



**REGIONAL OFFICE (MAHARASHTRA)
EMPLOYEES' STATE INSURANCE CORPORATION
(Ministry of Labour & Employment, Government of India)
Regional Office, Panchdeep Bhavan, N.M Joshi Marg,
Lower Parel, Mumbai-400013
Phone: 022- 61209775 /97
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**e - TENDER
FOR**

**“Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at
Kolhapur”**

BID DOCUMENT

Issued by: -

(Regional Director)

**Name of Work : Annual Repair & Maintenance of Electrical works at ESIC Hospital &
Branch Office at Kolhapur**

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Notice Inviting e-Tender

Name of work: Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur

1. E-tender in **percentage rate** in two bid system through e-procurement solution are invited from eligible contractors registered with C.P.W.Ds /State P.W.Ds./M.E.S./ Railways/BSNL Electrical Wing or any other government body as Electrical Contractor for the works **Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur**

Sl.	Item	Detail
1	Name of work	Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur
2	Time for Completion	12 Months
3	Estimated Cost	Rs. 37,91,531/- (Rupees Thirty-Seven Lakh Ninety-One Thousand Five Hundred Thirty one only)
4	Earnest Money Deposit (EMD)	The amount of Earnest Money Deposit (EMD) is Rs. 75,831/- which shall be in the form of deposit at Demand Draft/Bankers Cheque of scheduled Bank issued / drawn in favor of ' ESI FUND ACCOUNT No.1 ', payable at Mumbai.
5	Tender Document	The tender document may be downloaded from www.esic.nic.in/tenders and https://eprocure.gov.in/eprocure/app . from 12/09/2019 at 10:00 AM to 07/10/2019 till 05:00 PM.
6	Last Date of submission	Technical bid and Financial bid must be submitted online at https://eprocure.gov.in/eprocure/app . in during period from 12/09/2019

		at 10:00 AM to 07/10/2019 till 05:00 PM. Bid submitted through any other mode shall not be entertained.
7	Date of opening of tender:	The technical bids of tenders shall be opened in the presence of the tenderers who desire to be present on 10/10/2019 at 03:00 PM in conference hall at 3 rd Floor, RO Lower Parel, Mumbai. In case 10/10/2019 is declared a public holiday, tenders shall be opened as per above schedule on next working day. The date for opening of Financial Bid of those bids who found Technically qualified shall be communicated separately.

Regional Director
Employees' State Insurance Corporation,

Instructions for Online Bid Submission

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

REGISTRATION:

- i Bidders are required to enroll on the e-procurement module of the Central Public Procurement Portal (<https://eprocure.gov.in/eprocure/app>) by clicking on the link “Online bidder Enrollment” on the CPP Portal which is free of charge.
- ii As a part of enrollment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- iii Bidders are advised to register their valid email address and mobile numbers as parts of the registration process. These would be used for any communication from the CPP Portal.
- iv Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class III certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify/ nCode / eMudhra etc.), with their profile.
- v Only one valid DSC should be registered by a bidder. Please note that bidders are responsible to ensure that they do not lend their DSC’s to others which may lead to misuse.
- vi Bidder then logs in to the site through the secured log-in by entering their user ID/ password and the password of the DSC/ e-Token.

SEARCHING FOR TENDER DOCUMENTS

- 1 There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
- 2 Once the bidders have selected the tenders they are interested in, they may download the required documents/ tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- 3 The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

1. Bidders should take into account any corrigendum published on the tender document before submitting their bids.
2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents- including the names and content of each of the document that need to be submitted. Any deviation from these may lead to the rejection of the bid.
3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF / JPG foprmats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
4. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not to be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

Note: My documents space is only a repository given to the Bidders to ease the uploading Process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents beings part of Technical Bid.

SUBMISSION OF BIDS

- a) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- b) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- c) Bidder has to select the payment option as “offline” to pay the tender fee / EMD as indicated in the tender document.
- d) Bidder should prepare the EMD as per the instruction specified in the tender document. The original should be posted /couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- e) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has given as a standard BOQ format with tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white colored (unprotected) cells with their respective financial quotes and other details (Such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.
- f) The server time (which is displayed on the bidders’ dashboard) will be considered as the

standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders follow this time during bid submission.

- g) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- h) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- i) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

- (i) Any queries relating to tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- (ii) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact no. for the helpdesk is 18002337315. Foreign bidder can get help at +91-79-40007451 to 460.

Annexure-C

ELIGIBILITY CRITERIA FOR BIDDERS

SL. NO.	COMPONENT OF WORK	ESTIMATED COST (Rs.)	ELIGIBILITY
1.	Electrical Installation, Repair, Operation & Maintenance works (Major Components)	RS. 37,91,531/-	Registered contractors of C.P.W.Ds /State P.W.Ds./M.E.S./ Railways/BSNL Electrical wing or registered in any other government body as Electrical Contractor.

Rest Eligibility conditions as given below.

1. The bidder should have minimum three years' experience as on last day of the month previous to the one in which tenders are invited, in similar nature of works. (Similar nature of works means that the applicant should have completed the Electrical Works including the Operation & Maintenance of DG set, Internal & External Electrical installation, Maintenance of all type of LT/HT Control Panel, Maintenance of sub-stations Transformer, APFC Panel, Water Pump Sets, Switch Gears, Street light, window/split Air conditions in Central Govt. offices/ State Govt. offices/ attached offices/ statutory bodies/ PSU departments).
2. Average Annual Financial turnover during the immediate last 3 consecutive financial years should be at least 30% of the value of work to be executed (copies of Balance Sheets signed by Chartered Accountant to be submitted online).
3. The applicant should have also successfully completed similar works in Central Govt. offices / State Govt. offices / attached offices / statutory bodies / PSU departments during the period of last seven years ending on *Last day of the month previous to the one in which tender are invited* either of the following:
 - a) Three similar completed works costing not less than the amount equal to 40% of estimated cost put to tender i.e. **Rs. 15,16,612/- (each)**.
or
 - b) Two similar completed works costing not less than the amount equal to 60% of estimated cost put to tender i.e. **Rs. 22,74,919/- (each)**.
or
 - c) One similar completed works costing not less than the amount equal to 80% of estimated cost put to tender i.e. **Rs. 30,33,225/- (each)**.(Their completion certificate along with cost of the work, period and nature of work in the prescribed Proforma of the concerned department duly signed by the competent authority should be furnished online)
4. The Tenderer must have been registered in C.P.W.Ds /State P.W.Ds./M.E.S./ Railways/BSNL Electrical wing or any other government body as Electrical Contractor.

5. The Tenderer must have to submit a Self-Certificate that they have not been indicted for any criminal, fraudulent or anti-competition activity and have not been blacklisted by any Govt. departments or otherwise.
6. All documents as stated in point no. 2.2 of Annexure – D must be submitted online in Technical Bid.

INSTRUCTIONS TO THE BIDDERS

1. **Earnest Money Deposit:**

- 1.1. The Earnest Money of **Rs. 75,831/-** in the form of Demand Draft/Bankers Cheque of scheduled Bank issued / drawn in favor of '**ESI FUND ACCOUNT No.1**', payable at **Mumbai** shall be dropped on or before **to 07/10/2019 till 05:00 PM** in the tender box placed at Construction branch, ESIC Regional Office, Lower Parel, Mumbai. The bids received without submission of EMD will summarily be rejected.
- 1.2. EMD shall be placed in separate sealed cover by writing the **Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur** on the envelope. If the Earnest Money is not found as per the prescribed manner then Technical/Financial Bid shall not be opened.
- 1.3. EMD as above mentioned will be accepted in above manner shall accompany the bid.
- 1.4. EMD shall remain valid for a period of 90 days. A bid received without Bid Security (EMD) shall be rejected at the bid opening stage.
- 1.5. The earnest money shall be refunded to the unsuccessful tenderers after finalization of the contract.
- 1.6. No interest is payable on the EMD/SD.
- 1.7. The bid security (EMD) may be forfeited, if a bidder withdraws his bid during the specified period of bid validity, specified in the bid documents. In the case of successful bidder, if the bidder fails to submit the agreement bond along with Performance Guarantee within time specified in the Tender document after awarding of the contract, ESIC shall without prejudice to any other right or remedy available in Law, be at liberty to forfeit the earnest money absolutely.
- 1.8. Letter of authorization to attend bid opening.

2. **Submission of bids:-**

- 2.1. Each and every page of the tender documents should bear the stamp and signature of the person whose name registration exists or he/she shall be authorized legally or any representative by clearly mentioning the name and stating that the person can sign the tender documents on his behalf. Format enclosed shall be filled without exception.
- 2.2. The tenderer should take care to upload online all the information sought by the Employees' State Insurance Corporation in prescribed formats. Also, the tenderer has to upload online the scan copy of following documents along with the technical bid.
 - (a) **E.M.D. of Rs. 75,831/- (Rupees Seventy Five Thousand Eight Hundred Thirty One only)/-**
 - (b) PAN Card

- (c) Clause by clause compliance demonstrating substantive responsiveness to the commercial condition by signing and stamping on all the pages of the original bid documents in online submission.
 - (d) Certificate of Incorporation/ Shop & Establishment Registration Certificate of Firm/ Memorandum and Article of Association/ Partnership Deed/ Proprietorship Deed/ Declaration of Proprietorship etc. as the case may be.
 - (e) Balance sheet/ P & L Account for last three financial years **(i.e. for the year 2015-16, 2016-17, 2017-18)**.
 - (f) Income Tax Return of the Firm for last three financial years **(i.e. for the year 2015-16, 2016-17, 2017-18)**.
 - (g) GST Registration Certificate.
 - (h) Annual turnover of works for immediate last 3 consecutive financial years **i.e. for the year 2015-16, 2016-17, 2017-18, duly** certified by Chartered Accountant.
 - (i) Satisfactory completion certificate of similar nature of work (as per sr. no. 3 of Annexure –C, i.e. eligibility condition)
 - (j) Registration Certificate of the firm under ESIC.
 - (k) Registration Certificate of the firm under EPFO.
 - (l) Valid License/ Registration of the firm from C.P.W.Ds/ State P.W.Ds./M.E.S./Railways/BSNL Electrical wing or any other government body as Electrical contractor.
 - (m) Copy of valid Electrical license to carry out electrical works
 - (n) Registration certificate of the firm under the Contract Labour (Regulation & Abolition) Act 1970 & Contract Labour Central Rule (Regulation & Abolition) 1971, if applicable.
 - (o) Professional Tax Registration Certificate.
 - (p) A self-certificate that they have not been indicted for any criminal, fraudulent or anti-competition activity and has not been blacklisted by any Govt. departments or otherwise.
 - (q) Complete Bank Details/ Cancelled Cheque.
- Technical bid shall be opened on the date as mentioned in NIT. The financial bid of the tender shall be opened only for the tenders, which qualify in the technical bid. The date of opening of Financial Bid will be communicated separately

2.3 Financial Bid:

Financial bid must be submitted online only at <https://eprocure.gov.in/eprocure/app>. The financial bid of the tenderers, whose technical bid is found to be qualified, will be opened in the presence of the tenderers, who desire to attend the opening of financial bid.

3. EMD (as per Annexure-‘D’-1.1) may be dropped in the tender box placed at following address :

**Construction Branch
Regional Office
Employees State Insurance Corporation
Panchdeep Bhavan-108, N.M. Joshi Marg,
Lower Parel, Mumbai-400013**

4. The site for the work can be seen on any working days during office hours by contacting ‘Branch Officer, Construction Branch, Employees’ State Insurance Corporation, Panchdeep Bhavan-108, N.M. Joshi Marg, Lower Parel, Mumbai-13’. The tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting the tenders, the form and nature of site, the means of access to the site etc. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.
5. Canvassing whether directly or indirectly, in connection with tenders strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
6. The work shall remain open for acceptance for a period of **90** days from the date of opening of tenders. If any tenderer withdraws his tender before the said period or issue of letter of acceptance/Indent whichever is earlier or makes any modifications in the terms and conditions of the tender which are not acceptable by the ESIC and, shall be without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money.
7. **Rights of Acceptance/ Rejection:**
Regional Director, ESI Corporation, Maharashtra reserves the right to reject all or any tender in whole, or in part, without assigning any reason thereof. The competent authority on behalf of ESIC does not bind himself to accept the lowest or any other tender and reserves the right to reject any or all of the tenders without assigning any reasons thereof. All the tenders, in which any of the prescribed conditions is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer, shall be summarily rejected.
8. **PERFORMANCE GUARANTEE:**
 - 8.1 The successful contractor will be required to furnish an irrevocable PERFORMANCE GUARANTEE of 5% (Five percent) of the tendered amount in addition to other deposit mentioned elsewhere in the contract for his proper performance of the contract (not

withstanding and /or without prejudice to any other provisions in the contract) within 10 days from the date of issue of letter of acceptance of tender.

- 8.2 The guarantee shall be in the form of Demand Draft/ Banker's Cheque in favor of '**ESI Fund A/c No. 1**' or Irrevocable Bank Guarantee Bonds of any scheduled bank or the State Bank of India in the format as per Annexure-'K'. The Performance Guarantee shall be refunded without accrual of interest after successful completion of Contract.
- 8.3 The Performance Guarantee shall be initially valid for a period up to **365** days beyond the Stipulated Contract Period. In case the Contract Period of work gets extended, the contractor shall get the validity of Performance Guarantee extended, at his own cost; to cover such extended time for Contract Period.
- 8.4 EMD shall be returned to the successful bidder after receiving Performance Guarantee from he/she/they and making Contract Agreement with him/her/they.
9. Letter of Acceptance of tender/Work Order shall be issued in the first instance to the successful tenderer with the decision/approval of the competent authority and letter for commencement of work awarded shall be issued only after the Performance Guarantee in the prescribed form is received from the successful tenderer/contractor. In case of failure of the contractor to furnish the Performance Guarantee within the specified period, the ESIC shall without prejudice to any other right or remedy available in Law, be at liberty to forfeit the earnest money absolutely.
10. **SECURITY DEPOSIT:** The contractor shall permit ESIC at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 2.5% of the gross amount of each running bill value of the work. Such deductions will be made and held by ESIC by way of Security Deposit. Security Deposit would be released after completion of defect liability period.
11. On acceptance of the tender, the name of the accredited representative(s) of the contractor, who would be responsible for taking instructions from the Engineer/Authority, shall be communicated in writing to the ESIC.
12. Central Sales Tax, Local Sales Tax, VAT, Purchase Tax, Turn over Tax, Service Tax, GST or any other tax, wherever applicable, inclusive of all cess and all duties in respect of the contract, must be payable by the contractor. The ESIC, will not entertain any claim what so ever in respect of the same.
13. Rates quoted by the Contractor/Tender shall be deemed to have inclusive of cost of manpower, material, machinery, tools, plants, GST etc. & all taxes including GST, duties, levies, Cess, ESI, EPF, Insurance etc. No escalation of whatsoever nature, shall be payable.
14. The tenderers shall produce their valid enlistment with the appropriate authority for all types of Taxes, GST, Cess, Duty, Contribution etc.

15. Rates quoted by the Contractor/Tenderer shall also be inclusive of 1% (one percent) Cess on the work done as applicable on the Building & Other Construction Workers' Welfare Cess Act 1996 due to the introduction of "The Building & Other Construction Workers (Regulation of Employment & Conditions of Services) Act 1996".

16. Award of work :

- i The selection of the agency will be at the sole discretion of the Employees State Insurance Corporation, who reserves the right to accept one or to reject any or all the tenders without assigning any reasons thereof.
- ii The contract shall be awarded to the best qualified responsive tender.
- iii Upon evaluation of offers, the written notification for award of contract will be intimated to the successful tenderer to start the work.

Regional Director,
Employees' State Insurance Corporation

Sign & Seal of the Contractor:

Date :Place:

SCOPE OF WORK

Details of Premises/buildings :

Serial No.	Name and Address of Building	Nature of Facility
1	Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur	Hospital & BO (Repair & Maintenance)

Scope of Works/Services:

- (1) Day to Day repair, Operation & Maintenance of Electrical Substation, Transformers, DG sets, HT/LT Panels, Capacitors panel, UPS, Relays, Pumps, complete Electrical installations through Annual Repair & Maintenance as per Bill of Quantities as per requirements.
- (2) Any other works as and when directed by the authorized person from ESIC other than mentioned above falling under the domain of Electrical works.

GENERAL CONDITIONS OF CONTRACT

1 Definitions

In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

- (i) **“Employer”** means the Employees' State Insurance Corporation and the legal successors in title to Employees' State Insurance Corporation.
- (ii) **“Engineer”** means the person appointed by Employees' State Insurance Corporation to act as an Engineer for the purpose of the Contract.
- (iii) **“Contractor”** means an individual or firms whether incorporated or not, that has entered into contract (with the employer) and shall include his/its heirs, legal representatives, successors and assignees. Changes in the constitution of the firm, if any, shall be immediately brought to the notice of the employer, in writing and approval shall be obtained for continue performance of the contract.
- (iv) **“Contract”** means the conditions, the Specifications, the Bill of Quantities, the Tender, the Letter of acceptance, the Contract Agreement (if completed) and such other documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement.(As per Annexure ‘J’)
- (v) **“Specification”** means the specification of the works included in the contract and any modification thereof. The items of works shall be executed in strict accordance of CPWD specifications.
- (vi) **“Drawings”** means all the completion drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under this contract and all drawings, calculations, samples, patterns, models, Repair/Repairs and Maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.
- (vii) **“Bill of Quantities”** means the priced and completed bill of quantities forming part of the Tender.
- (viii) **“Tender”** means the Contractor's priced offer to the Employer for the execution and satisfactory completion of the works and the remedying of any defects therein in accordance with the provisions of the Contract, Specification as accepted by the Letter of Acceptance. The word Tender is synonymous with “Bid” and the words “Tender Documents” with “Bidding Documents”.
- (ix) **“Letter of Acceptance”** means the formal acceptance of the tender by Employees' State Insurance Corporation in writing.
- (x) **“Contract Agreement”** means the contract agreement (if any) referred to contract agreement as per Annexure ‘J’.
- (xi) **“Appendix to Tender”** means the appendix comprised in the form of Tender annexed to these Conditions.
- (xii) **“Commencement Date”** means the date from which the Contractor is directed by ESIC to start the works in writing.
- (xiii) **“Time for Completion”** means the time period for which the contract has been allowed to be completed by the employer to the contractor.
- (xiv) **“Taking Over Certificate”** means a certificate issued by employer evidencing

- successful and satisfactory completion of the awarded work as per contract agreement.
- (xv) **“Contract Price”** means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and removing of any defects therein in accordance with the provisions of the Contract.
 - (xvi) **“Extra Item Price”** Any items of works if it is not available in Bill of Quantities and required to be executed in the interest of completion of work.
 - (xvii) **“Substitute Item Price”** Any items of works required to be executed in the interest of completion of work and replace by the similar item available in Bill of Quantities.
 - (xviii) **“Retention Money”** means the aggregate of amount retained by the Employer as Security Deposit.
 - (xix) **“Works”** means the Permanent Works and the Temporary Works or either of them to be executed in accordance under the contract and contract specifications.
 - (xx) **“Site”** means the places provided by the Employer to the Contractor.
 - (xxi) **“Cost”** means all expenditure properly incurred or to be incurred, whether on or off the Site, including over head and other charges but does not include any allowance for profit.

2. Engineer’s Duties and Authority

The Engineer shall carry out the duties as specified in the Contract.

3. Custody and Supply of Drawings and Documents

The Drawings shall remain in the sole custody of the Employer but copies as required thereof shall be provided to the Contractor for free solely for the purpose of this contract.

4. Sufficiency of Tender

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination of this site conditions. The acceptance of tender is deemed to have visited the site and made themselves conversant with the type of works incorporated in this tender.

5. Contractor's Employees

The Contractor shall provide qualified and experienced technical staff on the site of work in connection with the works and for remedy of any defects therein.

6. Engineer at Liberty to Object

The Engineer shall be at liberty to object, to remove forthwith from the Works, any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on site is otherwise considered by the Engineer to be undesirable and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced immediately.

7. Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and till completion of the Works remedying of any defects therein:

- (i) Have full regard for the safety of all persons entitled to be upon the site and keep the site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons, and
- (ii) Provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority for the protection of the Works or for the safety and convenience of the public or others, and
- (iii) Take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others, resulting from pollution, noise or other causes arising as a consequence of his methods of doing work activities under the contract.
- (iv) All safety rules prescribed by the Government should be complied and shall be strictly observed to execute the work and safety of manpower deployed.

8. (A) Insurance of work by the Contractor for his liability:

- (i) During the execution of the work any loss or damage to the property and life of his employee arising from a cause for which contractor is responsible.
- (ii) For loss or damage occasioned by the Contractor in the Course of any work carried out by him for the purpose of complying with his obligations.
- (iii) It shall be the responsibility of contractor to notify the Insurance Company of any charge in the nature and extent of the works and to ensure the adequacy of the Insurance cover at all times during the period of contract.

(B) Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of :

- (a) Death or injury to any person, or
- (b) Loss or damage to any property (other than the Works):

Which may arise out of or in consequence of the Annual Repair & Maintenance of the works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof.

9. Accident or injury to Workmen

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman under Compensation Act for death or injury resulting from any act or default of the contractor. The contractor shall indemnify and keep indemnified the Employer against all such damages and compensation and expenses whatsoever in respect thereof or in relation thereto.

10.1 Evidence and Terms of Insurance

The contractor shall take out appropriate insurance to cover his work, workers and staff employed by him fully. The contractor shall provide evidence to the Employer as soon as practicable after the respective insurance have been taken out but in any case, prior to the start of work at the Site that insurance required under the Contract have been effected.

10.2 Compliance with Statutes and Regulations:

The Contractor shall conform in all respects, including by giving all notices and paying of all fees/charges, with the provision of:

- (a) Any National or State Statute, Ordinance or other Law or any regulation or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and
- (b) The rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works, and the Contractor shall keep the Employer indemnified against all penalties and liabilities of every kind for breach of any such provision.
- (c) Any changes required for approval due to revision of the local laws.
- (d) The Contractor shall abide by the provisions of the Minimum Wages Act, 1948 and Child Labour (Prohibition and Regulation) Act, 1986.

11. Default contractor in Compliance

In case of default on the part of Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any payments due or to become due, to the Contractor and the Engineer shall notify the Contractor accordingly.

12. Time for Completion

The time limit of work shall be as mentioned in the letter of commencement/Work Order and shall start from the date of issue of letter or as informed by through Letter/Work Order or as decided by Regional Director.

13. Extension of Time for Completion

The extension of the period for completion of work can only be granted on the valid and unavoidable grounds by the competent authority as per same terms and conditions of Contract and based on the requirements of Employer/Users.

14. Termination of Contract:

The employer reserves it's right to terminate the contract/works by giving 30 days notice at any time during currency of the contract, if the services of the contractor are not found satisfactory as per the opinion of employer or his representative for which no claim or compensation shall be entertained by the Employer.

15. Defect Identification and its rectifications

Contractor shall immediately attend the defects and complaints after getting intimation at site. Defect Liability period shall be 12 months from the date of completion of work under Bill of Quantities for measurable works. The contractor shall rectify at his own expenses, any defect in the work carried out by him during this period. On failure of the contractor to do so, the same shall be executed by the Employer through other means as deemed fit, at the risk and cost of the contractor.

16. Compensation for Delay

If the Contractor fails to complete the work in time then the Employer can impose liquidated damages on the contractor @ 1% per day maximum of 10 % of estimated cost.

17. Contractor's Failure to Carry out Instructions

In case of default on the part of the Contractor in carrying out defect rectification works, the Employer shall be entitled to employ and pay other persons/agency to carry out the same and if such work, in the opinion of the Employer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall be determined and recovered from the Contractor by the Employer and may be deducted from any payment due or to become due to the Contractor.

18. Instruction for Variations

Quantities given in the Bill of Quantity may increase or decrease from the provision of contract quantity being estimated quantities. The quantity of any particular item may vary to any extent.

Variation in quantity in particular items or overall cost, does not entitle contractor to claim for any extra rate then tendered.

19. Method of Measurement

The Engineer shall determine by measurement of the value of actual work done in accordance with the Contract and shall be paid proportionately. The works shall be measured net, notwithstanding any general or local custom, except where otherwise provided in the Contract. The method of measurements shall be followed as per the CPWD Norms / Specifications.

20 (A). Certificates and Payments

The contractor shall submit a bill in three copies by 7th day of every month for the work executed up to the date of previous month in the tabulated form. The bill must be supported with the following documents.

- a) Measurement of all the works executed.
- b) Abstract of the all parts of bill.
- c) Test Reports.
- d) Copy of certified attendance sheet of staff/workmen engaged with their copy of wages register, ESI, EPF Challan, Bank statement for salary compliance etc.
- e) A self-certificate by agency stating 'They are adhering to all statutory laws including labour laws & minimum wages act.'
- f) Complaint registration form duly signed by complainant on satisfactory work completion

After receipt of the bills submitted by the contractor in the manner prescribed by the above duly supported by all the documents, the Engineer shall check the bills and certify the payments admissible to the contractor. The payment shall be released only after certification of the engineer for the works carried out at site.

20 (B). Timing of Payments: - Applicable when if submitted as per clause 20(A)

Amount which is due with respect to each interim payment shall be paid as follows: -

- i) 50% of the value of the ARM bills submitted along with all details and supporting documentation complete in all respects against the work executed and claimed in the submitted bills.

The balance amount due after checking of the bills by the Employer within 30 working days.**21.1**

Deduction of Income tax

The amount to be deducted towards the income tax shall be at the rate applicable.

21.2 Labour Welfare CESS

Rate on the work done shall be deducted from each bill as per statutory requirements, as applicable.

22. Performance Guarantee:

Within **10** days of issue of letter of Work Order/Intent of Work/acceptance of tender, the Contractor shall submit a Performance Guarantee@ 5% of the Value of Contract amount for proper performance of the Contract in the form as specified in the contract. The Performance guarantee shall be initially valid for the duration of the contract period plus 365 days.

The performance security can be en-cashed by the Employer to recover any amount which is payable by the contractor to the Employer on any account for a cause arising out of the contract.

23. Correction of Certificates:

The Engineer may have issued any Interim Payment Certificate, the correction or modification in any previous Interim Payment Certificate which has been issued by him, and shall have authority, if any work is not being carried out to his satisfaction, to omit or to reduce the value of such work in any Interim Payment Certificate.

24. Final Certificates:

Within 60 days after receipt of the Final Statement, and the written discharge, the Engineer shall report to the employer (with a copy to the Contractor) with a Final Certificate stating:

- (a) The amount which, in the opinion of the Engineer, is finally due under the Contractor, and
- (b) After giving credit to the Employer for all amounts previously paid by the employer and for all sums to which the Employer is entitled under the contract.

25. Default of Contractor:

If the performance of the contract is not satisfactory and not corrected within 15 days of receiving notice, then employer shall be at liberty to terminate the contract and get the work executed through other means at the risk and cost of the Contractor.

26. Amicable Settlement of Dispute:

The parties (the Employer and the Contractor) shall use their best efforts to settle amicably all disputes arising out of or in connection with this contract or the interpretation thereof.

27. Arbitration:

Any dispute and differences relating to the meaning of the specifications, designs, drawings and instructions herein before mentioned and as to the quality of workmanship of materials used in the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions or these

conditions or otherwise concerning the works or the execution of failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof in respect of which amicable settlement has not been reached shall be referred to the Sole Arbitrator appointed by the Chief Engineer, Employees' State Insurance Corporation, who shall proceed as per the Arbitration Act, 1996.

28.1 The Work under the contract shall continue, during the Arbitration proceedings.

28.2 The award of the Arbitrator shall be final, conclusive and binding on both the parties (the Employer and the Contractor).

29. Payment on Termination:

In the event of termination of the contract, employer shall be at liberty to get balance work done at the risk and cost of the contractor and due payment of the contractor, if any, shall be released after the completion of whole of the works.

Regional Director,
Employees' State Insurance Corporation

Sign and seal of Contractor :

Date :

Place:

Particular Conditions of Contract

- CPWD specifications shall be followed. Where not available, BIS/Engineering practice as directed by the Engineer shall be followed. The materials shall be got approved prior to its use for work from the Engineer-In-Charge of the ESIC.
- Formats of Performance Guarantee and Contract Agreement are at Annexure-K and Annexure-J respectively.
- As the work will have to be carried out in building and area in use the contractor shall ensure
 - a. All design/drawing work/s involved in this tender is/are in the scope of Contractor, which is/are to be submitted by them to ESIC with the vetting/certification of Government Engineering College/NIT/ IIT before execution of respective and allied work/s.
 - b. That the normal functioning of Employees' State Insurance Corporation activity is not effected as far as possible.
 - c. That the work is carried out in an orderly manner without noise and obstruction to flow of traffic.
 - d. That all rubbish etc. is disposed off at the earliest and the place is left clean and orderly at the end of each day's work.
 - e. The work should be carried out by the qualified worker for their part of work. He shall be responsible for their conduct. The staff should behave in a courteous manner. The contractor shall be held responsible for any loss or damage to Employees' State Insurance Corporation property.
 - f. The contractor shall ensure safety of his workers and others at site of work and shall be responsible for any consequence arising out of execution of the operation of day to day maintenance & Repair work.
 - g. When instructed to do so, the contractor shall ensure proper record keeping and storing of irreparable/dismantled material.
 - h. The contractor has to make his own arrangement for use of the same including extending temporarily lines etc. The responsibility for following relevant rules, regulations and loss in the regard shall be entirely that of the contractor.
 - i. The contractor shall take proper care during dismantling operations to ensure that there is no danger/damage to any adjoining/existing structures and in case of any damage the contractor shall re-do the work/do the necessary repairs as per direction of the Engineer-in-Charge for which no claim would be entertained by the department.
 - j. For any Extra items/substituted items/deviations in quantities of BOQ items, Contractor has to intimate to ESIC and obtained prior approval from Competent

Technical Authority before work execution.

- k. The work shall be carried out in manner complying in all respects with the requirement of relevant byelaws of the local Municipal Corporation of the local body whatsoever.
- l. The contractor shall put necessary boards on display forbidding the residents/public from approaching the building under repair to avoid any accident.
- m. The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution-boards. They shall be responsible for all damages and accidents caused due to negligence on their part.
- n. All incidental charges of any kind including cartage, storage cutting and wastage and safe custody of materials etc. (not covered under any other condition) shall be borne exclusively by the contractor and nothing extra shall be payable to them on this account.
- o. All warning boards and displays, such as REPAIR WORK IN PROGRESS, KEEP AWAY FROM BUILDING, NO PARKING etc. along with sufficient supervisory staff on ground shall be provided by the contractor, wherever required. Nothing extra shall be payable on this account.
- p. Water and electricity shall be arranged by the contractor at his own cost. Nothing extra shall be payable on this account.
- q. The site of work shall be always kept neat and clean due to constraints of working space in and around buildings. To avoid nuisance to the occupants, all building rubbish unserviceable materials shall be periodically removed from the premises to the approved municipal grounds and all necessary permissions in this regard have to be obtained by the contractor from the Municipal Authorities. Nothing extra shall be payable on this account.
- r. Since the work is to be carried out in the occupied buildings, proper sequencing as regards dismantling of Existing wiring, DBS, Switch board, Electrical installation etc. shall be done so as to cause minimum in convenience to the occupants besides taking care of the constraint of keeping the system functional during repairs by making temporary arrangements, as required. Nothing extra shall be payable on this account.
- s. Regional Office, ESIC shall not be under any obligation for providing employment to any of the worker of the Contractor after expiry of the contract. ESIC does not recognize any employee-employer relationship with any worker of the Contractor.
- t. For not employing of the required staff/workman, recovery shall be made from their bill at the following rate:-
 - Wireman cum operator- Rs. 800/day
 - Helper- Rs. 700/day
- u. The services of contractor may be utilized for Branch offices/Dispensaries etc. (of Kolhapur Region) as and when required/directed by the Employer, on the same terms, conditions & rates as per this agreement.

Additional Terms and Conditions for Electrical Works

1. The work shall be carried out as per CPWD General specifications for electrical works part-I (Int.) 20 13, Part- II (Ext.) 1995 as amended up to date relevant IS codes & Indian electricity rules amended up to date wherever applicable and to the entire satisfaction of the Engineer - in-charge.
2. The contractor must study carefully all the specifications/schedule of work/additional terms & condition for electrical work and quote rates after accounting all works. No extra claim on any account shall be paid/ entertained other than the agreement/quoted rates.
3. The firm shall use only chase cutting machine for cutting the chases in the wall for recessed conduit wiring.
4. Any damage caused to the building during the execution of work shall be the responsibility of the Electrical contractor. The damage so caused shall have to be made good to the entire satisfaction of the Engineer-in-charge. The decision of the Engineer-in- charge shall be final and binding.
5. All the material to be used in the work shall be new and must be got approved from the Engineer-In-Charge before use in the work.
6. Bad workmanship in the opinion of Engineer-in-charge shall not be accepted and shall be rectified by the contractor at his cost to the entire satisfaction of Engineer-in-charge.
7. Dismantled material shall be returned to the department at JE's store otherwise recovery for the same shall be made at current market rates.
8. All hardware items such as screws, thimbles, connectors, earth/neutral terminals, wires etc., which are essentially required for completing any item of work as per specifications will be deemed to have been included in the item even when the same have not been specifically mentioned.
9. Wherever it is not possible to provide rigid conduits, flexible metallic pipe with couplers clutches on both ends shall be provided for drawing/running the wires. However, such arrangement has to be kept to the barest minimum and only with the prior approval of Engineer-in-charge. The structure is double height hence nothing extra will be paid on A/c of dismantling and execution of work.
10. All T&P including ladders, wire drawing equipment, electrical chase cutting equipment, drill machine, meggar, earth resistance testing equipment etc., required for the work shall have to be arranged by the contractor. No T & P shall be issued by the department.
11. The staff engaged by the contractor shall possess valid electrical license should be well behaved, polite and courteous. Any complaint against staff on behavior shall be taken very seriously and such staff should be removed by the contractor immediately from the site and arrange replacement for the same failing which the Engineer-in-charge has the power to cancel the contract and the contractor shall have no claim of loss / compensation for this.
12. Safety of the staff deployed will be the responsibility of the contractor who must ensure the safety of the staff adequately, as per CPWD safety rules. ESIC will not be responsible for any mishap, injury accident or death of the staff. No claim in this regard shall be entertained/accepted by the department.

13. Labour welfare cess at @1% and other statutory deductions will be deducted from the bills payable to the firm in addition to income tax.
14. All the debris generated are to be cleared on daily basis and coordination/ cooperation is to be made with other agencies.
15. Nothing extra shall be paid on a/c of cartage etc to the contractor.
16. The department shall be at liberty to discontinue / terminate the contract any time if the performance is not found satisfactory or otherwise also without assigning any reason. The decision of Engineer-in-charge regarding above shall be binding on contract. No compensation shall be paid due to premature closure / termination of contract.
17. The firm shall have to obtain necessary Security Passes/Entry Passes by doing all necessary formalities before start of work. The department will only assist for the same.
18. Any delay on account of obtaining passes shall not be entertained on account of extension of time for the work.
19. Department will not provide the store to the agency and watch and ward of materials will be responsibility of contractor till completion/ handing over of the site to the client Department.
20. Labour Laws will be applicable as per CPWD GCC-2004 Clause-19.
21. The color temperature of fittings shall be decided by the Engineer after consultation with the client. Before procurement same shall be confirmed.
22. The LED fixtures/ All type AC shall be under warranty for 2years

TECHNICAL SPECIFICATION FOR 62.5 KVA DG SET.

1.0 Climate Conditions

The DG set required to deliver specified output under following climate conditions to be in conformity with CPCB approved type tests:

- (i) Outside maximum ambient temperature : 40 Deg. C
- (ii) Height above mean sea level : 1000 meter
- (iii) RH : 50%

2.0 DG set should be type tested for noise and emission norms / standards as per CPCB as per Appendix 'II' and 'III' of General specifications for Electrical works Part-VII (DG Sets) 2006.

3.0 Diesel Engine

3.1 Engine Rating

The engine shall be of standard design of the original manufactures. It should be 4 stroke cycles, water cooled, turbo charged diesel engine developing suitable BHP for giving a prime power rating of 250 KVA as per ISO 8528-Part-I at the load terminals of alternator at 1500rpm at ambient temperature of 40 C, for height at 1000meter above MSL and at 50% RH.

The engine shall be capable for delivering specified prime power rating at variable loads for PF of 0.8 lag with 10% overload available in excess of specified output for one hour in every 12 hours. The average load factor of the engine over period of 24 hours shall be 0.85(85%) for prime power output.

The testing procedure shall be as mentioned in pare 19.0

The engine shall conform to IS: 10000/ISO 3046/BS; 649/BS 5514 amended upto date.

3.2 Necessary certificate indicating the compliance of the above capacity requirement for the engine model so selected along with compliance of noise and emission norms as per latest CPCB guidelines should be furnished from the Manufacturers alongwith the technical bid.

3.3 The engine shall be fitted with following accessories subject to the design of the manufacturer:

- (i) Dynamically balanced fly-wheel.
- (ii) Necessary flexible coupling and guard for alternator and engine (applicable only for double bearing alternator).
- (iii) Air cleaner (dry/oil bath type) as per manufacturers standard.
- (iv) An electronic governor to maintain engine speed at all conditions of load.
- (v) Daily fuel service tank of 700 Litre capacity, fabricated form M.S sheet inlet, outlet connections air vent tap, drain plug and level indicator (gauge) M.S fuel pipe from tank to engine with valves,

unions, reducers, flexible hose connection and floor mounting pedestals, twin fuel filters and fuel injectors. The location of the tank shall depend on standard manufacturer design.

- (vi) Dry exhaust manifold with suitable exhaust residential grade silencer to reduce the noise level.
- (vii) Suitable self starter for 24 DC.
- (viii) Battery charging alternator unit and voltage regulator, suitable for starting batteries, battery racks with interconnecting leads and terminals.
- (ix) Necessary gear driven oil pump for including oil, priming of engine bearing as well as fuel systems as per manufacturer recommendations
- (x) Necessary /turbo charger
- (xi) Lubrication oil cooler
- (xii) Lubrication oil filters with replaceable elements.
- (xiii). Crank case heater as per manufacturer recommendations.
- (xiv) Fuel injection: Engine should have suitable fuel injection system in order to achieve low fuel consumption.
- (xv) Fuel control solenoid
- (xvi) Fuel pump with engine speed adjustment.
- (xvii) Engine Control Panel: fitted and having digital display for following: ---
 - (a) Stat/stop key switch.
 - (b) Lube oil pressure indication
 - (c) Water temperature indication
 - (d) RPM indication
 - (e) Engine Hours indication
 - (f) Battery charging indication
 - (g) Low In be oil trip indication
 - (h) High water temperature indication
 - (i) Over speed indication.
- (xviii) All moving parts of the engine shall be mechanically guarded in such a manner that a human finger cannot touch any moving part.
- (xix) Radiator
- (xx) Any other item not included/specified, but is a standard design of the manufacturer

3.4 Governor

Electronic governor of class A1 as per ISO 3046/BS 5514 with actuator shall be provided as per standard design of manufacturer. Governor shall be a self-contained unit capable of monitoring speed.

3.5 Frequency variation

The engine speed shall be so maintained that frequency variation at constant load including No load shall remain within a band of 1% of rated frequency.

3.6 Fuel System

It shall be fed through engine driven fuel pump. A replaceable element of fuel filter shall be suitably located to permit easy servicing. The daily service tank shall be complete with necessary supports, gauges, connection pipe work etc. In case of top mounted tank, non return valves are must in fuel supply and return line of specified value. Pipe sealant should be used for sealing all connections. No Teflon taps is to be used. If piping length is more than 10 meters, detail engineering is required in consultation with OEM/Manufactures.

3.7 Lubricating oil system

It shall be so designed that when the engine starts after a long shut down lubrication failure does not occur. Necessary priming pumps for the tub. oil circuit as per recommendation of manufacturer shall be installed, to keep bearings primed. This pump shall be normally automatically operative on AC/DC supply available with the set.

3.8 Starting System

This shall comprise of necessary set of heavy duty batteries 24 V DC and suitable starter motors and axial type gear to match with the toothed ring on the fly wheel. A timer in the control panel to protect the starter motor from excessively long cranking runs shall be suitably integrated with the engine protection system and shall be included within the scope of the work. Battery capacity shall be suitable for meeting the needs of starting system (as three attempt starting), as well as the requirements of control panel, indications and auxiliaries such as priming pump as applicable etc. The system shall be capable of starting the DG set within 20-30 seconds, even in winter condition with and ambient temperature down to 0 °C.

3.9 Battery Charger

The battery charger shall be suitable to charge required numbers of batteries at 24 Volts complete with, transformer, rectifier, charge rate selector switch, indicating ammeter & voltmeter etc. Connections between the battery charger & batteries shall be provided with suitable copper leads with lugs etc.

3.10 Piping work

All pipe lines, fittings and accessories requirement inside the room/enclosure and outside for exhaust piping shall be provided by the contractor. This shall include necessary flexible pieces in the exhaust, fuel, tub. oil and water lines as are necessary in view of the vibration isolation

requirement in the installation. Piping of adequate size shall be used for lub. oil of the material as per manufacturer standard. However, only M.S. pipes for the exhaust and fuel oil lines shall be used. The pipe work shall be inclusive of all fittings and accessories required such as bends, reducers, elbows, flanges, flexible connections, necessary hardware etc. The installation shall cover clamps, supports, hangers etc. as are necessary for completing the work. However, the work shall be sectionalized with flanged connections as are necessary for easy isolation for purposes for maintenance of unit as approved by Engineer-in-charge.

3.11 Common bed plate

Engine and alternator shall be coupled by means of flexo plate / flexible coupling as per manufacturer standard design and both units shall be mounted on a common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations. The bed plate shall be suitable for installation on suitable ant-vibration mounting system.

3.12 Exhaust System

3.12.1 Exhaust Piping. All M.S. Pipes for exhaust lines shall be conforming to relevant IS. The runs forming part of factory assembly on the engine flexible connections upto cladding of exhaust pipe work using 50mm thick glass wool /mineral wool/ rock wool, density not less than 46 kg/m² and aluminum cladding (0.80mm thick) for the complete portion. The exhaust pipe work includes necessary supports, foundation etc. to avoid any load & stress on turbo charger/ exhaust piping. The exhaust pipe support structure shall be got approved by engineer-in-charge before execution.

- a) Exhaust system should create minimum back pressure.
- b) Number of bends should be kept minimum and smooth bends should be used to minimize back pressure.
- c) Pipe sleeve of larger dia should be used while passing the pipe through concrete wall & gap should be filled with 'felt lining.
- d) Exhaust piping inside the Acoustic Enclosure/Genset room should be lagged with asbestos rope along with aluminum sheet cladding to avoid heat input to the room.
- e) Exhaust flexible shall have its free length when it is installed. For bigger engines, two flexible bellows can be used.
- f) For engines upto 250 KVA, only one bellow is required. However, if exhaust pipe length is more than 7 m, then additional bellow/provision for expansion should be provided.
- g) 'Class B' MS pipes and long bend/el bows should be used.
- h) The exhaust outlet should be in the direction of prevailing winds and should not allow exhaust gases to enter air inlet/window etc.
- i) When tail end is horizontal, 45 Degree downward cut should be given at the end of the pipe to avoid rain water entry into exhaust piping.

- j) When tail end is vertical, there should be rain trap to avoid rain water entry. If rain cap is used, the distance between exhaust pipe and rain cap should be higher than diameter of pipe. Horizontal run of exhaust piping should slope downwards away from engine to the condensate trap. Silencer should be installed with drain plug at bottom.

3.12.2 Optimum Silencer Location: Location of the silencer in exhaust system has very definite influence on both reduction of noise and back pressure imposed on the system. The preferred silencer locations are given in the Table below, where L is length of the total exhaust system measured from exhaust manifold in meters. Please note that locating the silencer as per optimum silencer location is not mandatory. For high rise buildings, suitable arrangements may have to be provided in consultation with acoustic engineer.

Optimum Location of Silencer (In meters]

	In-line Engine	'V' Engine
Best	2L/5	(4L — 1.5)/5
Second Best	4L/5	(2L - 4.55
Worst Location of Silencer	L/5 or 3L/5 or at tail end of Exhaust piping	(3L — 10)/ 5 or at the tail end of exhaust piping

3.12.3 In order to dispose exhaust above building height, minimum exhaust Stack height should be as follows:-

- (a) for DG set upto 1000 KVA :

$$H = h + 0.2 \times \text{KVA}$$
 Where H = height of exhaust stack II = height of building

3.12.4 Care should be taken to ensure that no carbon particle emitted due to exhaust leakage enters and deposits on alternator windings and on open connections.

3.12.5 Support to exhaust piping

Exhaust piping should be supported in such manner that load of exhaust piping is not exerted to turbocharger.

3.13 Air System

It is preferable to provide vacuum indicator with all engines to indicate choked filter. Maximum air intake restrictions with lean and choked filters should be within prescribed limit as per OEM/manufacture recommendation for the particular model of the engine. Gensets should be supplied with medium duty air cleaners.

3.14 Cooling System

3.14.1 System should be designed for ambient temperature of 40 Deg. C.

3.14.2 Coolant should be used mixed with additive (in suitable proportion) as per recommendation of OEM/Manufacturer for various engine models.

3.14.3 Radiator fan flow should be free from any obstruction.

4.0 ALTERNATOR

Scope: This section covers technical requirement of the alternator.

4.1 Synchronous Alternator: Self excited, screen protected, self regulated, brush less alternator, Horizontal foot mounted in Double bearing construction suitable for the following:

Rated PF.	:	0.8 (lag)
Rated Voltage	:	415 volts
Rated frequency	:	50 Hz
No. of phases	:	3
Enclosure	:	SPDP
Degree of protection	:	IP-23
Ventilation	:	Self ventilated air cooled
Ambient Temperature	:	40' C Maximum
Insulation Class	:	F/H
Temperature	:	Within class F/H limits at rated load
Voltage Regulation	:	+/- 1%
Voltage variation	:	+/- 5%
Overload duration/capacity	:	10% for one hour in every 12 hours of continuous use.
Frequency	:	As defined by the Engine Governor (+/-1%)
Excitation	:	Self excited
Type of AVR	:	Electronic
Type of Bearing and Lubrication arrangement lubrication	:	Anti-friction bearings with Grease
Standard	:	15-4722 & IEC:34 as amended upto date.

4.2 Alternator should be able to deliver output rating at 40' C. ambient at 1000 Meter altitude at MSL & at 50% RH.

4.3 Excitation: The alternator shall be brushless type and shall be self excited; self regulated having static excitation facility. The exciter unit should be mounted on the control panel or on the alternator assembly. The rectifier shall be suitable for operation at high ambient temperature at site.

4.4 Automatic Voltage Regulators (AVR): In order to maintain output terminal voltage constant within the regulation limits i.e. +/- 1%, Automatic voltage regulator unit shall be provided as per standard practice of manufacturer.

- 4.5 Fault tripping: In the event of any fault e.g. over voltage/high bearing temperature/ high winding temperature or an external fault, the AVR shall remove the excitation voltage to the alternator. An emergency trip shall also be provided.
- 4.6 Standards: The alternator shall be in accordance with the following standards as are applicable.
- (j) IS:4722/BS : 2613/ 1970. The performance of rotating electrical machine.
 - (ii) IS:4889/BS : 269 rules for method of declaring efficiency of electrical machine.
- 4.7 Performance: Voltage dip shall not exceed 20% of the rated voltage for any step load or transient load as per \SO:8528 (Part-S). The windin9 shall not develop hot spots exceeding safe limits due to imbalance of 20% between any two phases from no load to full load.

The Generator shall preferably be capable of withstanding a current equal to 1.5 times the rated current for a period of not more than 15 seconds as required vide clause 14.1.1 of IS 4722:1992.

The performance characteristics of the alternator shall be as below:

- (a) Efficiency at full load 0.8 P.F.
 - (i) Upto 250 KVA — not less than 93.5%
 - (b) Total distortion factor Less than 3%
 - (c) (i) 10% overload One hour in every 12 hrs of continuous use.
 - (ii) 50% overload 15 seconds.
- 4.8 Terminal Boxes: Terminal boxes shall be suitable for U.G. cables/Bus Trunking. The terminal Box shall be suitable, to withstand the mechanical and thermal stresses developed due to any short circuit at the terminals.
- 4.9 Earth Terminals: 2Nos. earth terminals on opposite site with vibration proof connections, non-ferrous hardware etc. with galvanized plate and passivated washer of minimum size 12mm dia hole shall be provided.
- 4.10 Space Heaters: Alternators of capacity upto 250 KVA shall be provided with suitable space heaters to maintain the winding temperature automatically such that it does not absorb moisture during long idle periods. The heater terminals shall be brought to a separate terminal box suitable for 230V AC supply and a permanent caution notice shall be displayed.

5.0 AMF PANEL, BATTERIES AND ELECTRICAL SYSTEM

Scope: This section covers technical and functional requirements of AMF Panel, battery/Electrical system.

5.1 Location

AMF Panel shall be located in the existing room and DG Set shall be located outside.

5.2 AMF Control Panel

- 5.2.1 General Features: The control panel shall be outdoor type fabricated out of 3 mm sheet steel, totally enclosed. Dust, damp and vermin proof free standing floor mounted type & front operated. It shall be made into sections such that as feasible, there is no mixing of control, power, DC & AC functions in the same section and they are sufficiently segregated except where their bunching is necessary. Hinged doors shall be provided preferably double leaf for access for routine inspection from the rear. There is no objection to have single leaf hinged door in the front, all indication lamps, instruments meter etc. shall be flushed in the front. The degree of protection required will be IP-65 conforming to IS: 2147.
- 5.2.2 Terminal blocks and wiring.- Terminal blocks of robust type and generally not less than 15 Amps capacity, 250/500 volts grade for DC upto 100 volts and 660/1100 that they are freely accessible for maintenance. All control and small wiring from unit to unit inside the panel shall also be done with not less than 2.5 Sq. mm copper conductors PVC insulated and 660/1100 volts grade. Suitable color coding can be adopted. Wiring system shall be neatly formed and run preferably, function wise and as far as feasible segregated voltage-wise. All ends shall be identified with ferrules at the ends.
- 5.2.3 Labeling: All internal components shall be provided with suitable identification labels suitably engraved. Labels shall be fixed on buttons, indication lamps etc.
- 5.2.4 Painting: The entire panel shall be given primer coat after proper treatment and powder coating with 7 tanks process before assembly of various items.
- 5.2.5 Equipment requirements: The control cubical shall incorporate into assembly general equipment and systems as under:
- a) Control system equipments and components such as relays, contactors, times, etc. both for automatic operation on main failure and as well as for manual operation.
 - b) Equipment and components necessary for testing generating set's healthiness with test mode and with load mains.
 - c) Necessary instruments and accessories such as voltmeter, power factor meter, KW meter, KWH meter, Ammeter, Frequency meter etc. in one energy analyzer unit with selector switch to obtain the reading of desired parameters.
 - d) Necessary indication lamps, fuses, terminal blocks, push buttons, control switches etc., as required.
 - e) Necessary engine/generating set shut down devices due to faults/abnormalities.
 - f) Necessary visual audio alarm indication and annunciation facility, as specified.
 - g) Necessary battery charger.
 - h) Necessary excitation control and voltage regulating equipment.

- i) Necessary overhead bus trunking terminations all internal wiring, connections etc., as required.
- j) Breakers as specified in the schedule of work.

5.2.6 System Operation: The above-mentioned facilities provided shall afford the following operational requirements.

5.2.6.1 Auto Mode :

- a) A line voltage monitor shall monitor supply voltage on each phase. When the mains supply voltage fails completely or falls below set value (variable between 80 to 95% of the normal value) on any phase, the monitor module shall initiate start-up of diesel engine. To avoid initiation due to momentary disturbance, a time delay adjustment between 0 to 5 second shall be incorporated in start-up initiation.
- b) A three attempt starting facility shall be provided 6 seconds ON, 5 seconds OFF, 6 seconds ON, 5 seconds off, 6 Seconds ON. If at the end of the third attempt, the engine does not start, it shall be locked out of start and a master timer shall be provided for this function. Suitable adjustment times are to be incorporating which will make it feasible to vary independently ON- OFF setting periods from 1 — 10 seconds. If alternator does not build up voltage after the first or second start as may be, further starting attempt will not be made until the starting facility is reset.
- c) Once the alternator has built up voltage, the alternator circuit breaker shall close connection the load to the alternator. The load is now supplied by the alternator.
- d) When the main supply is restored and is healthy as sensed by the line voltage monitor setting, both for under voltage and unbalance, the system shall be monitored by a suitable timer which can be set between 1 minute to 10 minutes for the load to be transferred automatically to main supply.
- e) The diesel alternator set reverts to standby for next operation as per (a), (b) and (c) above.

5.2.6.2 Manual mode:

- a) In a manual mode, it shall be feasible to start-up the generator set by the operator on pressing the start push button.
- b) Three attempts starting facility shall be operative for the start-up function.
- c) Alternator circuit breakers closing and trip operations shall also be through operator only by pressing the appropriate button on the panel and closure shall be feasible only after alternator has built up full voltage. If the load is at ready on 'mains', pressure on 'close' button shall be ineffective.
- d) Engine shut down, otherwise due to faults, shall be manual by pressing a 'stop' button.

5.2.6.3 Test Mode

- a) When under 'test' mode, pressing of 'test' button shall complete the start up sequence simulation and start the engine. The simulation will be that of mains failure. Sequence 1 (a) and (b) shall be completed.
- b) Engine shall build up voltage but the set shall not take load by closing of alternator circuit breaker. When the load is on the mains, monitoring of performance for voltage/frequency etc. shall be feasible without supply to load.
- c) If during test mode, the power supply has failed, the load shall automatically get transferred to alternator.
- d) Bringing the mode selector to auto position shall shut down the set as per sequence I (d) provided main supply in ON. IN the mains supply is not available at that time, the alternator shall take load as in (c) above.

5.2.7 Engine shut down and alternator protection equipments: Following shut down and protection system shall be integrated in the control panel.

(a) Engine :

- i. Low lubrication oil pressure shut down. This shall be inoperative during start up and acceleration period.
- ii. High coolant (water) temperature shut down.
- iii. Engine over speed shut down.

(b) Alternator Protection: Following protection arrangement shall be made:

- i. Over load
- ii. Short circuit
- iii. Earth fault
- iv. Over voltage

5.2.8 Monitoring and metering facilities :

- a) Necessary energy analyzer unit for visual monitoring of mains, alternator and load voltage, current, frequency, KWH, power factor, etc.
- b) A set of visual monitoring lamp indication for:
 - i. Load on set .
 - ii. Load on mains.
 - iii. Set on test (alternator on operation duty. Alternator on standby duty).
 - iv. Set of lamp for engine shut down for over speed, low lub. Oil pressure and high coolant water temperature; overload trip of alternator, earth l°ault tri p of alternator, engine lock out and failures to start etc. All accepts the alarm, the hooter will be silenced and the fault indication will become steady until reset by operating a reset button.

5.2.9 Operating .devices: A set of operation devices shall be incorporated in the front of panel us under:

- a) Master Engine Control Switch: This shall cut off in 'OFF' position DC control to the entire panel, thus preventing start-up of engine due to any cause However, battery charge and lamp test button for testing the healthiness of indication lamps, DC volt mater/ammeter etc. shall be

operative. It shall be feasible to lock the switch in OFF position for maintenance and shut down purposes.

- b) Operation select or switch OFF/Auto/MANUAL/TEST position.
 - c) Energy analyzer unit for display of various electrical parameters like voltage, current, frequency, KW, power factor, etc.
 - d) A set of push button, as specified.
 - e) Relays, contactor, times, circuit breakers, as required.
 - f) Necessary battery charger with boost/trickle selector, DC voltmeter and DC ammeter.
- 5.2.10 Compatibility with 'Building Management System' (BIS): PLC compatibility and required nos. of Input /Output terminals point should be provided in the AMF control panel.

6.0 Battery/ Electrical System.

- 6.1 Batteries supplied with Genset are generally dry and uncharged. First charging of uncharged batteries is very important and should be done from authorized battery charging center. Initial charging should be done for 72-80 hours.
- 6.2 Batteries should be placed on stands and relatively at cool place.
- 6.3 for AMF applications, a static battery charger working on mains supply is recommended to the batteries charged at all times.
- 6.4 1.5 Sq.mm copper wire should be used for wiring between junction box and Control Panel.
Cabling.

7.0 Cabling.

- 7.1 Power cabling between alternator and control panel and control panel and change over switch to mains should be done with recommended cable sizes.
- 7.2 Overheating due to loose thumbing /undersize cables causes most of electrical failures and hence correct size of cable and thimbles should always be used, if cable is specified.
- 7.3 While terminating cables, avoid any tension on the bolts/ busbars. (if cable is specified) While terminating R,Y & B phase notations should be maintained in the alternator and control panel for easy maintenance.
- 7.4 Crimped cables should be connected to alternator and control panel through cable glands, if cable is specified.
- 7.5 Multi-core copper cables should be used for inter connecting the engine controls with the switchgear and other equipments.
- 7.6 For AMF application, multicore core 1.5 sq. mm flexible stranded copper cable for control cabling should be used.
- 7.7 It is recommended to support output cable on separate structure on ground so that weights of cables should not fall on alternators/ base rail.

- 7.8 External airings, when provided for remote voltage/excitation monitoring/droop CT etc. shall be screened sheathed type. Maximum length of such wiring shall not exceed 5 meters.
- 7.9 Alternator termination links.
- 7.9.1 For proper terminations between links and switchgear terminals, the contact area must be adequate. The following situations should also be avoided as they lead to creation of heat sources at the point of termination:
- i. Point contact arising out of improper position of links with switchgear terminals.
 - ii. Gaps between busbars /links and terminals being remedied by connection bolt/stud in such cases the bolt will carry the load current. Normally these bolts/studs are made of MS and hence are not designed to carry currents.
- 7.9.2 Adequate clearance between busbars/links at terminals should be maintained (IS:4232 may be referred to for guidelines]
- 7.9.3 Improper termination will lead to local heat generation which may lead to failure.

8.0 FOUNDATION

Scope : This section covers details of foundations for DG set with or without acoustic enclosures.

- 8.1 Genset with acoustic enclosure: A PCC foundation (1:2:4,M-20 grade) of approximate depth 300mm is required so as to provide leveled surface for placement of the acoustic enclosure. About 150mm foundation height should be above ground level. The length and breadth of foundation should be at least 250mm more than the size of the enclosure. Genset should be mounted on AVM's inside the enclosure.
- 8.2 Foundation should be designed considering safe bearing capacity of soil. Vibration isolators (AVMs) should be provided to reduce vibration transmission to the surrounding structure.
- 8.3 Foundation level should be checked diagonally as well as across the length for even flatness. The foundation should be within ± 0.5 Degree (angle) of any horizontal plane.

9.0 ACOUSTIC ENCLOSURE

Scope: This section covers technical requirements of the acoustic enclosures.

9.2 INSTALLATION

- 9.2.1 Acoustic enclosures are supplied with built in Anti Vibration Mountings (AVMs). As such Genset can be installed directly on the leveled surface.
- 9.2.2 Exhaust piping outlet should not be turned towards window/ventilator of home or occupied building. Provision of rain cap should be ensured.
- 9.2.3 The acoustic enclosure placement should be such that there is no restriction in front of air inlet and outlet from canopy.

9.3 Service Accessibility

- 9.3.1 Genset/Engine control panel should be visible from outside the enclosure.
- 9.3.2 Routine/periodical check on engine/alternator (filter replacement and tappet setting etc.) should be possible without dismantling acoustic enclosure.
- 9.3.3 For major repairs/overhaul, it may be required to dismantle the acoustic enclosure.
- 9.3.4 Sufficient space should be available around the Genset for Inspection and service.

9.4 General Design Guidelines

- 9.4.1 To avoid ré-circulation of hot air, durable sealing between radiator and canopy is must.
- 9.4.2 Ventilation fans are must for the Gen.sets cooled by heat-exchanger/cooling tower system.
- 9.4.3 Exhaust piping inside the enclosure must be lagged (except bellow)
- 9.4.4 Temperature rise inside the enclosure should not be more than 5'C for maximum ambient above 40'C and it should be below 10'C for ambient below 40'C.
- 9.4.5 There should be provision for oil, coolant drain and fill. Fuel tank should have provision for cleaning.

9.5 Specifications for Acoustic Enclosure

- 9.5.1 The acoustic enclosure shall be designed and manufactured confirming to relevant standards suitable for outdoor installation exposed to weather conditions, and to limit overall noise level to 75 db (A) at a distance of 1 mtr. from the enclosure as per CPCB norms under free field conditions.
- 9.5.2 The construction should be such that it prevents entry of rain water splashing into the enclosure and allows free & quick flow of rain water to the ground in the event of heavy rain. The detailed construction shall confirm to the details as under:
- 9.5.3 The enclosure shall be fabricated out of the CRCA sheet of thickness not less than 1.6mm on the outside cover with inside cover having not less than 0.6 mm thick perforated powder coated CRCA sheet.
- 9.5.4 The hinged doors shall be made from not less than 16 SWG (1.6mm) thick CRCA sheet and will be made air tight with neoprene rubber gasket and heavy duty locks.
- 9.5.5 All sheet metal parts should be processed through 7-tank process.
- 9.5.6 The enclosure should be powder coated.
- 9.5.7 The enclosure should accommodate the daily service fuel tank of the D.G. Set to make the system compact. There should be provision of fuel gauge, which should show the level of the fuel even when the DG set is not running. The gauge should be calibrated. The fuel tank should be filled from the out side as in automobiles and should be with a lockable cap.
- 9.5.8 The batteries should be accommodated in the enclosure in battery rack.
- 9.5.9 The canopy should be provided with high enclosure temperature safety device.
- 9.5.10 The acoustic lining should be made up of high quality insulation material i.e. glass/mineral wool of minimum 50mm thickness upto 500 KVA capacity and 75 Kg/cubic metre to 100 Kg/

cubic meter for sound absorption as per standard design of manufacturers to reduce the sound level as per CPCB norms. The insulation material shall be covered with fine glass fiber cloth and would be supported by perforated M.S. Sheet duly powder coated.

- 9.5.11 The enclosure shall be provided with suitable size and No. of hinged type doors along the length of the enclosure on each side for easy access inside the acoustic enclosure for inspection, operation and maintenance purpose. Sufficient space will be provided inside the enclosure on all sides of the D.G. set for inspection, easy maintenance and repairs.
- 9.5.12 The canopy should be as compact as possible with good aesthetic look.
- 9.5.13 The complete enclosure shall be of modular construction.
- 9.5.14 The forced ventilation shall be as per manufacturer design using either engine radiator fan or additional blower fan(s). if the acoustic enclosure is to be provided with forced ventilation then suitable size of axial flow fan (with motor and auto-start arrangement) and suitable size axial flow exhaust fan to take the hot air from the enclosure complete with necessary motors and auto start arrangement should be provided. The forced ventilation arrangement should be provided with auto stop arrangement to stop after 5 minutes of the stopping of D.G. sets.
- 9.5.15 The acoustic enclosure should be suitable for cable connection/connection through bus- trunking. Such arrangements on acoustic enclosure should be water proof and dust-proof conforming to IP-65 protection.
10. After completion of works the firm shall produce pollution under control certificate issued by competent authority.

LIST OF PREFERED MAKE

LIST OF PREFERED BRAND / MAKE OF MATERAILS FOR ELECTRICAL WORKS		
SR. NO.	MATERAILS	MAKE /BRAND
1	RIGID FR PVC CONDUIT PIPE	NIHIR, PRECESION, POLYCAB
2	ACCESSORIES OF CONDUIT (I.E. BEND, TEE COUPLER,ELBOW ETC.)	SAME MAKE OF PIPE
3	COPPER WIRE /CONDUCTOR	FINOLEX, POLYCAB, RR CABLE, HAVELLS, ANCHOR
4	MODULAR TYPE SWITCH/SOCKET,PLUG ETC.	MK , LEGRAND, ANCHOR, HAVELLS
5	MCB / ELCB/ RCCB/ MCBDP/TP	LEGRAND, ABB, HAGER, SCHEINDLER L&T, SIMENS
6	MCCB / ACB	ABB, SCHEINDER, SIMENS, L&T
7	LIGHTING FIXTURES & LAMPS	PHILIPS, CROMPTON, WIPRO, HAVELLS
8	CEILING FANS & EXHAUST FAN	CROMPTON, ORIENT, HAVELLS, BAJAJ, USHA
9	GEYSER	RECORD, HAVELLS, BAJAJ, USHA, AO SMITH
10	PVC TAPE	STEEL GRIP, ANCHOR , JONSON
11	CALL BELL	ANCHOR, ORPAT, MAX
12	DISTRIBUTION BOARD	INDOCAPP, HAVELLS, SIMENS,L&T
13	STREET LIGHT FIXTURES AND LAMPS	PHILIPS, CROMPTON, HAVELLS, BAJAJ, SYSKA
14	CFL LAMPS/ LED LAMPS/FITTINGS	PHILIPS, CROMPTON, HAVELLS, BAJAJ, SYSKA
15	TELEPHONE WIRE	RRCABLE, FINOLEX, DELTON, POLYCAB
16	LAN WIRE	TYCO ELE.(AMP), SCHEINDER, R&M, SYSTIMAX
17	TELEPHONE TAG BOX	KRONE OR EQUIVELENT BRAND

18	TELEPHONE/ TV SOCKET	ISI MARKED ONLY
19	MAIN LT CABLE	FINOLEX, POLYCAB, RR CABLE, HAVELLS, TORRENT,
20	CABLE LUGS	DOWELLS, JOHNSON, HEX
21	CABLE GRANDS	DOWELLS, SIMENS, CROMPTON, HEX
22	CONNECTORS	L&T, SCHINDER, SIMENS, ABB
23	CABLE JOINTING KIT	RAYCHEM, DENSON, M-SEAL
24	WINDOW/ SPLIT TYPE A.C. MACHINE	HITACHI, DAIKIN, TOSHIBA, BLUESTAR, CARRIER/VOLTAS
25	WATER COOLER	VOLTAS, USHA, BLUESTAR
26	MOTOR PUMP SET	CROMPTON, KIRLOSKAR, KSB
27	MS CONDUIT	BEC, AKG, STEELCRAFT, NIC, RMCON
28	CABLE TRAY	INDIANA, RUSHABH , PROFAB, AKB
29	IRON CLAD SWITCH WITH REWIREABLE FUSE /SFU	KEW, TRISHUL, SUPER, C&S
30	METALCLAD SWITCH WITH REWIREABLE FUSE /SFU	HAVELLS, KEW, C&S, INDOASIAN
31	PROTECTION RELAY	L&T, SIEMENS, ABB, CULTER HAMMER
32	ANALOG / DIGITAL METER /LOAD MANAGER	L&T, SCHIENDER, ABB, HPL
33	TRANSFORMER	KIRLOSKAR, VOLTAMP, ABB, CROMPTON
34	HT VCB	SIEMENS, ABB, L&T, CROMPTON
35	HT CABLE	HAVELLS, FINOLEX, POLYCAB, TORRENT,
36	PUSH BUTTON	SIEMENS, ABB, L&T, SCHNEIDER
37	INDICATING LED LAMP	SIEMENS, ABB, L&T, WIPRO
38	PUSH BUTTEN	SIEMENS, ABB, L&T, SCHNEIDER
39	TIMERS	L&T, SIEMENS, ABB, CULTER HAMMER
40	SELECTOR SWITCH	L&T, HPL, CUMMINS, HAVELLS
41	CTs& PTs	KAPPA, L&T, AREVA, MAXWELL
42	Silent type DG set	Kirloskar / Powerica / Jackson / Parrys make
43	SCREW	RK, ACTION OR EQUAIVELENT

44	Diesel engine	Cummins/ Caterpillar/ Volvo Penta
45	Alternator	Stamford/ Leroy somer / Crompton Greaves
46	AMF Panel	OEM/OEA of DG set
47	Acoustic Enclosure	OEM/OEA of DG set
48	Relays	L&T / Siemens/ GE / Telecanique/ PIC
49	Contractors	L&T (MNX)/ Siemens (SKOP)/ GE/ABB/ Telecanique
50	M.S. Pipes/ GI Pipes 'B' class	TATA/ Jindal Hissar /Prakash Surya
51	Anti Vibration mountings	Gerb/ Resisto flex/ Polybond/ Flenonic (USA)/ Dunlop
52	Batteries	Exide/ Standard Farukawa/ Panasonic/ Amar-raj
53	LT Cables/ Power Cables/ HT Cables	Universal/ Nicco/ Finolex/ Havells/ RR Cables
54	PVC insulated FRLS/ FR Copper wires	Finolex/ RR cables/ Havells/ Skytone
55	Lug / Thimble	Dowells/ Johnson/ Schneider Electric
56	Cable Gland/ Termination	Comet/ Gripwell/ Dowell/ Raychem/ ABB
57	MCCB	Legrand (DPX)/ Siemens (Sentron-VL)/ Merlin Gerin (Compact))/ L&T (DN series)/ ABB(T-Max)
58	Change over switch	L&T / Siemens/ HPL
59	Switch Dis-connector Fuse Units	ABB/ L&T/ Siemens/ GE
60	Indicating Instruments, Meters & Selector Switches	Sintron/ MECO/ AE/ Rishabh/ L&T/ RAAS Control/BCH/ Vaishno
61	Current Transformer	AE/ KAPPA/ L&T/ Siemens/ ABB
62	PUSH Buttons	Siemens/ GE/ BCH/ L&T / RAAS Control/ Vaishno
63	Indicating Lamps	Siemens/ GE/ BCH/ L&T / RAAS Control/ Vaishno
64	Multi Function Meter/Digital Meter	Neptune (Phase tract)/ L&T/ Enercon(Conzerve)/ AE
65	Cable Tray	Steel ways/ Slotco/ Pilco/ Venus

TESTING OF MATERIALS

The contractor shall procure all the materials in advance so that there is sufficient time for testing and approving of the material and clearance of the same before use in the work.

The contractors rates for the items involving the use of materials shall be deemed to cover the cost of samples, the cost of packaging, sealing, transportation, loading, unloading etc. shall be borne by the contractor, Testing charges shall be borne by the Department only when the samples satisfy the provisions specified & conform to the requirements of the relevant specifications. If the results show that the samples do not satisfy the relevant specifications, the testing charges shall be borne by the contractor.

Testing of materials should be got done through the following Testing laboratories.

1. All Government Institutes having testing Laboratory facility.
2. Indian Institute of Technology, Powai, Navi Mumbai.
3. National Test House, Andheri, Mumbai.
4. National Institutes of Technology.
5. Central Government / State Government Research Centers.
6. Centrally or State Government funded Laboratories stands approved.
7. Laboratory as approved by the competent authority.
8. National Council for Cement and Building Materials , Ahmedabad, Mumbai.

Sign& Seal of Contractor :

Date :

Place:

Regional Director
Employees' State Insurance Corporation,
Panchadeep Bhavan, N.M. Joshi Marg,
Lower Parel, Mumbai-400013

Annexure - J

CONTRACT AGREEMENT

This CONTRACT (hereinafter called the “Contract”) is made on the day of the month of _____ between Regional Director, Regional Office, Employees' State Insurance Corporation, Panchdeep Bhavan-108, N.M Joshi Marg, Lower Parel, Mumbai-13 on the one hand (hereinafter called the Employer) and on the other hand(hereinafter called the Contractor).

WHEREAS

The Employer has accepted the offer of the Contractor to provide **Annual Repair & Maintenance of Electrical works at ESIC Hospital & Branch Office at Kolhapur** under Employees' State Insurance Corporation, Regional Office, Lower Parel, Mumbai-13.

AND WHEREAS The Contractor, having represented to the Employer that they have the required professional skills, personnel and technical resources, have agreed to provide the services and execute the works on the terms and conditions set forth in this Contract Agreement.

Now therefore the parties here to/ hereby agree as follows:

1.0 The following documents attached hereto shall be deemed to form an integral part of this contract:

1	Notice Inviting Tender	Annexure 'A'
2	Eligibility Condition	Annexure 'C'
3	Instruction to the bidders	Annexure 'D'
4	Scope of work	Annexure 'E'
5	General Conditions of Contract	Annexure 'F'
6	Particular Conditions of Contract	Annexure 'G'
7	Format of Contract Agreement	Annexure 'J'
8	Additional Terms & Conditions for Electrical works	Annexure-H
9	Bill of Quantities	Annexure-Q
10	FORM OF PERFORMANCE SECURITY BANK GUARANTEE BOND	Annexure-K
11	Technical specification for 62.5 KVA DG set.	

2.0 The mutual rights and obligations of the Employer and the Contractor shall be as set forth in the contract in particular:

- a) The Contractor shall carry out the services in accordance with the provisions of the contract and,
- b) The Employer shall make payments to the contractor in accordance with the provisions of the contract.

In witness whereof, the parties hereto have caused this contract to be signed in their respective names as of the day and year first above written.

Signature & Seal of Contractor

Dated at _____
Corporation,

Regional Director,
Employees' State Insurance
Panchadeep Bhavan, N.M. Joshi Marg,
Lower Parel, Mumbai-400013

FORM OF PERFORMANCE SECURITY BANK GUARANTEE BOND

In consideration of the Employees' State Insurance Corporation having agreed under the terms and conditions of the Agreement no. dated made between Employees' State Insurance Corporation and Second Party (here in called the said Construction Agency for the work hereinafter called the said agreement) to production of irrevocable bank guarantee for Rs. (Rs. only) as a Security/Guarantee from the Construction Agency for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We(hereinafter referred as to "The Bank" hereby) (indicate the name of the bank) Undertake to pay to the Employees' State Insurance Corporation an amount not exceeding Rs.(Rs. only IN WORDS) on demand by the Employees' State Insurance Corporation.

2. We do hereby undertake to pay the amounts due and payable under this Guarantee without any demure, merely on a demand from the Employees' State Insurance Corporation stating that the amount claimed is required to meet the recoveries due or likely to be due from the Second Party. Any such demand made on the Bank shall be conclusive as regards the amount due and the payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rs. only IN WORDS)

3. We, the said bank further undertake to pay to the Employees' State Insurance Corporation any money that is demanded notwithstanding any dispute or disputes raised by the Second Party in any suit or proceeding pending before any court or Tribunal relating thereto, a liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of a liability for payment there under and the Second Party shall have no claim against us making such payment.

4. We further agree that the guarantee herein contained shall remain in full force and effect during the period that would taken for the performance of the said agreement and that it shall continue to enforceable till all the dues of the Employees' State Insurance Corporation under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or Engineer-in-charge on behalf of the Employees' State Insurance Corporation certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Second Party and accordingly discharges this guarantee.

5 We(indicate the name of Bank) further agree with the Employees' State Insurance Corporation that, the Employees' State Insurance Corporation shall have the fullest

liberty without our consent and without effecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employees' State Insurance Corporation against the said Second Party and to bear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor or for any forbearance, act of omission on the part of the Employees' State Insurance Corporation or any indulgence by the Employees' State Insurance Corporation to the said contracts or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank of the contractor,

7. Welastly undertake not to revoke this guarantee except with the previous consent of the Employees' State Insurance Corporation in writing.

8. This guarantee shall be valid up to Unless extended on demand by Employees' State Insurance Corporation. Notwithstanding anytime mentioned above, our liability against this guarantee is restricted to Rs.(Rs. only) and unless a claim in writing is lodged with us within six months of the date of expiry of the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated Day of

For(indicate the name of Bank)

TECHNICAL BID PERFORMA**1. GENERAL INFORMATION**

NAME OF THE AGENCY/ FIRM ALONG WITH ADDRESS AND TELEPHONE / MOBILE NO AND E-MAIL ADDRESS .	
NAME OF OWNER/ ALL PARTNERS/ ALL DIRECTORS	
TYPE OF FIRM (Proprietorship/ Partnership / Pvt. Ltd/Ltd.)	
BANK ACCOUNT NUMBER WITH BANK NAME,IFSC Code AND ADDRESS	

2. STATUTORY AND OTHER REQUIREMENTS:

Particulars	<u>Registration Number</u>	<u>Copy Enclosed (Yes/No)</u>
Certificate of Incorporation/ Registration of Firm		
Registration details as Electrical Contractor with C.P.W.D.s/ State P.W.D.s./M.E.S./ Railways/ BSNL Electrical wing or any other government body (along with year of registration)		
Valid copy of ESI Registration		
Valid copy of EPF Registration		
GST Registration upto date file return.		
PAN No. under Income Tax		
Professional Tax Registration		
Labour (Central) Registration Certificate, if applicable		
Valid copy of Electrical License to carryout Electrical work.		

3. DETAILS OF COMPLETED WORK AS PER SL. NO. 3 OF ANNEXURE - C :

Name of Government Body	Details of the Completed Works of Similar Nature	Cost of the Completed Works	Copy of Certificate issued by Govt. Body Enclosed (Yes/No)

4. DETAILS OF BALANCE SHEET/ P&L ACCOUNT DURING LAST THREE FINANCIAL YEAR :

Financial Year	Copy Enclosed (Yes/No)	Income (Rs.)	Expenditure (Rs.)	Net Profit/ Loss (Rs.)
2015-16				
2016-17				
2017-18				

5. COPIES OF INCOME TAX RETURN DURING LAST THREE FINANCIAL YEAR :

Financial Year	Income Tax Return Enclosed (Yes/No)
2015-16	
2016-17	
2017-18	

Sign & Seal of Contractor:

Date :

Place:

EXPERIENCE OF COMPANY

Experience of similar nature of completed work as per eligibility condition.

1	Project title & Location :	
2	Name of the Client and Address :	
3	Describe area of participation (Specific Work done/services rendered by the applicant)	
4	Period of work Done/Services rendered for the project	
5	Total cost of similar nature of work as per completion Certificate	
6	Date of start of the work	
7	Date of completion of the work	
8	Completion Certificate issued by	
7	Any other details	

NOTE :-

Supporting authenticated documents, like completion certificates from the client in support of each of the above works/project to be furnished in original when asked for.

Sign& Seal of Contractor :

Date :

Place:

UNDERTAKING

1. I/we, the undersigned certify that I have gone through the terms and conditions mentioned in the tender document and undertake to comply with them.
2. The rates quoted by me are valid and binding upon me for the entire period of contract.
3. The earnest money of Rs. _____ has been deposited by me vide demand Draft/ Banker Cheque no. _____ dated: _____ drawn on Bank _____ Branch _____.
4. I/we hereby undertake to provide the service as per directions given in the tender document order within stipulated period.
5. I/We give the rights to Regional Director to forfeit the earnest money deposited by me/us if any delay occur on my/agent's part of failed to provide the service within the scheduled time or service of desired quality.
6. This is to declare and certify that the neither myself nor my firm has ever been blacklisted by any Govt./Semi Govt./Public/Private Institution.
7. I/We hereby certify that the firm posses all the required license/ certification to perform the work.

Sign& Seal of Contractor: _____

Full Name: _____

Designation: _____

Date: _____

Place: _____.

ANNEXURE-O

CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR COMPONENT OF WORK

Name of work: - _____.

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 Address

Contractor Address

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

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

MEMORANDUM OF UNDERSTANDING (M.O.U)
(to be submitted for each and every MINOR 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 Minor Work:

(Minor Component) 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 (ESIC) 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 Regional Director, Regional Office, Mumbai. His decision shall be final and binding on both of us.

We have agreed as under:

1. The Associated Contractor will execute all Minor 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 equipments, tools and tackles required for execution of the Minor works, as per agreement, shall be the responsibility of the Associated Contractor.
4. The site staff required for the Minor 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 Minor work shall be done by the department with 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

SIGNATURE OF ASSOCIATED
CONTRACTOR

Date:

Place:

Date

Place:

Annexure-Q

Financial Bid:

<u>ELECTRICAL WORK SCHEDULE (BOQ)</u>					
Sr. No.	Description of Item	Qty	Units	Rate	Amount(Rs.)
<u>PART A. Manpower for ELECTRICAL MAINTENANCE</u>					
1	Providing services of Electrician cum operator (Skilled) - 1 Nos. ITI/Certified with minimum 03 years' experience (For general shift). 26 days a month basis complete as required.	12	Month	22,036.00	2,64,432.00
2	Providing Reliever duty for Electrician cum operator 1Nos for 4 days in month (general Shift)	12	Month	3,390.00	40,680.00
3	Providing services of Khalasi (Helper) - 1Nos (Un-Skilled) 26 days a month basis complete as required. (for general shift)	12	Month	16,638.00	1,99,656.00
Total Part A. Rs.					5,04,768.00
<u>Part B . Supply of Materials.</u>					
<u>Supplying of following materials for the day to day maintenance work as and when required at site</u>					
4	1.5 sq. mm ISI marked, FR PVC insulated, single core copper conductor cable(Polycab)	1500	Mtr	11.00	16,500.00
5	2.5 sq. mm ISI marked, FR PVC insulated, single core copper conductor cable (Polycab)	700	Mtr	18.00	12,600.00
6	4.0 sq. mm ISI marked, FR PVC insulated, single core copper conductor cable (Polycab)	250	Mtr	28.00	7,000.00
7	6.0 sq. mm ISI marked, FR PVC insulated, single core copper conductor cable (Poilycab)	200	Mtr	40.00	8,000.00
8	32/0.20mm (1 sqmm) twin circular FRLS PVC sheathed, workshop flexible copper cable (Piolycab)	200	Mtr	9.00	1,800.00
9	Ceiling rose, 3 pin, 5 amps ISI marked	100	Each	15.00	1,500.00
10	S.P. 5/6 amps, one way modular switch, ISI marked	100	Each	36.00	3,600.00
11	S.P. 5/6 amps, two way modular switch, ISI marked	20	Each	72.00	1,440.00
12	S.P. 15/16 amps, one way modular switch, ISI marked	40	Each	80.00	3,200.00
13	3 pin 5/6 amps modular socket outlet, ISI marked	40	Each	75.00	3,000.00
14	6 pin 15/16 amps modular socket outlet, ISI marked	20	Each	121.00	2,420.00
15	Modular bell push, ISI marked	10	Each	74.00	740.00
16	Stepped type Modular Fan regulator (2 module)	50	Each	265.00	13,250.00
17	Telephone Socket outlet modular type	5	Each	68.00	340.00
18	T.V. Socket outlet modular type	2	Each	68.00	136.00
19	Modular blanking plate	10	Each	15.00	150.00
20	Modular base & cover plate for 1 module	30	Each	48.00	1,440.00
21	Modular base & cover plate for 2 module	30	Each	48.00	1,440.00
22	Modular base & cover plate for 3 module	40	Each	61.00	2,440.00
23	Modular base & cover plate for 4 module	30	Each	70.00	2,100.00
24	Modular base & cover plate for 6 module	40	Each	98.00	3,920.00
25	Modular base & cover plate for 8 module	10	Each	126.00	1,260.00
26	Modular base & cover plate for 12 module	12	Each	156.00	1,872.00
27	Brass pendant holder	25	Each	43.00	1,075.00
28	Brass batten/ angle holder	25	Each	48.00	1,200.00

29	6 amps. to 32 amps. ratings , SP MCB, “C” curve,10 KA breaking capacity	10	Each	130.00	1,300.00
30	6 amps. to 32 amps. ratings , SPN MCB, “C” curve,10 KA breaking capacity	15	Each	460.00	6,900.00
31	6 amps. to 32 amps. ratings , DP MCB, “C” curve,10 KA breaking capacity	10	Each	471.00	4,710.00
32	6 amps. to 32 amps. ratings , TP MCB, “C” curve,10 KA breaking capacity	10	Each	730.00	7,300.00
33	6 amps. to 32 amps. ratings , TPN MCB, “C” curve, 10 KA breaking capacity	10	Each	985.00	9,850.00
34	Single pole, blanking plate	15	Each	6.00	90.00
35	40 amps., 2 pole isolator	15	Each	263.00	3,945.00
36	63 amps., 2 pole isolator	10	Each	307.00	3,070.00
37	40 amps., 4 pole isolator	10	Each	674.00	6,740.00
38	63 amps., 4 pole isolator	10	Each	681.00	6,810.00
39	20 mm dia. ISI marked, PVC conduit	500	meter	13.00	6,500.00
40	100 A capacity TP&N disconnecter fuse	3	Each	6,024.00	18,072.00
41	25 mm dia. ISI marked, PVC conduit	300	meter	18.00	5,400.00
42	Supplying pedestal type air circulator 450 mm. sweep oscillating type suitable to work on 230 Volts 50 cycles 1440 RPM with speed regulator, overhead protection unit, totally enclosed, flame proof motor with additional 3 core wire, 5 metre length and hand shield type 3 pin 5A. plug top complete with moisture proof treatment and ‘E’ class insulation.	5	Each	5,050.00	25,250.00
43	63 Amp 4 pole MCB	10	Each	1,326.00	13,260.00
44	two pole power contactor 230 V, 12 A	5	Each	990.00	4,950.00
45	two pole power contactor 230 V, 32 A	5	Each	2,546.00	12,730.00
46	four pole power contactor 430 V, 16 A	5	Each	1,359.00	6,795.00
47	four pole power contactor 430 V, 40 A	5	Each	2,813.00	14,065.00
48	Supplying regular/ standard model ceiling fan of 1400mm. sweep complete erected in position (Bajaj/Crompton/Phillips)	60	Each	2,024.00	1,21,440.00
				Total of Part B. Rs.	3,71,600.00
Part C- Job work.					
49	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm. FR PVC insulated copper conductor single core cable etc as required.				
49.1	Group C	30	Point	966.00	28,980.00
50	Wiring for twin control light point with 1.5 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, 2 way piano type switch, phenolic laminated sheet, suitable size MS box and earthing the point with 1.5 sq.mm. FR PVC insulated copper conductor single core cable etc as required.	5	Point	975.00	4,875.00
51	Wiring for twin control light point with 1.5 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, 2 way modular switch, modular plate , suitable GI box and earthing the point with 1.5 sq.mm. FR PVC insulated copper conductor single core cable etc as required.	10	Point	1,057.00	10,570.00
52	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface				

	/ recessed medium class PVC conduit, with modular switch, modular plate , suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc. as required.				
52.1	Group C	150	Point	990.00	1,48,500.00
53	Wiring for light/ power plug with 2 X 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit along with 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required	300	Mtr	200.00	60,000.00
54	Wiring for light/ power plug with 4 X 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 2 Nos. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	150	Mtr	308.00	46,200.00
55	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FR PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				-
55.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	500	Mtr	146.00	73,000.00
55.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	400	Mtr	167.00	66,800.00
55.3	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	200	Mtr	308.00	61,600.00
55.4	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	50	Mtr	394.00	19,700.00
56	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface recessed steel / PVC conduit as required				
56.1	3 x 1.5 sq. mm	50	Mtr	54.00	2,700.00
56.2	6 x 1.5 sq. mm	50	Mtr	100.00	5,000.00
56.3	3 x 2.5 sq.mm	50	Mtr	75.00	3,750.00
56.4	3 x 4 sq.mm	50	Mtr	117.00	5,850.00
56.5	6 x 4 sq.mm	25	Mtr	221.00	5,525.00
57	Supplying and fixing following piano type switch/ socket on the existing switch box/ cover including connections etc. as required. Supplying and fixing following piano type switch/ socket on the existing switch box/ cover including connections etc. as required.				
57.1	5/6 amps switch	15	Each	45.00	675.00
57.2	2 way 5/6 amps switch	15	Each	54.00	810.00
57.3	15/16 amp switch	20	Each	110.00	2,200.00
57.4	3 pin 5/6 amp socket outlet	20	Each	58.00	1,160.00
57.5	6 pin 15/16 amp socket outlet	15	Each	128.00	1,920.00
58	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required. Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	20	Each	32.00	640.00
59	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required.				
59.1	1 or 2 Module (75mmX75mm)	25	Each	243.00	6,075.00
59.2	3 Module (100mmX75mm)	25	Each	267.00	6,675.00
59.3	4 Module (125mmX75mm)	25	Each	287.00	7,175.00
59.4	6 Module (200mmX75mm)	30	Each	333.00	9,990.00
59.5	8 Module (125mmX125mm)	15	Each	383.00	5,745.00
59.6	12 Module (200mmX150mm)	15	Each	434.00	6,510.00
60	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required. (For light plugs to be used in non residential buildings).	5	Each	401.00	2,005.00

61	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch , connection etc. as required.	5	Each	495.00	2,475.00
62	Supplying and fixing call bell/ buzzer suitable for single phase, 230 volts, complete as required.	10	Each	92.00	920.00
63	Supplying and drawing of UTP 4 pair CAT 6 Lan cable in existing surface / recessed steel / PVC conduit as required 1 run of cable Supplying and drawing of UTP 4 pair CAT 6 Lan cable in existing surface / recessed steel / PVC conduit as required 1 run of cable	100	Mtr	49.00	4,900.00
64	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	3	Each	1,232.00	3,696.00
65	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
65.1	2 X 10 sq. mm (19mm)	10	Each	198.00	1,980.00
65.2	3½ X 35 sq. mm (32mm)	10	Each	300.00	3,000.00
65.3	3½ X 50 sq. mm (35mm)	10	Each	329.00	3,290.00
66	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/ RCCB/ Isolator)				
66.1	8 way , Double door	5	Each	1,760.00	8,800.00
66.2	12 way , Double door	5	Each	2,053.00	10,265.00
67	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
67.1	Single pole	60	Each	199.00	11,940.00
67.2	Single pole and neutral	40	Each	544.00	21,760.00
67.3	Triple pole	20	Each	826.00	16,520.00
68	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	20	Each	8.00	160.00
69	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
69.1	40 A	10	Each	339.00	3,390.00
69.2	63 A	10	Each	385.00	3,850.00
70	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
70.1	40 A Each	10	Each	832.00	8,320.00
70.2	63 A Each	10	Each	839.00	8,390.00
70.3	100 A Each	4	Each	1,047.00	4,188.00
71	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
71.1	25 A Each	1	Each	1,927.00	1,927.00

71.2	40 A Each	1	Each	2,095.00	2,095.00
72	Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
72.1	25 A Each	4	Each	2,526.00	10,104.00
72.2	40 A Each	4	Each	2,626.00	10,504.00
73	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	6	Set	6,216.00	37,296.00
74	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	100	Mtr	483.00	48,300.00
75	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	4	Each	5,308.00	21,232.00
76	Providing and laying earth connection from earth electrode with 6 SWG dia G.I. Wire in 15 mm dia G.I. pipe from earth electrode including connection with G.I. thimble excavation and re-filling as required	100	Mtr	188.00	18,800.00
77	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required	60	Each	342.00	20,520.00
78	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	100	Each	32.00	3,200.00
79	Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required. Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required. Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required. Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required.	50	Each	65.00	3,250.00
80	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable, including providing and fixing phenolic laminated sheet cover on the fan box etc. as required.	60	Each	203.00	12,180.00
81	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.)				
81.1	4 way (4 + 12), Double door	2	Each	5,651.00	11,302.00
82	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.(For street Light)				-
82.1	Upto 35 sq. mm	400	Meter	323.00	1,29,200.00
83	Rewinding motor of the 1200/1400 mm ceiling fan and over hauling including minor repairs lubricating of ball bearings & bush bearing, and	10	Each	548.00	5,480.00

	replacing condenser, screws etc. Testing of fan for original speed and consumption with guarantee for one year.				
84	Providing & erecting 3 Pole MCCB of 315/400A, 415V capacity with short circuit rating 36 kA (Ics=100% of Icu), adjustable thermal (overload) setting and fixed magnetic setting with provided leads, provision for installation of shunt/ UV/ trip alarm contact and MCCB should have phase barriers both sides, in provided enclosure on iron /GI frame	1	Each	18,207.00	18,207.00
85	Providing & erecting 3 Pole MCCB of 250A,415V capacity with short circuit rating 36 kA (Ics=100% of Icu) adjustable thermal (overload) setting and fixed magnetic setting with provided leads, provision for installation of shunt/ UV/ trip alarm contact and MCCB should have phase barriers both sides, in provided enclosure on iron /GI frame.	1	Each	13,736.00	13,736.00
86	Supplying, erecting & terminating XLPE 1.1 kv grade armoured cable 2 core 10 sq. mm. aluminium conductor cable with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	100	Mtr	135.00	13,500.00
87	Supplying, erecting & terminating XLPE armoured cable 3 core 16 sq. mm. aluminium conductor cable 1.1 kv grade with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	100	Mtr	173.00	17,300.00
88	Supplying, erecting & terminating XPLE armoured cable 4 core 16 sq. mm. aluminium conductor with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	100	Meter	201.00	20,100.00
89	Supplying, erecting & terminating XLPE armoured cable 3 core 6 sq. mm. aluminium conductor with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	500	Meter	130.00	65,000.00
90	Supplying, erecting & terminating XLPE armoured cable 3 core 10 sq. mm. aluminium conductor with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	50	Meter	153.00	7,650.00
91	Supplying, erecting & terminating XLPE armoured cable 3½ core 35 sq. mm. aluminium conductor cable 1.1 kv grade with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	150	Mtr	278.00	41,700.00
92	Supplying, erecting & terminating XLPE armoured cable 3½ core 50 sq. mm. aluminium conductor cable 1.1 kv grade with continuous 5.48 sq. mm. (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	200	Mtr	362.00	72,400.00
93	Supplying, erecting & terminating XLPE armoured cable 3½ core 150 sq. mm. aluminium conductor cable 1,1 kv grade with continuous 12.97 sq. mm. (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe	100	Mtr	850.00	85,000.00
94	Supplying, erecting & terminating XLPE armoured cable 3½ core 300 sq. mm. aluminium conductor with continuous 12.97 sq. mm. (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as required.	100	Meter	1,557.00	1,55,700.00
95	Supplying and erecting D.O.L. Starter 400V. 3 phase, 50 cycles with no volt coil and overload element with necessary materials and connected to supply upto 7.5 H.P.	1	Each	2,004.00	2,004.00
96	Supplying and erecting electronic ballast , pf > 0.9 or transformer suitable for FTL upto 40 W . Supplying and erecting electronic ballast , pf > 0.9 or transformer suitable for FTL upto 40 W .	5	Each	284.00	1,420.00

97	Supplying 18 / 20 /36 / 40 W tube starter 230 V .Supplying 18 / 20 /36 / 40 W tube starter 230 V .	15	Each	15.00	225.00
98	Supplying and erecting LED street light fitting suitable for 60W lamp, including lamp , with PF > 0.95 class IP 65 and above housing of pressure die cast aluminium alloy and heat sink extruded aluminium complete.	20	Each	5,884.00	1,17,680.00
99	Supplying and erecting bulkhead fitting suitable for upto LED upto 12W fixed on wall. Supplying and erecting bulkhead fitting suitable for upto LED upto 12W fixed on wall.	12	Each	247.00	2,964.00
100	Supplying & erecting LED 18W tube light fitting (4 feet) with polycarbonate housing , heat sink, integrated HF electronic driver complete(Crompton/Phillips)	250	Each	638.00	1,59,500.00
101	Supplying and erecting LED Mirror Light with integrated driver including 7W to 9W lamp with polycarbonate housing and opal diffuser to be fixed above mirror or as required on clamps complete.	4	Each	1,030.00	4,120.00
102	Supplying and Erecting PVC trunking (PVC casing-ncapping) of size 25 mm with accessories on wall/ceilingSupplying and Erecting PVC trunking (PVC casing-ncapping) of size 25 mm with accessories on wall/ceiling	100	Meter	39.00	3,900.00
103	Supplying, installing, testing and commissioning split type variable speed Inverter technology room Air conditioning unit 1.5 TR Capacity having ISEER minimum 3.50 to maximum 3.99 suitable to operate on 250V, 50 cycles, A.C. supply having 1 no. of air handling unit hiwall / floor mounting type complete with refrigerant R410 A/R32 and copper condenser at position.	3	Nos	52,760.00	1,58,280.00
104	Supplying, erecting and commissioning of diesel generating set with alternator of 62.5 kVA output continuous rating, 3 phase, 415V, 50c/s 0.8 p. f. A.C a totally enclosed air cooled / liquid cooled multi-cylinder diesel engine developing suitable BHP at 1500 rpm with 10% overload for 1 hour in 12 hours, along with standard accessories, self-excited, self-regulated, screen protected alternator with static excitation system running at 1500 RPM as per IS 4722-2001 with voltage regulation +/- 5 %. Both the engine and alternator direct coupled on a common fabricated steel base frame and mounted on anti-vibrating pads with standard control panel comprising meters,switchgears, indicators connected with suitable wires/cables, the complete set enclosed in composite acoustic enclosure as fully assembled integral unit made of 16 SWG CRCA Sheet, sound absorbing material to restrict sound level upto 75 dB at 1.0 m,provided with first filling of oil, diesel etc.	1	Each	6,10,263.00	6,10,263.00
105	Supplying and erecting fresh air cum exhaust fan of light duty 250 V A.C. 50 cycles 300mm. 1400 RPM rust proof body & blades, wire mesh, duly erected in an approved manner.	20	Nos	1,420.00	28,400.00
106	Supply & erecting Carbon Dioxide (CO2) fire Extinguisher of capacity cartridge type conform to IS 2878 /15683 complete elected with necessary clamp made from 50X6 mm. M.S. Flat with nut & bolts grouted in wall complete. 4.5 kgs Co2 type fire extinguishers with certificationSupply & erecting Carbon Dioxide (CO2) fire Extinguisher of capacity cartridge type conform to IS 2878 /15683 complete elected with necessary clamp made from 50X6 mm. M.S. Flat with nut & bolts grouted in wall complete.4.5 kgs Co2 type fire extinguishers with certification	10	Nos	9,580.00	95,800.00
107	Providing and fixing ABC type dry powder exinguisher as per IS : 15683: 2006 consisting of welded MS cylindrical body, with discharge valve,	30	Nos	3,765.00	1,12,950.00

	nozzle and Co2 cartige and hanging arrangement complete of make " Minimax/ceasefire or equivalent. Capacity 6 Kg with certification				
108	Supply of High speed diesel for DG Set i/c transportation from petrol pump to site, loading and unloading, filling charges etc complete as required.	700	Lit	85.00	59,500.00
		Total of Part C			29,15,163.00
		Total of Part(A+B+C)			37,91,531.00

.....% above OR.....% Below on total estimated total value of work.

Contractor:

ESIC