility of the contractor to make all arrangement for smooth working of installation and to ensure water supply and sewage disposal. In case lapse of any service/ deficiency in service penalty @ Rs. 2,000/- per day will be changed.

11. INVENTORY PUMP

Detail of various pump installed - Detail of pumps;

i. Yelwala

- 10 HP UG Sump Pump-2 nos.
- UG tank capacity: 1 Lakh Liters &4 Lakh Liters.
- OHT capacity: 1 Lakh Liters
- 14 HP Diesel Engine Driven Pump- 1 no.
- 6 HP Borewell Pump -2 nos.
- Water supply pumping from Hootagalli Pump House to UG Sump.

ii. Kuvempunagar

- 10 HP UG Sump Pump-1 no.
- UG tank capacity: 2 Lakh Liters
- 10 HP Diesel Engine Driven Pump- 1 no.
- Water supply from corporation to UG sump in the campus.

iii. Lakshmipuram
- 5 HP UG Sump Pump-2 nos.
- Water supply from corporation to UG sump in the campus.
- OHT capacity of 20000 Liters.

The quantities of above installations may be varied & new installations may be added, at any stage and nothing extra shall be paid on account of this.

DETAILS OF EQUIPMENT COVERED UNDER THE CONTRACT

Sl No	Description of equipment	Qty	Location	Remarks
1	• Make: Kirloskar • Model: 1040+ • Capacity: 15 LPS • Head: 31 Meter • Motor Rating: 7.5 kW / 10 HP	2 Nos	Yelwala Colony	In Working Condition
2	Diesel Engine Driven Pump including accessories associated with this pump • Make: Kirloskar • Model: DB 80/20 • Capacity: 20 LPS • Head: 20 Meter • Quantity: 1 No C. Diesel Engine • Make: Kirloskar • Model: TV2 Sr. II • Power: 10.3 kW • Quantity: 1 No	1 No	Yelwala Colony	In Working Condition
3	Borewell Pumps • Make: Kirloskar • Model: KS6B-0612 SSI • Capacity: 3 LPS • Head: 84 Meter • Motor Rating: 4.5 kW / 6 HP	2 No	Yelwala Colony	In Working Condition
4	Under Ground Sumps	2 No	Yelwala Colony	To be cleaned once in a year
5	Elevated water Tank above pump house	1 No	Yelwala Colony	To be cleaned once in a year
6	Associated piping, valves & Instruments, Electrical panels, cables etc	1 lot	Yelwala Colony	All associated systems connected with pump house shall be considered in the scope of Comprehensive maintenance contract

Sl No	Description of equipment	Qty	Location	Remarks
7	Electrical Pump • Make: Kirloskar • Model: 1040+ • Capacity: 15 LPS • Head: 31 Meter • Motor Rating: 7.5 kW / 10 HP	1	Kuvempunagar Colony	In Working Condition
8	Diesel Engine Driven Pump • Make: Kirloskar • Model: KPD 65/32 • Quantity: 1 No C. Diesel Engine • Make: Kirloskar • Model: DA10 • Power: 7.4 kW	1 No	Kuvempunagar Colony	In Working Condition
9	Under Ground Sumps	1 No	Kuvempunagar Colony	To be cleaned once in a year
10	Associated piping, valves & Instruments, Electrical panels, cables etc	1 lot	Kuvempunagar Colony	All associated systems connected with pump house shall be considered in the scope of Comprehensive maintenance contract
11	Kirloskar make submersible pumps	2 No	Lakshmipuram Colony	
12	Under Ground Sumps	1 No	Lakshmipuram Colony	To be cleaned once in a year
13	Associated piping, valves & Instruments, Electrical panels, cables etc	1 lot	Lakshmipuram Colony	All associated systems connected with pump house shall be considered in the scope of Comprehensive maintenance contract

12. Scope of Work

The scope of work shall include complete preventive maintenance, routine maintenance, condition monitoring, emergency breakdown maintenance, testing, servicing, alignment, lubrication, inspection, and performance monitoring of all pumps, motors, diesel engines, accessories, pipelines, valves, and associated systems.

The contractor shall maintain all equipment in healthy operating condition throughout the contract period.

13. DETAILED SCOPE OF MAINTENANCE WORKS

13.1 DAILY MAINTENANCE ACTIVITIES

The contractor shall carry out the following activities on daily basis:

13.1.1 Electrical Pumps

- Checking suction and delivery pressure.
- Monitoring discharge quantity and flow consistency.
- Checking abnormal vibration, noise, overheating, and leakage.
- Checking motor current, voltage, and phase balance.
- Checking bearing temperature.
- Ensuring proper gland sealing and checking mechanical seal leakage.
- Checking proper operation of starter panels and indication lamps.
- Cleaning pump house area and equipment surfaces.
- Monitoring pump running hours.
- Recording all operating parameters in logbook.
- Checking foundation bolts and coupling condition visually.
- Checking for any water leakage in suction and delivery lines.

13.1.2 Borewell Pumps

- Monitoring discharge pressure and flow.
- Checking current consumption and voltage.
- Checking for dry running condition.
- Monitoring abnormal sound or fluctuation.
- Checking starter operation and cable condition.
- Recording daily operation parameters.
- Checking borewell head assembly leakage.

13.1.3 Diesel Pumps and Diesel Engines

- Checking engine oil level.
- Checking diesel level in fuel tank.
- Checking radiator water/coolant level.
- Checking battery electrolyte level and terminal condition.
- Checking engine vibration and abnormal sound.
- Checking exhaust smoke condition.
- Checking engine RPM and performance.
- Checking coupling alignment between engine and pump.
- Running the diesel engine periodically for healthiness.
- Checking leakage from fuel lines, lube oil lines, and cooling system.
- Checking governor operation.
- Checking starting system and battery charging system.
- Recording all observations in logbook.

13.2 WEEKLY MAINTENANCE ACTIVITIES

13.2.1 Electrical Pumps

- Cleaning motor body and cooling fins.
- Tightening electrical terminals.
- Checking insulation resistance of motor.
- Checking coupling rubber and coupling alignment.
- Greasing bearings wherever applicable.
- Cleaning starter panels.
- Checking contactors, relays, and overload protection.
- Checking panel ventilation and dust accumulation.
- Checking foundation bolt tightness.
- Inspection of non-return valves and isolation valves.

13.2.2 Borewell Pumps

- Checking cable joints and insulation.
- Inspection of control panel and starter.
- Checking discharge pipe vibration.
- Checking earthing continuity.
- Verifying proper operation of protection systems.

13.2.3 Diesel Engines and Pumps

- Cleaning air filters.
- Checking fan belt tension.
- Cleaning battery terminals.
- Checking fuel filter condition.
- Checking lubricating oil condition.
- Checking coolant circulation.
- Checking engine mounting bolts.
- Checking exhaust line condition.
- Checking pump coupling and alignment.
- Running trial operation under load condition.

13.3 MONTHLY PREVENTIVE MAINTENANCE ACTIVITIES

13.3.1 Electrical Pumps and Motors

- Megger testing of motor windings.
- Checking winding resistance.
- Bearing inspection and lubrication.
- Checking impeller condition.
- Checking shaft sleeve wear.
- Checking gland packing and mechanical seals.
- Alignment checking using dial gauge.
- Vibration monitoring and correction.
- Tightening all electrical and mechanical connections.
- Cleaning of suction strainers.
- Inspection of foot valves and non-return valves.
- Performance testing for discharge and head.
- Checking pump efficiency.
- Checking panel wiring and cable lugs.
- Thermographic inspection of electrical connections if required.

13.3.2 Borewell Pumps

- Insulation resistance testing.
- Current and voltage analysis.
- Checking discharge performance.
- Verification of proper submergence condition.
- Checking cable insulation health.
- Inspection of starter and protection devices.
- Inspection of rising main and pipe supports.

2.3.3 Diesel Engines

- Engine oil replacement.
- Replacement/cleaning of oil filters.
- Cleaning/replacement of fuel filters.
- Inspection of cylinder head and valve clearance.
- Checking governor calibration.
- Checking cooling system.
- Checking alternator charging system.
- Exhaust system inspection.
- Fuel line flushing and cleaning.
- Checking lubrication system.
- Checking vibration and alignment.

13.3.4 Diesel Pumps

- Inspection of impeller and casing.
- Checking shaft alignment.
- Inspection of bearings and lubrication.
- Checking suction and delivery valves.
- Inspection of coupling and guards.
- Checking foundation and anti-vibration pads.
- Performance testing under load.

13.4 HALF-YEARLY MAINTENANCE ACTIVITIES

- Dismantling and internal inspection of pumps.
- Inspection of impeller wear and balancing.
- Inspection of pump casing erosion.
- Replacement of gland packing.
- Bearing replacement if required.
- Checking shaft runout.
- Alignment correction.
- Complete servicing of starter panels.
- Calibration of protection relays.
- Complete engine servicing.
- Fuel tank cleaning.
- Replacement of lubricants.
- Cooling system flushing.
- Battery health analysis.
- Performance testing and recording.

13.5 ANNUAL OVERHAULING ACTIVITIES

The contractor shall carry out annual overhauling of all pumps and diesel engines including:

- Complete dismantling of pump assembly.
- Cleaning and inspection of all internal parts.
- Replacement of bearings, seals, gland packing, gaskets, and O-rings as required.
- Dynamic balancing of impeller if required.
- Shaft inspection and correction.
- Coupling replacement if damaged.
- Reassembly, alignment, and testing.
- Complete diesel engine overhaul.
- Injector calibration.
- Fuel pump calibration.
- Cylinder head inspection.

- Valve grinding and adjustment.
- Replacement of engine oil, coolant, and filters.
- Testing under full load condition.
- Performance certification.

13.6. BREAKDOWN MAINTENANCE

The contractor shall attend all breakdown complaints immediately.

Scope of breakdown maintenance includes:

- Removal of pump from service.
- Dismantling and fault identification.
- Replacement of defective components.
- Rewinding coordination if motor fails.
- Rectification of electrical faults.
- Repair of starter panels.
- Bearing replacement.
- Seal replacement.
- Alignment correction.
- Coupling replacement.
- Diesel engine repair.
- Fuel system rectification.
- Cooling system repair.
- Emergency restoration of water supply.

14. SCOPE OF ELECTRICAL MAINTENANCE

The contractor shall maintain all associated electrical systems including:

- Motor starters.
- DOL/Star-delta starters.
- MCC panels.
- Control wiring.
- Power wiring.
- Cable termination.
- Earthing system.
- Voltage monitoring.
- Phase sequence checking.
- Overload relay setting.
- Contactor servicing.
- Indication lamps and meters.
- Battery chargers.
- Float switches and level controls if available.

15. CONSUMABLES TO BE PROVIDED BY CONTRACTOR

The contractor shall provide the following consumables under the contract:

- Grease.
- Lubricating oil.
- Coolant.
- Distilled water for batteries.
- Cleaning chemicals.
- Cotton waste.
- Gland packing.
- Teflon tape.

- Jointing sheets.
- Nuts, bolts, washers.
- Cable lugs.
- Ferrules.
- Insulation tape.
- Contact cleaner spray.
- Diesel filter cleaning materials.
- All electrical consumables.

16. TOOLS & TACKLES

The contractor shall arrange all required tools and tackles including:

- Megger.
- Multimeter.
- Tong tester.
- Vibration meter.
- Alignment tools.
- Bearing pullers.
- Grease guns.
- Chain pulley blocks.
- Hydraulic jacks.
- Welding machine.
- Portable lighting.
- Hand tools.
- Lifting tools.

17. SAFETY REQUIREMENTS

The contractor shall strictly follow all safety regulations.

The contractor shall ensure:

- Use of PPE by all workers.
- Electrical isolation before maintenance.
- Lockout/tagout procedure or suitable.
- Safe handling of diesel and lubricants.
- Proper housekeeping.
- Barricading during maintenance.
- Safe lifting practices.
- Fire safety compliance.
- Availability of first aid kit.

18. RECORDS & DOCUMENTATION

The contractor shall maintain the following records:

- Preventive maintenance checklist.
- Breakdown maintenance register.
- Spare replacement history.
- Lubrication records.
- Electrical test records.
- Engine performance records.
- Monthly maintenance reports.
- Equipment health status reports.

19. PERFORMANCE REQUIREMENTS

The contractor shall ensure:

- Reliable operation of all pumps.
- Minimum breakdowns.
- Timely preventive maintenance.
- Immediate response during emergencies.
- Proper documentation.
- Safe operation and maintenance.
- Compliance with OEM recommendations.

ADDITIONAL TERMS AND CONDITIONS

(For EI works)

1. The work shall be carried out in accordance with CPWD specification for electrical work part – I 2023 (internal), and part –II External, Part-IV (Sub-Station) 2013 (as amended up to date). All installation shall comply with the requirement of Indian Electricity Rules -1956 as amended up to date and as per instruction of Engineer-in-charge.
2. All the materials to be used on the work by the contractor shall be got approved from the Engineer-in-charge or his authorized representative before use on the work. The rejected materials shall have to be replaced by the contractor at his own cost and the same should be removed from the site immediately.
3. All T&P and special T&P shall be arranged by the contractor & nothing extra shall be paid on account of this.
4. Works with bad workmanship are liable to be rejected and the same shall be rectified by the contractor for which nothing extra shall be paid.
5. Only ISI marked PVC and steel conduits, wires, cables, switches, socket outlets, ceiling roses, lamp holders (If ISI mark is applicable to that item) etc. shall be used. These shall be got approved from the Engineer-in-charge before use at work.
6. The contractor is advised to visit the site before quoting this tender to apprise himself about the site environments and other conditions.
7. The contractor is bound to sign the site order book as and when required by the Engineer-in-Charge and shall carry out the instructions recorded therein.
8. Any damage done to the existing building while executing the electric work should be make good to the satisfaction of the department within scope of the work for which nothing extra shall be paid. The chases, holes etc. cut in the walls and roofs should be filled within two days. All malba should be removed on the same day by using gunny bag/mats for collection of malba. All the above shall be done under the scope of work and nothing extra shall be paid on a/c of this. In case of failure to do so it will be got done by the Engineer-in-charge or his authorized representative at contractor's risk and cost.
9. All the hidden works shall be carried out in the presence of Engineer-in-charge or his authorized representative with giving sufficient prior information.
10. The contractor shall make his own arrangements for storing the materials and watch & ward at his own cost, even for the installation till the completion of the work and handing over of the building/quarters.
11. The contractor shall make his own arrangement for all general and special tools and plants required for the work at his own cost and nothing extra shall be paid on this account.
12. The work will be executed in an occupied building i.e. School, Jawan Barrack and Residential Qtrs. etc., in a manner so that no inconvenience will be to the occupant. No claim for idle labour on account of this shall be entertained under this agreement.
13. The earth connection to main switches/boards etc. shall be done with lugs/thimbles properly soldered or with crimping tool within the quoted rates and nothing extra shall be paid on this account.
14. Laying of the conduit's routes, position of switches, fittings and cable routes etc. should be got approved by the Engineer-in charge or his authorized representative before execution of work. It will be in the interest of the contractor to mark the above layout at site and get it approved before actual execution of the work otherwise it will have to get it redone which no extra payment will be made.
15. Wireman executing electrical work should have valid electrical license as required under I.E. Act. The manpower to be deployed for special work should be other than staffs deputed for routine/running maintenance.
16. All inter-connections in the switch-boards shall be carried out with suitable cable/wire connectors with the sufficient current carrying capacity.
17. All the MCB, s etc. shall be of the same make as of the make of MCB DB/TP & DP sheet steel enclosure, irrespective of description of item.
18. All screws/nuts bolts should be galvanized/cadmium plated shall be use at site.
19. If any accident occurs during the execution of work, the firm/contractor will be responsible for

all and no compensation will be paid by the Deptt.

20. Workers engaged by the contractor for execution of work shall be liability of the contractor and they will not be considered for type of regular employment in the Department, in any case.
21. The contractor shall cover all new junction boxes i/c round boxes with White Phenolic laminated sheet within the scope of work and nothing extra shall be paid on account of this. However, if existing steel junction boxes to be covered with 3 mm thick laminated sheet, then this sheet shall be paid against respective item.
22. All loose wires connecting from ceiling rose to fittings/ fans/ exhaust fans shall be laid inside PVC sleeves. Providing & fixing these PVC sleeves are within the scope of work and nothing extra shall be paid on account of this.
23. The firm shall submit the Manufacturer test certificate of the equipment at the time of supply of material before installation at site.
24. The contractor is required to submit documentary evidences such as delivery challan/test report of material/ bill/ invoice/ for purchase of material used in work from Authorized dealer/Manufacture of make of material mentioned in NIT if required by the department for genuineness of material.
25. The agency shall give minimum one year Guarantee/ Warranty or Guarantee/ Warranty as per manufacturer's norms, which ever higher, to the equipment like Ceiling Fan, Wall Fan etc., w.e.f. the date of actual completion of the work against unsatisfactory performance and/or break down for which the agency shall submit an undertaking to the Department just after completion of work. The equipment or components, or any part thereof, so found defective during guarantee/ warranty period shall be forthwith 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/ rectified by the Department at the risk and cost of the contractor and the amount shall be deducted from his security deposit/ any due from the Department. The decision of the Engineer-in- charge in this regard shall be final & binding on the contractor.
26. As the installations /equipment are in running condition. The installations shall be handed over on "as is where is basis" and nothing extra shall be paid towards pre- maintenance as the equipment are in running condition.
27. 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.
28. Preventive maintenance activities are to be carried out as per schedule and should be entered in the maintenance register. When tests are carried out, the test result should be recorded with appropriate identification references.

ADDITIONAL TERMS & CONDITIONS

For Sub-Station & DG Set

1. Details of Equipment

DG SET INSTALLED AT Yelwala

i. 15 KVA Kirloskar make, DG Sets - 1 Nos.
ii. 40 KVA Kirloskar make, DG Sets - 1 Nos.

Sub-Station

i. 250 KVA Transformer - 2 Nos. (at Yelwala)
ii. 63 KVA Pole Mounted Transformer- 1 No. (at Yelwala)
iii. 100 KVA Transformer - 1 No. (at Lakshmipuram)
iv. 11KV Gang Operating Switches (GOS) – 5 Nos.

The Above Equipment are indicative only. All the equipment and accessories available at site are deemed to be covered in the scope of operation and maintenance of Sub- Station & DG Set. Any addition/ alteration in the system shall be included in the operation and maintenance of the installations and nothing extra shall be paid.

2. Details of Manpower

AS per BOQ Shift timings can be changed as per the requirement at site and decision of the Engineer-in-charge.

3. Qualification of deputed Manpower

i. Operator cum technician Should have passed ITI in relevant trade or shall have valid electrical license from competent authority with minimum 2 years' experience in similar work.
ii. Khallasi Physically strong, minimum 5th pass or above.

4. The contractor will have to maintain all the installation/ equipment's as stated proper working condition.

5. The contractor will have to depute additional skilled labour to attend a fault beyond the competency of the staff deployed for which nothing extra shall be paid.

6. The contractor will have to maintain registers for all the checks and faults with date and time of all equipment's at site and the firm has to arrange the log book within quoted rates & nothing extra shall be paid on account of this. These registers will be checked by the Junior Engineer (E)/ Asst. Engineer (E)/ Executive Engineer (E).

7. The Minor material such as soap, duster, broom, old dhoti, cotton waste, fuse wire, PVC tape, Grease, M. oil, test lamp, torch etc. shall be arranged by the contractor within their quoted rates & nothing extra shall be paid on account of this.

8. In case of minor repairs/ replace required such as nut bolt, fuse wire, connecting wire, distilled water, petroleum jelly, thimbles etc. the contractor shall arrange the same within quoted rate & nothing extra shall be paid on account of this. However major repairing not covered in the scope of work.

9. Contractor shall make arrangement of one mobile phone in the sub-station for the central control room for smooth functioning of the maintenance system the mobile phone shall be handed over to the manpower of another shift or the same number shall be available for round the clock and all the days. The mobile number shall be communicated to the department by the agency.

10. In case of electrical supply failure the contractor or his worker available on duty shall record in brief action taken in this regard with supply agency.

11. In case of any problem arising in equipment's/installations at site contractor has to arrange the Engineer/ OEM Engineer/ any other assistance required as and when and as per need of site or as per the direction of Engineer-in-charge with in the quoted amount for which nothing extra will be paid.

12. MAINTENANCE SCHEDULE FOR DG Sets

i. The work shall be carried out as per CPWD general specifications of DG Set (Part-VII) 2013, as amended up to date.

ii. The scope of work include: -

a. Comprehensive maintenance of all DG Sets with AMF Panel, Battery & Battery charger and replacement of worn out/defective/burnt out parts to keep them in proper working condition.
b. Preventive maintenance of each DG Set at least once a month.
c. Servicing of DG Set as per the schedule of OEM standards including providing & replacement of lube oil, filter etc.

iii. The contractor shall use following material within the scope of maintenance of D.G. set along with AMF panels for which nothing extra shall be paid.

a. Indication lamps.
b. White Petroleum Jelly.
c. Battery Water/Acid.
d. CRC for cleaning of relays, contractors, alternators carbon brushes etc.
e. Proper grade of grease oil for greasing lubricating bearings etc.
f. Protection metering fuses, control wiring etc.

iv. After the completion of the contract, the contractor shall have to handover the DG Set and associated installation in perfect working condition to the department.

v. All the installation/equipment shall always be maintained by the contractor in proper working condition i/c cleaning.

vi. The contractor has to carry out the routine / preventative maintenance as per CPWD specification &maintenance manual.

vii. The DG set are to be comprehensive maintained/ serviced by respective OEM or their authorized representative.

viii. The make of materials used for servicing/repair shall only be as per OEM or their authorized vendors.

ix. All the complaints are to be attended, promptly, within CPWD sewa benchmark, otherwise penalty shall be levied as per General & Commercial conditions, above.

x. Preventive Maintenance & cleaning of DG sets is to be carried out on fortnightly basis, besides comprehensive maintenance work. Failing which recovery @ Rs. 3000/- per visit for each DG Set shall be deducted from his payment.

xi. Consumable items/ materials will be supplied as per Schedule of Quantity and requirements. GST bill from authorized vendors must be submitted for materials supplied, failing which no payment shall be made for respective items.

xii. If any equipment is taken away from site, for repairs, the contractor has to provide a standby equipment to keep the system functional, during the intervening period, at no extra cost.

13. MAINTENANCE SCHEDULE FOR SUB- STATIONS

1. Follow all safety procedure during maintenance activities. (See IS Code No. 5216 (Pt. 1 & 2)1982 or safety procedure mentioned in CPWD Specifications for EI works (Pt.-I – Internal 2023) form or details)

2. Only Authorized persons should be permitted to handle electrical equipment. Names of Authorized persons should be displayed in the main MV panel room (Rule 3 of IE Rules) when maintenance activities are performed, another person should accompany the one carrying out the tasks.

3. ON LINE maintenance should not be undertaken in sub-stations. It must be ensured that supply lines concerned are isolated and proved isolated, considering also any likely back feeding.

4. Caution boards should be displayed while doing maintenance works so as to avoid accidental switching on.

5. Supplement this schedule with recommendations of manufacturers of the respective equipment. Proper record of every maintenance activity must be kept as per this Schedule of maintenance. Result of all tests must be also recorded therein. However, if there is any repair or replacement done, the same should be recorded in the History Book.

6. Logging of instruments may be logged daily, only in attended substations. In the case of unattended substations, logging should be done every month or at shorter intervals as feasible. As far as possible logging may be done in peak loading time, so as to monitor the pattern of loading. Periods of power cuts and shut downs should be indicated in attached substations. Logging is needed for voltage (HV/MV/battery), current (HV, MV/battery), power (MD), temperature (max.) of oil, ambient temperature and pf (and frequency meter is already installed). Load on each outgoing feeder may be checked by clip on ammeter/tong tester, once in every quarter, preferable during peak seasons, so that redistribution, it any needed among the feeders could be further examined and effected.

7. Inspection of equipment rooms and equipment. Clean up equipment rooms; remove cobwebs, bird's nests etc., if any. Check that the ventilators are clear exhaust fans and fans are operational. The approach to equipment rooms, and yards in outdoor installations should be clear. Wipeout dirt/ dust from external surface so equipment.

8. CAUTION: Never attempt to clean equipment with exposed (bare) bushing, with supply ON. Periodicity of cleaning such equipment may be increased to once a month or longer as felt in order, so as to avoid frequent switching operations.

9. Observe for any abnormal noise, vibration, smell (usually due to overheating), excess temperature etc. if so, investigate the reason immediately. Radiators of transformers, LT bus bar chamber, and

10. LT MCCB/ACB's and main LT cables (near terminations) may be touched externally to feel any undue heating. Apart from smell, the shine of PVC may reduce due to local heating. Compound may expand and come out of cable boxes due to local heating in compound filled cable terminators (usually old installations). Arcing contacts and main contacts should then be similarly examined. Do not use abrasive paper to clean the contacts, if there is any residue/ pitting. Check the architects to be intact, clean and without any obstructions. Mechanical linkages should be lubricated, wherever required. Test for free movements of all operations.

11. In the case of electrically operated breakers, Megger test the motor/ solenoid and check for their free movement. Lubricate as necessary, in the case of outdoor gang operated switch, free operation of the switch (and proper alignment of all the 3 phases) should be checked. Check that the HRC fuses are in position, and that safety interlock (with the front cover) is operational. Connections at bus bars, bus ducts and switchgear (including control wiring) should be checked. Tighten as required. Clean the supports and look for any possibilities of tracking on surface. Relays should be tested and setting checked. Relay coil insulation should be checked with LT megger. Plug opening/ hole (if any) in switchboards, effectively. Megger test the panel, and check the interior to be free from any foreign matter (like cotton waste/flint, dislodged nuts/ washers/ cut tapes etc.) before energizing again.

12. Check of safety items & others Check of safety items (insulating mat, caution boards, danger boards, first aid kit, fire protection items, Resuscitator (where provided), first aid chart etc.

13. Check also whether telephone numbers of officers, supply agency (licensee), fire brigade and

hospital are displayed on a painted board in MV panel room.

14. Check that the correct schematic diagram of distribution is displayed in MV panel room. Test the earth resistance of each electrode (Preferably during summer); and also the integrity of earth connections. Where the substation building is single storied, inspect the roof and roof drain before monsoon, so as to avoid water stagnation.

15. Check the cable ducts to be free from extraneous items (rubbish/ water) and that duct covers are intact.

16. The staff shall check condition of silica gel in breather of oil type transformer, oil level of transformer from time to time. If found colour of gel turns pinkish colour or drop of level of transformer oil, then bring this to notice of JE (E).

17. Testing of IDMT relays shall be done as per load & result shall be recorded for verification by Department.

18. Checking and making good of tripping system electrically, manually and making good ON/OFF indicating system.

19. Check the trip battery performance from log book readings and charging system for satisfactory condition.

20. Checking of bus bar assembly, front and rear after removing the insulation, cleaning, drying and tightening the nut-bolts i/c replacement of defective hardware, re insulating the joints with proper compound and tape etc. as regd.

21. After dehydration of transformer oil Silica Gel shall be replaced in every transformer for which payment shall be made as per relevant item of SOQ.

22. Proper preventive maintenance of electrical installation particularly for the following items of work shall be carried out as per period stated against them. The contractor should chalk out the suitable programme for doing the test result and inform the Engineer-in-charge in advance and same shall be noted in suitable register maintained by the contractor.

    i. Earth testing: Once in a year.
    ii. Insulation test: Once in six months.
    iii. Cleaning of installation: Once in three months
    iv. Transformer Oil Testing: Once in a year.

    Note: However, the contractor has to take corrective measure whenever required.

23. Preventive Maintenance & cleaning of Sub-station is to be carried out on fortnightly basis, besides comprehensive maintenance work. Failing which recovery @ Rs. 3000/- per visit shall be deducted from his payment.

ADDITIONAL CONDITIONS FOR AC UNITS

For Sub Head: (Split AC System)

1. **Inventory for Split AC Systems**

Sl No	Location	Make	Capacity	Units
1	Yelwala School and Lakshmipuram	INDcool, Carrier and Godrej	1.5 TR	18
2			2 TR	4
			Total	**22**

1. Log books are to be maintained to record the log reading such as current, voltage, operating periods etc. Maintenance register should indicate actual compliance to the schedule item wise. Major repairs or replacements should be recorded in the History book. A job card for each AC unit shall be maintained by the contractor. The detail of work done from time-to-time shall be entered in the job card and the signatures of the occupant, JE (E) and AE(E)
2. This Comprehensive Maintenance covers Replacement of defective spare parts viz. Compressor, Thermostats, over load relays, capacitors, PCBs of ACs, air filters, drain connections, Fans Motor etc. due to normal use and wear and replacement of refrigerant/gas and other accessories etc., as required.
3. Break down calls are to be attended during normal working hours on week days and within 24 hours of receipt of complaint.
4. The prospective tenderer shall inspect the installations to be operated / maintained and list out the short comings if any.
5. Checking and Servicing the AC units and shall be done once in three months in addition to the condition at number 2 above. This includes cleaning of air filters, fans, evaporators, condensers and oiling of fan motor etc. and if required replacement of parts for proper functioning of the units as per the instructions of the Engineering in charge in addition to the above checking and replacement of wiring, connections if any shall be carried out.
6. The agency shall provide stand by compressor in case of defective compressor of AC unit till the completion of repairs and fixing of old compressor of AC unit.
7. Spares used on the work shall be genuine and of quality and shall be got approved by the Engineering-in-charge.
8. All AC units shall always be functional. No breakdown is acceptable agency has to maintain stock of all spares including compressors, fan motors etc.
9. If any of the AC unit is under breakdown a recovery of Rs.1000/- per unit per Day after 24 hours of receipts of complaint shall be affected from the bills payable to the contractor.
10. If any AC unit is not serviced in any 3 months the time for frame the recovery shall be affected as follows.

    i).Each AC unit @ Rs 400/-.
11. A Service record book shall be maintained by the tenderer and record in respect of services rendered for each Air conditioner such as the spares replaced, major/minor repairs carried out and preventive maintenance checks and he has to obtain the signature of the Engineering-in-charge or his authorized representative in the service record book.
12. Service report shall be submitted to the Engineer-in-Charge or his representative officer each general servicing / preventive maintenance / repairs carried out.
13. For item to be used at site beyond the scope of this work, prior approved of Engineer-in-Charge

shall be taken

14. The work contract tax (GST) & Labour welfarecess will be deducted at source from each payment of the contractor.

15. The contractor shall submit the copies of service reports duly countersigned by the Assistant Engineer (E)/Junior Engineer (E) and the representative of client along with the RA/final bill for verification and payment by the division office.

16. All replacements shall be carried out in presence of Engineer-in-charge or his representative and representative of client and a record shall be maintained.

LIST OF PREFERRED MAKES OF MATERIALS

1) A List of Preferred Brands / Makes / Manufacturers of Various Materials / Products are shown below for usage in execution of Work.

2) It shall be ensured, in general, that all materials to be used in the works shall bear BIS Certification mark. In cases where for a particular material / product, BIS Certification Mark is not available, then the material proposed to be procured can be used subject to the condition that it should conform to CPWD Specifications and relevant BIS codes. In such cases written approval of the Engineer in charge shall be obtained before use of such material in their works Samples of the items to be submitted for approval. Wherever the physical sample submission is not possible for the proposed items, the Contractor shall submit the technical data sheets of items.

3) The list given below does not absolve the Executing Agency from their responsibility for using these products. It is only after, they have satisfied about the quality and performance, the products shall be used. To achieve this, proper check on the quality of the products, actually to be used, should be exercised.

4) The contractor shall obtain prior approval from the Engineer in Charge before placing order for any specific material or engaging any of the specialized agencies. The contractor shall make a detailed submittal as per the contract with catalogues and proposed specifications (duly highlighting relevant matter). In case of specialized agencies, they will also submit full details of the works executed by the specialized agencies.

5) In case any make included in the preferred makes (brands) list is found to be below the standards of quality and specifications and/ or is deficient in any other manner, that make shall be considered as deleted by the Engineer in Charge from the list.

6) Public procurement (Preference to Make in India) Order (PPP-MIII)-2017-Revision dated 29.05.2019 and DoT Public Procurement (Preference to Make in India) Order (PPP-MII Order) dated 29.08.2018 with upto date amendments / latest order till the last date of receipt of tender will prevail and shall be complied with.

7) The contractor will submit relevant documents to enable the Engineer in Charge to verify that manufacturers have valid IS Certification as on date for materials, wherever applicable.

8) In case, make for any material to be used in work is not specified in the list, the Engineer in Charge may approve the make.

9) The above make shall be used if not otherwise mentioned in the nomenclature of respective items.

10) Decision of Engineer in Charge in case of any discrepancy shall be final and binding on all above points.

LIST OF PREFERRED MAKES

S.NO	Name of the Product	Manufactured by
1.	PVC insulated copper conductor FRLS / HFFR copper ISI Marked	Havells/RR Kabel/KEI/ Polycab
2.	MCB / ELCB/RCCB / DB	Legrand/Siemens/Schneider/ L&T
3.	XLPE UG Aluminium / Copper LT Cable	Havell/ KEI/ RR Kabel/ Polycab / Rallison
4.	Cable glands and cable lugs	Jainsons / Comet / Dowells / Prabath/ Polycab/ Gripwel/ Raychem.
5.	DWC/ HDPE/Heavy duty PVC Pipe	Gemini / Rex /Duraline/prince/supreme
6.	PVC Conduit (ISI Marked)	Avonplast/AKG/Precision/ Astral
7.	MS/GI PIPES WITH ISI	JINDAL/TATA/Zenith Birla / Sail
8.	Modular Switches & Sockets / Fan Regulator / RJ-45 Data Socket / GI Boxes / TV / Telephone sockets	Legrand-Myrius/ Wipro North West (NOWA/ Stylus+)/ Schneider – Clipsal / Crabtree / Panasonic (Vision/ Europa)
9.	BLDC Fans (Ceiling Fans /Wall Fans / Pedestal Fans / Exhaust Fans)	Atomberg –Efficio /Havells /Crompton /Orient
10.	Decorative Type BLDC Fans for VIP Rooms & living room, Dining Hall, Entrance lounge in Guest House	Atomberg /Havells /Crompton /Orient or any other make as per the directions of Engineer-in-Charge
11.	Exhaust Fan	Crompton/Orient/Havells/Almonard
12.	All types of LED Fittings (Indoor / Outdoor Light Fittings)	Lighting Technologies/Philips/Havells
13.	Change over Switches, SDFU	Legrand/Siemens/Schneider/ L&T
14.	Moulded Case Circuit Breaker/Motor protection circuit breaker Electric	Legrand/Siemens/Schneider/ L&T
15.	Storage type water Coolers	Bluestar/ Voltas/ Usha
16.	Ammeter / Voltmeter / Multifunction meters/Analogue panel meters	AE / L&T / C&S / Conserve/ Kaycee / Socomec (Diris) .
17.	Fire Extinguisher (with ISI mark)	CeaseFire/Safex/Minimax/Kanex
18.	MS Conduits (ISI Marked)	AKG/BEC/RMCON / Steel Kraft
19.	Connector/Terminal block	Wago/Elemac/Phoenix
20.	Rising main, End Feed Unit, Tap Off Box	C&S/Legrand/Schneider/Siemens/L&T
21.	Air Circuit Breakers	Legrand/Schneider/Siemens/L&T / ABB

S.NO	Name of the Product	Manufactured by
22.	Selector Switch	BCH/Rishabh/Conserve/Kaycee/AE/
23.	CAT-6A Cable, Patch panel	Legrand/Commscope/ Systimax / Panduit /Schneider
24.	UPS	Numeric / Schneider / Fuzi / Vertiv /Power One
25.	Digital Meter/ Multifunction Meters	Rishab / Automatic Electric / Prok Devices / Schneider / Secure / L&T / ABB / Legrand
26.	Selector Switch	Kayee / Salzer / Siemens / HPL / BCH
27.	SMF Batteries	Exide / Prestolite / Amaraja / Amco / Saft / OEM of UPS
28.	Cable Gland/Lugs/ Thimbles	Comet / Dowells / Raychem / Gripwell
29.	Heat Shrinkable HT Termination Kits	Denson / Raychem / 3M
30.	Ladder type / perforated cable tray	Slottco/ Legrand/ OBO/ Profab/ MK
31.	INDICATING LAMPS	SIEMENS / SCHNEIDER / L&T / MG / SALZER or OEM
32.	ELECTRIC TIMER	SIEMENS / SCHNEIDER / L&T / MG / SALZER or OEM
33.	ROTARY SWITCH	SIEMENS / SCHNEIDER / L&T / MG / SALZER or OEM
34.	PUSH BUTTON AND PUSH BUTTON SET	SIEMENS / SCHNEIDER / L&T / MG / SALZER or OEM
35.	LUGS	DOWELL'S / 3D / JAINSON / COMET / HMI
36.	BIMETALLIC LUGS	HMI / HEX / CONNECT
37.	CABLE GLAND	JAINSON / 3D / COMET / HMI
38.	Industrial socket outlet & polycarbonate socket outlets	Siemens / Legrand / L & T / ABB / schneider
39.	Call bell buzzer	Anchor / Goldmedal / Phillips / MK
40.	Street light pole	Bajaj/VaLmont/Utkarsh/ K-lite
41.	CMS	Legrand/Obo/Honeywell/Schnieder
42.	Split Air-conditioners	Bluestar/Daikin/O General/Toshiba
43.	LED EXIT Emergency Lighting	Prolite / Bajaj / Crompton / Philips / Wipro / Havells / Legrand
44.	Solar water Heaters	Racold / Honeywell / V Guard / Solar flex / Havells / Supreme / Nuetech
45.	SPD	OBO/ABB/Legrand/ L&T
46.	Water supply pumps	Grundfos /Kirloskar/KSB

S.NO	Name of the Product	Manufactured by
47.	Motors	Siemens / Kirloskar / Crompton / ABB
48.	Industrial sockets & plugs	Siemens / Schnieder / L&T/ Legrand
49.	Switch disconnector fuse unit	Siemens / Schnieder / L&T/ Legrand
50.	Power contactors	Siemens / Schnieder / L&T/ Legrand