

Divisional Office: Dehradun



Life Insurance Corporation of India,
Divisional Office
Dehradun

Tender No- LIC/DO/ENGG/LT-6/2023-24

**E-Tender for Annual Rate Contract for Electrical Repair
& Maintenance work at DO & its properties,
for FY 2023-24 onward.**

Date of downloading of e-tender 17.01.2024 at 10:00 Hrs
Last Date for Submission of Tender: 31.01.2024 up to 15.00 Hrs
Date of Opening of Tender: 01.02.2024 at 11.30 AM

Tender Issued To:-----

.....


So. Divl Manager




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E-Tender for ARC (Annual Rate Contract) of Electrical Repair & Maintenance Works at DO & its Properties, Dehradun for FY 2023-24 & onward

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INSTRUCTION REGARDING SUBMISSION OF TENDER FEE AND EMD (BID – I)

E-Tender for ARC (Annual Rate Contract) of Electrical Repair & Maintenance Works at DO & its Properties ,Dehradun for FY 2023-24 & onward

BID – I : Tender Processing Fees and EMD as per amount mentioned below shall be remitted to LIC of India, Divisional Office Dehradun through NEFT/ RTGS/ Demand Draft drawn in favour of LIC of India, payable at Dehradun / MR (Miscellaneous receipt obtained by depositing cash on cash counters of Divisional Office, Dehradun) in this Bid. The proof of remittance of above shall be uploaded in BID – I of e-tender.

- (1) **Tender processing fees:**Rs.500/- + GST (RUPEES FIVE HUNDRED Only GST Extra). Tender processing fees is non-refundable.
- (2) **EMD:** Earnest Money Deposit of Rs. 10,000/- (Rupees Ten Thousand Only)
- (3) **Electrical License:** - *The Work will be awarded to the contractor having valid electrical license issued by the Electrical Safety Department, Uttar Pradesh / Uttarakhand/ Central Government*

Account Details for Tender Fee & EMD payment through Electronic Transfer in form of NEFT/ RTGS –Transfer in form of NEFT/ RTGS: -

Name of Account Holder	LIC of India, Divisional Office Dehradun LIC OF INDIA A/C –II, D027
Type of Account	Current
Account Number	510101002407050
Bank Name	UNION BANK OF INDIA
Bank Address	75,Rajpur Road ,Himalayan Apartment ,Near Raj Plaza Dehradun,248001
IFSC Code	UBIN0812099

Note:

- (i) A scan copy of the Demand Draft / MR is to be uploaded in the e –tender portal and original copy of Demand Draft / MR is to be submitted to the following address on or before **31.01.2024 up to 15.00 Hrs**

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Address: Sr. Divisional Manager, LIC of India, Jeevan Prakash Building, Nehru Colony, Divisional Office, Dehradun

- (ii) In case of NEFT/ RTGS Payment the Receipt of NEFT/ RTGS having UTR No. is to be uploaded. The Payment of EMD and Tender fee can be made together through NEFT/ RTGS.

REFUND OF EMD:

1. The earnest money of all bidders except lowest bidder shall be refunded after opening of financial/ price bid. However, being ARC if the tender other than lowest are willing to execute the work at the rate of lowest tenderer, the EMD shall be retained as part of SD and balance SD shall be deposited by the tenderer.
2. If lowest bidder withdraws his tender before expiry of validity period or before the issue of acceptance of bid, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, in such case the EMD will be forfeited by the department.
3. In case of forfeiture of EMD as prescribed in para 1 and 2 above, the bidder shall not be allowed to participate in the re-tendering process of the work.

The Tenderer has to submit the Bids as under:

- (1) **BID I (EMD, Tender Processing Fee) & BID II (Price Bid):** EMD, Tender Processing Fees & Price Bid for said work will be opened on 01.02.2024 at 11.30 AM
- (a) Tender form processing fee of Rs.500/-+GST (non-refundable) separately to be paid through NEFT/ RTGS/ Demand Draft drawn in favour of LIC of India, Payable at Dehradun / MR (Obtained by deposition cash at cash counter of Divisional Office, Dehradun). In case of tender fee payment through Demand Draft/ MR, Original Demand Draft/ MR to be submitted at Life Insurance Corporation of India, Divisional Office, Engineering Department, Dehradun before 31.01.2024 **up to 15:00 hrs** i.e the last date of submission of tender.
- (b) Earnest Money Deposit of **Rs.10000/- (Rupees Ten Thousand Only)** separately to be paid through NEFT/ RTGS/Demand Draft drawn in favour of LIC of India, Payable at Dehradun / MR (Obtained by deposition cash at cash counter of Divisional Office, Dehradun). In case of EMD payment through Demand Draft/ MR, Original Demand Draft/ MR to be submitted at Life Insurance Corporation of India, Divisional Office, Engineering Department, Dehradun on or before 31.01.2024 **up to 15:00 hrs** i.e the last date of submission of tender.

Note: Original Demand Draft / MR to be submitted to above mentioned address on or before 31.01.2024 up to 15.00 hrs. Scan copy of Demand Draft/ MR/ Receipt of NEFT/ RTGS having UTR No. / Valid electrical license shall be uploaded on e-Tender Portal in BID I.

Note: - If Tender Fees and EMD amount submitted through NEFT/RTGS mode on or before 31.01.2024 up to 15:00Hrs.

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LETTER TO CONTRACTOR FROM Sr. Divisional Manager

REF: Engg /

Dated: 16/01/2024

To,

M/s-----

Dear Sir/Sirs,

E-Tender for ARC (Annual Rate Contract) of Electrical Repair & Maintenance Works at DO & its Properties ,Dehradun for FY 2023-24 & onward

We hereby publish the TENDER on e-Tendering Portal (Website) through www.tenderwizard.com/lic **Electronic Mode** hereinafter referred as “**e Tendering**”.

- 1) Please note that copy of above e-Tender can be downloaded from above portal (website) and should be mandatorily submitted in **Online Electronic Mode** hereinafter referred as “**Online Offer**”. The submission of Online offer duly Encrypted & Digitally Signed on above portal should be in prescribed Electronic Forms (Online) available on above portal for respective tender in Online Envelope(s) on or before **As per the Key Dates mentioned in the tender document and online portal for above tender.**
- 2) Tender Processing Fees amount **Rs.500/-** + GST and EMD amount **Rs.10000/-** shall be remitted to the LIC of India, DO, Dehradun through NEFT/ RTGS/ Demand Draft / MR (Obtained by deposition cash at cash counter of Divisional Office, Dehradun) in this Bid. **The proof of remittance of above shall be uploaded in BID – I of e-tender as per the Key Dates** and the e Tenders will be opened at **As per the Key Dates** in the presence of contractors or accredited representatives, who wish to attend the online Tender Opening Process. The bidders can view the Tender Opening details through their respective Login IDs on the above mentioned e-Tender portal (Website).

The Tenderer should ensure that their tender is received **Online Electronically** on or before the due date and time as specified in “**Key Dates**” in the Tender Document and above mentioned Portal (website).

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Please note that above e-Tendering System is an automatically time locked system which will be locked immediately as soon as due date and time is over and will not accept any offer after that. So, the tenderers are strictly advised to do their process well before the due date and time to avoid any such instances.

- 3) Instructions In regard to Submission of tenders on Electronic Tendering System (ETS) is attached in the Tender document. The tenderers are advised to carefully read the above document for understanding of e Tendering System. The above instructions will supersedes all the terms & conditions mentioned for submission of tender in document.
- 4) The Life Insurance Corporation of India does not bind itself to accept the lowest or any tender.

Yours sincerely,

Sr. Divisional Manager

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LETTER FROM CONTRACTOR TO SR. DIVISIONAL MANAGER

The Sr. Divisional Manager,
Life Insurance Corporation of India,
Divisional Office, Dehradun.

Dear Sir/Sirs,

E-Tender for ARC (Annual Rate Contract) of Electrical Repair & Maintenance Works at DO & its Properties ,Dehradun for FY 2023-24 & onward

1. Having examined the Specifications, conditions of tender, form of Percentage rate contract, Schedule of Quantities relating to the above work of the tender and the drawings and having visited and examined the site of the proposed works and having inquired the requisite information relating thereto as affecting the tender invited by you on behalf of the Life Insurance Corporation of India, I/We, the undersigned hereby offer to construct, execute, complete and maintain the proposed works on Percentage rate basis in strict accordance with the contract conditions and specifications for the sum as mentioned in the General Summary as may be ascertained in accordance with the said conditions.
2. I / We undertake to complete and deliver the whole of the work within a period as specified in Appendix to the Conditions of Contract from the date of issue of intimation from you that the tender has been accepted and upon receiving possession of the site. I/We shall be under the obligation to pay the sum of as stated in the Appendix to the Conditions of Contract for every day that the works shall remain incomplete, damages as compensation subject to the conditions of contract relating to an extension of time.
3. I/We submit herewith my/our tender along with Earnest Money remittance of, Rs.10000.00 (**Rupees Ten Thousand only**). I/ we hereby agree this sum shall be forfeited by the Life Insurance Corporation of India in the event of my/our tender being accepted and I/We fail to execute the contract when called upon to do so.

I/We note that earnest money remittance in form other than **NEFT/ RTGS/ Demand Draft/ MR (obtained through depositing cash on cash counters of Divisional Office, Dehradun) payment** shall not be accepted. In case tenderer failed to submit original Demand Draft/ MR to the Concerned Office, before specified date **AS per Key Dates**, the tender will be considered as non bonafied tender.

4. In the event of the tender being accepted, the E.M.D shall be retained as part of security deposit. The contractor has to deposit additional Security Deposit with LIC for an amount of **Rs.10000.00** (EMD shall be converted in to SD). The total security deposit per group is Rs.20,000/-. No interest will be paid on SD. The Security Deposit **of Rs.20000.00 per group** will be released after successful completion of contract period

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including extension if any and plus Defect Liability Period as applicable for last awarded work under said contract.

5. I / We note that the Earnest Money deposited by me/us would be refunded to me/us.
 - a. On expiry of the validity of the tender or
 - b. earlier at the discretion of Sr. Divisional Manager in case my/our tender is not accepted.

Yours faithfully,

SIGNATURE OF THE CONTRACTOR

Name of the Partner of the Firm or Name of person having Power of Attorney to sign the contract. (Certified True Copy of the Power of Attorney should be attached).

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APPENDIX TO CONDITIONS OF CONTRACT

FINANCIAL YEAR		2023-24 & onward
EARNEST MONEY DEPOSIT		Rs.10000/-
TYPE OF TENDER		Percentage Rate Tender
Sr. No.	PARTICULARS	DESCRIPTION
1	Earnest Money Deposit	Earnest Money Deposit of Rs.10000/- (Rupees Ten Thousand Only) through Demand Draft/ MR / Electronic Online Transfer (NEFT/ RTGS) to be paid.
2	Duration of contract /validity of for ARC	The rate contract is valid for one year and may be extended subsequently after mutual consent. As deem fit by the Competent Authority of LIC.
3	Defects liability period	<ol style="list-style-type: none"> 1) Six months from the date of completion of work for routine repair & maintenance. 2) Twelve months from the date of completion of addition and alteration/ major works. 3) Equal to warranty given by OEM of any fittings & fixtures in actual
4	Security Deposit	In case of tender is accepted EMD shall be converted in to SD. The contractor has to deposit additional Security Deposit of amount Rs.10000.00 . The total security deposit per group is Rs.20,000/-. No interest will be paid on SD. The Security Deposit of Rs.20000.00 per group will be released after successful completion of contract period including extension if any and plus Defect Liability Period as applicable for last awarded work under said contract.
5	Validity	Tender submitted shall remain open for acceptance up to three months from the last date of the submission of the tender.
6	Insurance Policies	Contractors All Risk (CAR) Policy including Third Party Liability of Rs.500000/- only and Workmen Compensation policy for minimum 2 labours.(one skilled&one unskilled) or as per mutual agreement.
7	Liquidated Damages	At the rate of 1% (one percent) per week of value of work on accepted amount for individual work order, subject to max of 10% of accepted amount /value of work.

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8	Contract labour act	Contractor to obtain labour license before commencement of work if applicable.
9	Water & Electricity Charges (if provided and used by the contractor)	The required water & electricity charges for the Charges will be deducted from each bill @ 0.5% of gross value of work.
10	Interim certificate	As per payment terms
11	Period of honouring certificate	20 (Twenty) Days
12	Period of honoring Final certificate	90 days from the date of submission of final measurements with details.
13	Valid electrical License	The work will be awarded to contractor having valid Electrical License issued by the Electrical Safety Deptt. Uttar Pradesh Government/ Uttarakhand /Central Government.

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SPECIAL CONDITIONS OF CONTRACT

1. The contractor shall be responsible to pay all statutory levies imposed by the State and Central Government such as Income Tax etc. but excluding GST. GST will be paid separately along with the bills as per applicable rates/ prevailing rates.
2. ***The Electrical works carried out through ARC rates are of very emergent nature most of the time and requires immediate attention. The lowest contractor will be informed to attend the complaint by e-mail/ telephone / whatsapp/ work order / job card as per the circumstances and the contractor will be responsible to arrange to attend the complaint with in time period as communicated. If the response of the contractor will not be as per time requirement, the work will be assigned to another contractor. No correspondence in this regard will be entertained thereafter.***
3. The Construction Associate shall submit the bill having GST Number clearly printed and showing the taxes separately.
4. **Labour cess:** Rates are inclusive of Labour cess (if any) and labour cess will be deducted from contractor's bill, as applicable.

Contractor shall also be responsible to seek permission from local authorities/ administration before starting the work & during the work in progress for unloading/ keeping materials there or after completion of work, if required. if any.

The above will supersede all provisions given in the tender elsewhere.

Sr. Divisional Manager

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(TO BE GIVEN ON CONTRACTOR'S LETTERHEAD)
NO CLAIM CERIFICATE CUM STAMPED RECEIPT

Received Rs. _____ (Rupees _____ only) being the
amount against my/ours final bill dated _____ for _____
(Name of work) in full and final settlement of bill.

I/We have no further claim for any amount on above work.

(Signature of Contractor on Revenue stamp)
Rubber Stamp / Seal of the Contractor /Company

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E-Tendering Programme System Tender No. LIC1/DO/ENGG/LT-6/2023-24 & onwards

1. Online bids are hereby invited for the works mentioned below through online e-Tendering System portal www.tenderwizard.com/lic **from the intended contractors.**

Sr. No.	Name of Work	Estimated Cost	Earnest Money Deposit (EMD)	Tender Document Fee
1.	As mentioned above	Up to 5.00 Lakh	Rs.10,000.00	Rs.500.00 + GST

2. Possession of Digital Signature Certificate (DSC) and registration of the contractors on the portal <http://www.tenderwizard.com/lic> i.e. prerequisite for e-Tendering.

3. For Digital Certificate issuance you may please contact our Service provider **Antares Systems Limited, E-tender helpdesk, 24, Sudha Complex, III Stage, IVth Block, Basaveshwara Nagar, Bangalore-560079,**

Help Desk Contact details:

Tel: 080-40482000 / 121 / 133 / 140

Mob:- 9686115304 / 9686115323

Email:- lokesh.hr@antaressystems.com and raghuprashanth@antaressystems.com

4. Last dates of various activities by bidder:

Downloading of Tenders Documents : As per Key Dates
Bid Preparation and Submission : As per Key Dates

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For further details and e-tendering schedule (Key Dates), please visit website above mentioned portal (website)

KEY DATES

Sr. No.	Department Stage	StartDate and Time	ExpiryDate and Time
1	Uploading of Tender document	16.01.2024	
2	Downloading of Tender Document	17.01.2024 at 10.00 Hrs	31.01.2024 up to 15.00 Hrs
3	Deposit of Tender fee & EMD.		
a	In case of Demand draft/MR (sealed envelope)	17.01.2024 at 10.00 Hrs	31.01.2024 up to 15.00 Hrs
b	In case of NEFT payment	17.01.2024 at 10.00 Hrs	31.01.2024 up to 15.00 Hrs
4	Online submission of tender	17.01.2024 at 10.00 Hrs	31.01.2024 up to 15.00 Hrs
5	Opening of EMD, Tender Fees and Price Bid	01.02.2024 at 11:30 Hrs onward	

Note: Key Dates mentioned here in above table are final and these supersede any discrepancy in the dates mentioned elsewhere in the tender.

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INSTRUCTIONS TO CONTRACTORS REGARDING SUBMISSION OF E-TENDERS

1. All the Contractors intending to participate in the tenders processed online, are required to get registered for the Electronic Tendering System on the Portal <http://www.tenderwizard.com/LIC>
2. Tender Document can be down loaded as per key dates.
3. The Last Date of Submission on- line Bid as per key dates.
4. **Obtaining a Digital Certificate:**

The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the bidder bidding online. Digital signature certificate has two keys i.e. Public Key and Private Key. Public Key is used to encrypt the data and Private Key is used to decrypt the data. Encryption means conversion of normal text into coded language whereas decryption means conversion of coded language into normal text. These Digital Certificates are issued by an approved certifying authority, by the controller of Certifying Authorities, Government of India.

5. The contractors may also obtain Class III digital certificate from any Certifying Authority or Sub-certifying Authority authorized by the Controller of Certifying Authorities on the portal <http://cca.gov.in>. or may obtain information and application format and documents required for issue of digital certificate from our service provider to Electronic Tendering System (ETS)

M/s Antares Systems Limited
E tender Help Desk
#24, Sudha Complex
03rd Stage, 04th Block
Basaveshwaranagara, Bangalore- 560079

Help Desk Contact details
Tel: 080-40482000/121/133/140
Mobile: 9686115304/9686115323

Email: lokesh.hr@antaressystems.com
raghuprashanth@antaressystems.com

6. In case of online tendering, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a bid, it will be considered equivalent to a no-objection certificate/power of attorney to that User. The firm has to authorize a specific individual via an authorization certificate signed by all partners to use the digital certificate as per Indian Information Technology Act 2000. Unless the certificates are

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revoked, it will be assumed to represent adequate authority of the user to bid on behalf of agency for LIC of India, Divisional Office Dehradun. As per Information Technology Act 2000. The digital signature of this authorized user will be binding on the firm. It shall be the responsibility of management / partners of the registered firms to inform the certifying authority or Sub Certifying Authority, in case of change of authorized user and that a fresh digital certificate is procured and issued an 'authorization certificate' for the new user. The procedure for application of a digital certificate will remain the same for the new user.

The same procedure holds true for the authorized users in a private/Public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.

7. Online Viewing of Scheduled date of e-tendering Programme :

The contractors can view the e-tendering Programme and the time schedule (Key Dates) for all the tenders floated using the electronic tendering system on the website <http://www.tenderwizard.com/LIC>

8. Submission of Earnest Money Deposit:

Tenderers have to deposit Earnest Money Deposit of amount **Rs.10000/-** (Rupees Ten Thousands only) through Demand Draft/ MR / Electronic Online Transfer (NEFT/ RTGS) to account mentioned on Page 3 of this part, before **last date of submission as per Key Dates**. Any tender, which is not accompanied by Tender Fee & Earnest Money Deposit, shall be summarily rejected. No interest will be paid for the period during which the earnest money lies in deposit with the Employer.

Refund of Earnest Money Deposit to the unsuccessful bidders will be made through RTGS/NEFT only.

It is mandatory to upload the scanned copy of receipt / UTR against EMD while Bid preparation stage on eTender Portal

9. Submission of Tender Document Processing Fees:

Tenderers have to pay Non refundable Tender Document Processing Fee of **Rs.500.00 (Rupees Five Hundred only) +GST** through Demand Draft/ MR/ Electronic Online Transfer (NEFT/ RTGS/ IMPS), in favour of “ **Life Insurance Corporation of India**” at **Dehradun**.

A scanned copy of the receipt / UTR of Tender document processing fees should be uploaded on e-Tender Portal while Bid Preparation Stage, otherwise Technical/Commercial bid will not be opened. Further, Original Demand Draft / MR to be submitted in office before last date as per Key Dates.

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If the tenders are cancelled or recalled on any grounds, the tender document processing fees will not be refunded to the agency.

10. Download of Tender Documents

Download of Tender Documents: The tender documents can only be downloaded from the

Electronic Tendering System on the Portal <http://www.tenderwizard.com/LIC>

11. Submission of Online Bids:

The Tenderers need to download the Bids Documents including the Blank Templates/ Formats / Forms etc of Technical & Price Bids. The Technical Bid and Price Bids to be filled without making any changes in the format of the files and the completely filled files of Technical Bid/Price Bid shall be uploaded on the e-Tender Portal at appropriate Bids using DSC within the time and last date specified for submission of Bids As per Key Dates. The Scanned copies of self attested supporting documents (If any) of Bid I & Bid II (Price Bids) to be uploaded while submission of Bids.

The bidder should ensure that the status of a particular stage should be shown as "Submitted" before the expiry date and time of that particular stage and he should possess a copy of receipt of completion of each stage to be performed from his end. It will be the sole responsibility of the bidder if the status of a particular stage is "Pending" till the expiry date and time of that stage and he is not able to proceed further in the e-tendering process.

13 Other Information:

13.1 The intending bidders shall fill the **Percentage Rate** in the templates of the Price Bid. The Price Bid has to be submitted mandatory online. Tender processing fee and EMD should be uploaded mandatory while "Bid Preparation Stage". ~~The Prequalification documents along with following papers to be submitted before last date as mentioned in Key dates-~~

- ~~i. A list of all documents.~~
- ~~ii. Duly accepted power of Attorney in original along with its two certified copies in the name of bidder or authorized representative to act on behalf of the agency.~~

14. Price Bid envelope has to be submitted mandatory online and shall not be accepted physically under any circumstances. In case any bidder does not

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comply with procedure given above, it will be presumed that he is not interested in the work and they will be disqualified from the bidding.

15. ~~Performa of Articles of Agreement (Annexure – 'A') should not be filled in by the tenderer. While the contract shall be deemed to have come into existence on issue of letter of acceptance to the successful tenderer. Deleted Formal agreement shall be signed thereafter with the successful tenderer on non-judicial stamp paper of requisite value as per the Performa of Articles of Agreement~~
16. Contractors are warned that Cash, or Encashable Cheque, or Bank or Insurance Guarantee, or Fixed Deposit receipt in lieu of the aforementioned form of Earnest Money remittance will not be accepted.
17. Tenders containing errors are liable to be considered non-bonafide at the discretion of the Sr. Divisional Manager, Dehradun.
18. Tenderer should note that tender shall remain open for consideration for a minimum period of **THREE MONTHS** from the date of online submission of tenders.
19. Tenderer should fill in all the relevant blanks on the relevant places as indicated below such as :
 - a. Letter from Contractor to Sr. Divisional Manager.
20. No alterations are to be made by the tenderer to the text or the Schedule of these tender papers. Any tenderer, which proposes any alterations or amendments to any of the condition/s laid down or which proposes any other conditions of any description whatsoever is liable to be rejected.
21. The tenderer is required to check the numbers of the pages and if any page be found missing or in duplicate, or the figure or writing indistinct, he must inform the Sr. Divisional Manager, Dehradun at once and have the same rectified. If the tenderer be in doubt about the precise meaning of any item or figure, for any reason whatsoever, he must inform Sr. Divisional Manager in order that the correct meaning may be decided upon before the date for the submission of the tender. Similarly if there is/are any ambiguities noticed in any of the tender clauses /Item specifications etc given at different places in tender document, the Tenderer should bring all such ambiguities to the notice of Sr. Divisional Manager, Dehradun before submission of tender for necessary rectification.

No liability whatsoever will be admitted nor claim allowed in respect of errors in the submitted tender due to missing / duplicate pages, indistinct writing or any other error in the tender documents which should have been rectified in the manner described above.

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- 22 ~~In the event no rate has been quoted for any item(s), leaving space both in figure(s), words(s) , it will be presumed that the Deleted pr has included the cost of this item/ these item(s) in other item(s) and the rat Deleted item(s) will be considered as zero and work will required to be executed accordingly.~~
- 23 If any corrupt documents(s)/Files(s) are received by LIC on opening of Bids, the Tenderers will be solely responsible if their Bids becomes Non-Bonafied due to corrupt file.
- 24 Deleted
- 25 Deleted
- 26 Deleted
- 27 The tender shall be accompanied by a certified true copy of Power of Attorney in favour of the signatory to the tender documents. If the tender is submitted on behalf of a firm, it must be signed either by all partners or person holding a valid power of attorney from all partners constituting the firm. The person signing the tender on behalf of another partner(s) or on behalf of a firm or Company shall attach with the Tender a proper Power of Attorney duly executed in his favour by such other person(s) or by all the partners in accordance with the Constitution of the Company / Articles of Association, stating that he has the authority to sign on behalf of such other person(s) of the firm or the Company as the case may be, in all matters pertaining to the contract including the Arbitration Clause. Scanned copy of the Power of Attorney shall be uploaded on the eTender Portal.
- 28 The Life Insurance Corporation of India reserves the right to accept any tender or to accept tenders in part; to reject any or all tenders without assigning reasons thereof.
Note: - Bidders participating in e-tendering shall check his/her validity of Digital Signature Certificate before bidding in the specific work floated online at the website <http://www.tenderwizard.com/LIC>. Also, the bidder will be held liable solely, in case, while bidding in particular stage - Date & Time expired as per the key dates available on the tender document. Key dates are subject to change in case of any amendment in schedule due to any reason stated by the Department.

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General terms and conditions of contract

1. This rate contract is meant for undertaking (i) Repairing work (ii) Renovation Works (iii) Addition and alteration works etc. In our buildings and each job will be executed under specific work order for any item or item of work (mentioned in attached schedule) irrespective of its/ their quantity.
2. The contractors are requested to quote their rate on percentage rate basis i.e Above/Below/At par in attached schedule of rates in words and figure; otherwise tender will not be entertained or will be considered as non bonafide. In case rates written in figure are not tallying with rate written in words, the rate quoted by contractor in words shall be taken for consideration.
3. **SITE**: The word "Site" wherever referred is of the "Premises" where the work has to be carried out as directed giving least inconvenience to occupants.
4. Work can be carried out before or after office hours or during nights, holidays and Sundays with prior written permission from the department, for which no extra shall be payable and the contractor shall cover for all such events in his quoted rates. Also, shifting the working office/ home furniture, cupboards, etc. and rearranging the same so as to not to disturb the functioning of office may also be involved. In such an event, contractor shall comply with instructions of Engineer-in-charge. Rates quoted for various items of work shall cover for all such events and no separate payment will be made.
5. The details of Security Deposit, Completion period, Defect Liability Period, Insurance Policies, Liquidated Damages etc., are as per enclosed Appendix to the conditions of contract. No interest shall be payable over the security deposits like Initial Security Deposit, Retention Money etc., lying in deposit with LIC of India.
6. **EARNEST MONEY DEPOSIT** :The amount of EMD is to be remitted online as instructed on page no 3 to 4 in favour of " **LIC of India** ". The amount of EMD shall be **Rs.10,000/- (Rupees Ten Thousand only)** as detailed in Appendix to the Conditions of Contract. No interest shall be payable on Earnest Money deposit lying with LIC of India.
7. **SECURITY DEPOSIT**:The EMD of **Rs.10,000/- (Rupees Ten Thousand only)** at Condition No.6 above, shall be converted as Security deposit **for successful Tenderer** and further **Rs.10,000/- (Rupees Ten Thousand only)** to be deposited by them thus to make total Security Deposit of **Rs.20,000/- (Rupees Twenty Thousand only)**.

The contractors other than lowest, who will be willing to work on approved rates will have to deposit one time a Security Deposit of **Rs.20,000/- (Rupees Twenty Thousand**

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only) with LIC within period of 15 days from issue of letter by LIC in this regard and their EMD submitted at Condition No-5 above will be refunded subsequently.

The balance EMDs submitted by other tenderers shall be refunded after finalization of Annual Rate Contracts. **Once ARC is finalized and tenderer got the refund of EMD, no Contractor is entertained / allowed to submit the Security Deposited at last date to carry out the works.**

8. The contractors are requested to put their firm's endorsement on each page of the tender document in token of acceptance.
9. **WATER AND ELECTRICITY CHARGES** : Notwithstanding what is mentioned elsewhere in the tender, water and electricity (supply at one point), if provided by LIC, deduction will be made , from the value of work @ **0.5% of Gross value of work and shall be recovered from the bills of the contractor.**
10. The contractor is to fully indemnify the LIC of India against any type of loss/ accident caused due to the negligence of contractor and the contractor should take all precautions for smooth execution of the work.
11. **CONTRACT LABOUR ACT:** The contractor shall pay his labour as per the Contract Labour Act and observe hours of work and conditions of employment according to the existing rules under contract labour act. Further it shall be contractor's responsibility to ensure that regular payments to his workers are made. The contractor shall fully indemnify LIC of India from any claim under Contract Labour Act. Labour license to be obtained from Central Labour Commissioner if applicable.
12. **WORKMEN'S COMPENSATION ACT:** The contractor shall fully indemnify the LIC of India from all claims for any injury caused to any person whether a workmen or not and LIC of India shall not be bound to defend any claim made under the Workmen's Compensation Act. All Contractors have to obtain **Workmen Compensation Policy** in the joint name of LIC of India and the contractor for the value as directed, **which shall remain in force till the completion of the work.**
13. **CONTRACTOR'S ALL RISK POLICY INCLUSIVE OF THIRD PARTY LIABILITY :** The contractor shall be responsible for all injuries / damages to his men , material and property etc, which may arise from the work, for negligence of himself and / or his workers and shall fully indemnify the LIC of India, for such expenses which shall be solely to the contractor's own account. All Contractors have to obtain **Contractor's All Risk Policy inclusive of Third Party Liability** in the joint name of LIC of India and the contractor for the value as directed, **which shall remain in force till the completion of ARC.** Tenderers should note that their rates quoted shall be firm during the currency of the contract irrespective of the quantity executed and no escalation shall be permissible. The currency of contract shall be inclusive of extensions if granted.

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14. No alterations or additions are to be made by the contractors to the text of Schedule of Rates and other tender papers. Violation of this instruction entails rejection of the tender at the discretion of the Sr. Divisional Manager.
15. Any tenderer who proposes any alterations to any of the condition laid down or which proposes any other condition of any description whatsoever is liable to be rejected at the discretion of the Sr. Divisional Manager.
16. The contractor is required to check the numbers of pages and if any page be found missing or in duplicate, or the figure or writing indistinct, he must inform the Sr. Divisional Manager in order that the correct meaning may be decided upon before the date for the submission of the tender.
17. If contractor is in doubt about the precise meaning of any item or figure, for any reason whatsoever, he must inform the Sr. Divisional Manager, Dehradun in order that the correct meaning may be decided upon before the date for the submission of the tender. No liability whatsoever will be admitted nor claim allowed in respect of errors in tender due to mistake in the Schedule of Quantities which should have been rectified in the manner described above.
18. All measurements of concealed items shall be got recorded before they are covered up / concealed.
19. Contractors will have to submit their bills in triplicate. The bill must be submitted in the first week of next month along with all the work certificates and documents of previous month work. After that we will not entertained the bills if it is not submitted in said duration.
20. Contractors to note that the quoted rates shall be firm throughout the currency of the contract. Any price variation towards Materials, Labour, Steel, Cement etc., is not allowed and will not be paid. Rates to be quoted taking the current market rates of materials into account. Rates quoted to be applicable for work at all levels. The use of lifts for taking materials shall not be permitted. The rates quoted shall include all taxes; octroi etc. and nothing extra shall be paid on any account.
21. The rates quoted shall cover for all material, labour, tools, plants, scaffolding, shuttering, curing etc. and any kind of taxes, fee, duties etc. that are payable. It also includes everything necessary for proper execution of work to the entire satisfaction of the department.
22. The screws, nails, iron oxidized hinges, necessary fasteners, holdfast etc. required for fixing doors, partitions, panels etc shall be included in the quoted rates of the respective items. No separate payments shall be made for this purpose.

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23. **EXTRA ITEMS:** Extra Items if any shall be settled on the basis of cash memos for purchase of material and actual labour employed. Contractor shall be allowed 15% over the above to cover for, supervision, overheads and profit. Wherever applicable analysis of rates shall be on the pattern of C.P.W.D. analysis of rates. The decision of Sr. Divisional Manager, Dehradun shall be binding and final.
No extra / deviated items will be settled in absence of supporting documents. LIC of India does not bound itself to accept the rates mention in vouchers/ purchase bills and may settle the rate on basis of prevailing rates in market.
24. All materials used in the work shall be from list of approved makes enclosed and specification of work must be such as to comply with LIC standard specification unless otherwise mentioned it should be as per I.S. / C.P.W.D. specifications or as per quality specified in the tender and approved by the competent authority.
25. The contractor shall be responsible for all the damages and shall replace or make good at his own expense any material lost or damaged or quality not approved.
26. It may be noted that Time is essence of contract and the schedule time for completion has to be followed strictly. The work must be completed in all respect within specified time mentioned in work order. If the work is likely to be delayed due to any reason beyond the control of contractor, the contractor shall in advance seek the extension in time limit before the expiry of time.
27. In case of replacement of spares, it shall be certified by the occupants or Corporations Engineer.
28. LIC of India, Sr. Divisional Manager, Dehradun reserves the right to supply any material/ spares at its sole discretion.
29. No advance shall be payable for the commencement of any job.
30. All works shall be carried out as per local by-laws with respect to stocking of material, supplying of labour etc. Electrical work shall be carried out through a Licensed electrician, as per IE rules, local electricity authority rules, LIC material specifications and general conditions of contract and to the entire satisfaction of LIC Engineer. Alternate arrangement for restoring the supply shall be made without any extra charges.
31. The quantities given in estimate prepared on approved annual rates shall be approximate and may vary and payment will be made only as per the actual work executed at site as ascertained by joint measurements.
32. **MEASUREMENT:** The actual authorized quantities shall be measured by the contractor and will be submitted to LIC, which will be checked by the engineer jointly for payments on basis of rates quoted. The quantities are to be read in conjunction with specification

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- and condition of contract and the rates quoted shall be for doing all the works as per specification complete, whether the same are reiterated or not.
33. The final bill of the work should be submitted within 30 days of completion of work failing which LIC shall finalize the bill, which shall be binding on the contractor.
 34. In case of dispute the decision of the Sr. Divisional Manager, LIC of India, Divisional Office, Dehradun shall be conclusive and binding on the contractor.
 35. Contractors to please note that the work is to be carried out in co-ordination with other agencies / occupants with least disturbance as directed. The Contractor should observe that his work shall not cause any nuisance to the public in general and to the neighboring occupants in particular.
 36. **MALBA:** After completion of the work, the site should be cleared thoroughly of any mulba, debris etc., at the contractors own expenses and the rates quoted shall include the same.
 37. **TESTING OF MATERIAL:** The contractor to account in his quoted rates, for the cost of required samples taken jointly for carrying out the tests and payments for testing charges. The testing charges only shall be reimbursed to contractor if the material conforms to specifications.
 38. **VALIDITY:** The tender shall be valid for acceptance for a period of **3 months** from the last date of receipt of tender.
 39. Deleted.
 40. The rates once approved by the competent authority shall be **valid for one year** unless or otherwise the rates are further approved for more period by the competent authority .
 41. In case of replacement of spares, it shall be certified by the occupants or Corporation's Engineer.
 42. The lowest contractor will be awarded work up to their capacity which has been duly approved by the competent authority during the empanelment of the agencies. However, LIC's reserves the right to invite separate tender for any amount or of any type of repairs, renovations, additions and alterations works in the LIC Buildings irrespective of items in the Rate Contract Schedule.
 43. If the contractor or its accredited representative fails to attend the office for consecutive 2 days to receive verbal instructions / work order or if the contractor, upon receiving written or verbal work order does not undertake the work within the next 24

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hours or immediately as instructed in case of emergency. The Sr. Divisional Manager, Dehradun shall have liberty to cancel the Rate contract / work order and employ other agency to get the works done at the risk and cost of contractor and the differences in total cost thereof shall be deducted from the contractors bills of any other work such lying with LIC without making any reference to the contractor.

44. If any defect is noticed within twelve months after completion of the work, the contractor has to rectify the same at his cost and risk, failing which LIC reserves the right to get the defects rectified through any agency and deduct the cost thereof from the contractor's bill.
In case of defects, which are to be rectified immediately, and which cannot be held up for the want of the contractor, the same will be got done through any agency. Money spent for rectification shall be recovered from contractor bill or any dues payable to the contractor.
45. The Corporation Engineer may due to adequate reason as he thinks fit from time to time, terminate the contract by giving one month's notice. The contractor should then leave the buildings or the place of work in a decent and workable condition, failing which the LIC reserves the right to take any action as deemed fit against the contractor.
46. **Minimum Wages Act :** The Contractor shall pay rates of Wages and observe hours of work and conditions of employment according to existing rules under Minimum Wages Act. Further, it shall be contractor's responsibility to ensure that he pay his workmen wages which are not lower than the minimum prescribed by the Union Government and State Government. In which area this contract is being operated.
47. LIC reserves the right to accept any tender or to accept the tenders in part or to reject any or all the tenders without assigning any reason thereof.
48. Contractor please note that to carry out the said work permission if required from local authorities etc will be obtained by them including liasioning with them. No extra payment shall be made on this account. The contractor shall quote the rates on considering the same.
49. Delete
50. Work shall be given to lowest tenderer. However, in case lowest tenderer is not available for any reasons or not doing the work, then the work may be offered to other tenderer i.e.; L2, L3, L4...etc at the lowest approved rates if they give their consent to carry out the work on the lowest approved rates. This clause shall be valid through out the currency of the contract.
51. The Standard Security Deposit is Rs.20,000/-.

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TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS

(A) GENERAL

1. The installations shall generally be carried out in conformity with the Code of Practice for electrical wiring installation. The system voltage not exceeding 650 V. viz I.S. 730. 1963 or the latest revision thereof.
2. **Definition:**
As given in I.S. Code of Practice shall apply.
3. **Pressure and frequency of supply :**
All current consuming devices shall be suitable for 415 V., 3phase, 50cycle A.C. supply.
4. **System of wiring:**
 - i) The wiring shall be carried out as per schedule. Power wiring must be in separate FRLS conduit and shall be kept separate and distinct from lighting wiring. All wiring must be done on the distribution system with main and branch distribution board at convenient centers. All conductors shall run as far as possible along the walls and ceilings so as to be easily accessible and capable of being thoroughly inspected. The contractor shall arrange balancing of circuits before hand over the electrical installation in consultation with Electrical Engineer of L.I.C.I.
 - ii) Within one month of taking over of the installation, the contractor shall submit to L.I.C.I. 3sets of completion drawings of the Electrical Installation in corpora ting all modifications made from time to time including cable & conduit lay-outs to the satisfaction of the Electrical Engineer of L.I.C.I. & the wiring plans shall be deemed to be "Drawings" within the meaning of the term as used in the general conditions of contract.
5. **Conductor:**
The conductors shall be of copper or otherwise stated in tender and shall be either FRLS insulated or FRLS insulated FRLS sheathed. The minimum sections of conductors used for wiring of light and plug points shall be 1.5 sq mm. Single core wires shall only be used.

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6. Cables:

- i) All cables including flexible cables used shall be ISI approved and confirming the ISI specifications.
- ii) Twin flexible cable shall be of minimum section area of 14/0.0076 and PVC insulated.
- iii) Wires as per specification of materials.

7. Fall of Potential:

The cross sectional area of all conductors inside buildings shall be so proportioned to their lengths that the drop in pressure between the main fuses and their furthest point shall not exceed two percent, with all the consuming devices in use.

8. Rating of Lamps and Fans:

As per the power rating of the equipment's as mentioned in Schedule of quantity.

9. Test :

The installation with fittings complete shall before current is switched on satisfactorily pass the following tests:

The whole of the lamps and appliance having been connected to the conductors and all switches and fuses being 'on', a pressure not less than twice the intended working pressure subject to a limit of 500 volts shall be applied and the insulation resistance of the whole or any part of the installation to earth must not be less in Mega ohms than 25 divided by the number of points as defined above. With all lamps and appliance removed from the circuits a similar test between poles may be demanded, provided that during the rainy season half the above test value will be accepted. Where any appliance referred to is a motor larger than one-half B.H.P. the insulation resistance of that particular circuit must be greater than one Meg ohm.

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10. Joints and Looping Back :

No joints shall be allowed in conductors. Neutral shall be looped from point to point whereas the live wires shall be looped in the switch board only from switch to switch.

11. Switches:

- i) All main switches (other than those of iron clad pattern) carrying over ten amperes shall be fitted for back connections.
- ii) All switches and circuit breakers shall be constructed in accordance with the I.E.E. 'wiring rules' 8th, edition no 67, or its latest version, provided also that springs shall be either of phosphor bronze, or if of steel, shall be copper or nickel plated; & that handles shall be so fastened that do not tend to unscrew or become loose (see clause 16)

12. Control at point of Entry of Supply:

There shall be one MCB for each main circuit (other than the neutral conductor of a 3-wire circuit) at the point of entry of the supply.

13. Distribution Boards:

- i) Main distribution board shall be metal clad and shall be provided with an iron clad switch and fuse on each pole of the circuit (MCCB / Switches).
- ii) Branch distribution board shall be provided with one fuse/ MCB for each circuit and one common neutral bar. Maximum number of points to be wired on each circuit shall be 6.
- iii) Switches and fuses of opposite polarity shall be mounted on separate bases with a shield of non-ignitable insulating material between the bases when placed one above the other.
- iv) In wiring a branch distribution board the total number of points shall be divided as far as possible evenly between the numbers of ways of the board. A spare circuit shall be left for future extensions.

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- v) MCB / Fuses shall be of approved materials and each circuit shall be clearly numbered from left to right in conspicuous figures to correspond with the wiring plans.
- vi) Two spare fuse carriers / MCB per main branch board shall be supplied for replacements.

14. Passing through the walls

- i) Except as laid down in clause 87 where conductors pass the walls, one of the following alternative methods shall be used.
A hole of suitable area shall be made in the wall through which the casing or conductor shall be carried so as to allow of an air-space of not less than one inch on three sides of the casing or conductors as the case may be or the conductors shall be carried in approved heavy gauge solid drawn or lap welded conduit tube on porcelain ducts. Where the supply is alternating current, the conductors of the circuit must be bunched.
- ii) Where a wall tube passes outside a building so as to be exposed to the weather, the outer end shall be bell mounted and turned downwards.

15. Branch Switches (see clause – 11)

In installation supplied from a three wire system, all branch switches shall be placed on the outer wires, switches (Other than those for multiple control) controlling not more than 10 amperes shall be of the Modular type switches shall be 'ON' when knob is down. Where the specified position of branch switches is altered, any such alterations of position after fixing will be paid for.

16. Ceiling Rose and Wall Sockets

Three pins Ceiling roses, and wall sockets shall not contain fuse terminals. Wall sockets shall comply with the requirements of the Bureau of Indian Standards.

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17. Fittings.

Where conductors are required to be threaded through tubes or channels formed in the metal work of fittings, these must be free from sharp angles or projecting edges and of such a size as will enable them to be wired with the conductors used for the final sub-circuits without removing the braiding taping or outer covering. As far as possible all tubes or channels should be for sufficient size to permit of 'looking back'. Where with approval of the Electrical Engineer of L.I.C. 'Electrolytic copper' wire is used for wiring fittings. The sub-circuit leads must terminate in a ceiling rose or connector from which this wire will be carried into the fittings. Flexible wire must not be used for wiring fittings, except portable fittings. All fittings must have not less than a half inch male nipple. Fittings and lamp holders for gas fitted lamps shall be adequately ventilated.

18. External and Road lamps ;

External and Road Lamps shall have weather proof fittings of approved design so as to effectually prevent the admission of moisture. An insulating distance piece of moisture proof materials must be inserted between the lamp holder nipple and that of the fitting. Flexible cord conductors and cord grip lamp holders must not be used where exposed to the weather. In verandahs and similar exposed situations rod pendants or ceiling plates shall be used.

19. Fans and Regulators

- (l) (a) All ceiling fans shall be suspended from a hook or shackle and insulated from the same. All joints in the suspension rod shall be screwed and all joints or bolts in connection therewith shall be additionally secured by means of split pins.
- (b) The canopy and wood block at the top of the suspension rod shall effectually hide the suspension.
- (c) The leading in wire shall be not smaller than 3/22 S.W. G. and shall be protected from being cut.
- (d) All fans shall be free from sparking, noise oil throwing and excessive heating.

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- (ii) (a) All fans shall be hung nine and half feet above the floor or as directed by the Engineer Incharge.
- (b) All fans shall be capable of running at full speed for one month without additional oiling and shall not overheat after eight hours continuous run at full speed.
- (c) Each fan shall have a speed regulator of Electronic type.

B. CONDUIT SYSTEM

1) Conduit to be continuous

Conduit shall be of approved pattern and manufacture and in accordance with the specification of the Bureau of Indian Standards & relevant IE rules.

2) Bunching of Wires

The wires of a circuit may be bunched together in a conduit, and if the supply is alternating current, they must be bunched.

3) Junction in Conduit

The lengths of conduit shall be joined by means of push fit joints or other approved joints. The greatest care shall be taken in preparing the conduit that no sharp edges or burrs are left which could damage the Insulation. The Elec. Engineer with a view to ensuring that the above provision has been carried out, may require (if he should consider if necessary) that the separate lengths of conduit etc. after they have been prepared shall be submitted for inspection before being fixed.

4) Fixing of Conduit

The FRLS conduit shall be fixed to the surface of walls, secured to plugs, arranged as in clause 15 by saddles and round-headed screws. No conduit shall be buried beneath the surface of the masonry unless so specified or approved by the Electrical Engineer, L.I.C.

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5) Bends of Conduit

The conduits shall be brought round the angles of walls by means of bends or elbows as may be directed.

6) Outlets

All outlets for fittings, switches, etc. shall be equipped with an approved outlet box.

7) Conductors

All conductors used in conduit wiring shall be stranded

8) Erection and Earthing of conduit

The whole system of conduit shall be erected and completed before the conductors are drawn in. In conduit system, the pipe must be continuous when passing through walls or floors, and no other form of insulating or protecting tube is required.

Section-I

Specifications for LT (1.1 KV Grade) Cables

1 Scope:

This specification covers supply, testing at works, supply at site, installation, termination, jointing, connection, testing at site, commissioning and handing over of 1.1 KV grade Cables.

2 System :

The 1.1 KV grade cables are to be used in under ground distribution system with normal system voltage of 415 V, 50 Hz, 3 phases, 4 wire systems.

3 Applicable standards:

Cables to be supplied under this specifications shall be with Copper or Aluminum conductor as specified, in drawings or Bill of Quantities, PVC insulated and PVC sheathed, armored and with an outer PVC protective sheath, heavy duty type and shall conform to,

IS 1554 (Part I) 1976: PVC insulated electric cables.

IS 1753: Aluminum conductors for insulated cables.

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IS 3961: Recommended current ratings for cables.

4 General requirements:

- 4.1 All cables shall be new without any kinks or visible damage. The manufacturers name, insulating material, conductor size and voltage class shall be marked on surface of the cable at distance not exceeding 1 M.
- 4.2 Procurement of cables shall be on the basis of the actual site measurements and the quantities given shall be regarded as a guide. Before procurement of the cables, the contractor shall submit the detailed measurement sheet, based on site measurement showing the various cable lengths and after approval of the same place orders for the cables.
- 4.3 Cables shall be tested at factory as per IS requirement. The tests shall incorporate routine tests, type tests and acceptance test. The Contractor shall produce the certificate for type test.
- 4.4 The cables shall be of one of the makes mentioned in the list of approved materials and with ISI mark.
- 4.5 The cables shall be supplied and delivered at site in original cable drums with manufacturer's name, cable size, type and length all clearly indicated on each drum.
- 4.6 The unit rate shall include loading, unloading, transport, storage, handling, unwinding the cable from cable drums and laying in the cable trench or erected on cable trays etc.
- 4.7 The cables shall be laid by skilled and experienced labour.
- 4.8 Where the cable route intersects roads, streets or pathways, RCC spun pipes shall be laid in the trenches to serve as cable ducts. The pipes shall be joined by RCC spun collars. The RCC pipes shall project at least 150 mm on either side of road crossing.

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- 4.9 The cable loops shall be kept at both ends of the cable length. Minimum 3 meters long loop shall be provided.
- 4.10 The contractor shall take care to see that the cables received at site are apportioned to various locations to ensure maximum utilization and cable joints are avoided. This apportioning shall be got approved before the cables are cut to lengths. Straight joints are permitted only under exceptional circumstances.

5 Storage and loading, unloading of cables. :

- 5.1 Cable drums shall not be stored one above the other. Sufficient space between cable drums shall be left for air circulation and the drums shall stand on battens placed directly under the flanges.
- 5.2 Cable drums shall be stored preferably on a plain ground without having any hard stones or any other sharp materials projecting above the ground surface. The drums shall be stored preferably in the shed or otherwise they shall be covered by tarpaulin.
- 5.3 Drums shall be stored and kept in such a way that bottom cable end does not get damaged.
- 5.4 Drums shall be rotated only in the direction marked on the drum.
- 5.5 Loading and unloading shall be done with material handling equipments only.

6 Erection and laying of cables:

6.1 General:

- 6.1.1 All cables shall be adequately protected against any risk of mechanical damage to which they may be liable in normal conditions of service.
- 6.1.2 When cables pass through holes in metal work, precautions shall be taken to prevent abrasion of the cables on any sharp edge. Cables passing through walls, ceiling or floor shall run through sleeves of Hume pipes of adequate dia. & after pulling of the cables both ends of the sleeve shall be sealed with fire resistance material to prevent spread of fire.

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6.1.3 In every vertical channel, duct, trucking or cable trench, containing cables and exceeding three meters in length, internal barriers shall be provided so as to avoid heating of the air at the top of the unit.

6.1.4 In every vertical cable shaft, cable trench or any passage of cable through wall, ceiling, floor etc. Barriers against spread of fire and smoke shall be provided.

6.1.5 In fire hazard areas extra care shall be taken to prevent spreading of fire in case of cable failure. Cables in these areas shall be covered by glass wool or embedded in sand in appropriate trenches. The cabling in such areas shall be done as per FIA approval and IEE regulations.

6.1.6 Communication cables should be laid away from the power cables to avoid electromagnetic interference. Minimum clearance of 300 mm shall be maintained.

6.1.7 Control and power cables shall be laid on separate trays.

6.1.8 The maximum number of power cables on a tray should be limited to six.

6.1.9 Every cable shall be installed where it will not be exposed to direct sunlight, rain, dripping water, oil or any corrosive substance.

6.1.10 The cables shall be erected and laid by either of the following methods and as specified in Bill of Quantities or specifications or drawings.

6.2 Cables laid in excavated trenches:

6.2.1 The cables for external electrification work shall be laid in specially prepared cable trenches as specified under the section for cable trenches.

6.2.2 While laying cable in the trench the cable end shall be pulled with pulling eye only after mounting the drum on the jacks.

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- 6.2.3 Care shall be taken in laying cables to avoid forming kinks. The drums shall be unrolled and cables run over wooden rollers, placed at intervals not exceeding 2 Mts.
- 6.2.4 High voltage cables are to be laid separately from other cables. HV, MV cables shall not be laid in the same trench and /or alongside of water main.
- 6.2.5 The cables shall not be laid directly in such soil, which is corrosive, and having components, which react with the insulating layer or amount of the cable. In such case it should be laid in pipes or concrete trenches.

6.3 Cables laid in built-up trenches:

- 6.3.1 For the cable route passing through the area which is proposed to be covered with concrete/tiles etc. the cables shall be laid in the R.C.C./brick masonry cable trenches as specified in the items. This arrangement shall be generally inside the building.
- 6.3.2 For the area outside the building but covered with concrete /tiles etc. the cables shall be laid through R.C.C. pipes laid in ground with brick chambers at both ends. The chambers shall be covered with C.I. heavy-duty covers if the area is prone for vehicular traffic otherwise medium duty C.I. covers should be provided.
- 6.3.3 Cables laid in the built-up cable trenches within the building shall be raised so as not to lay at the trench bottom. Cables shall be either secured to the wall by saddles or laid on hot dip galvanized angle iron brackets or cable trays, ladder, rack, trough etc.
- 6.3.4 Where cables are clamped to the wall a minimum clearance of 100 mm shall be maintained between wall and cable and minimum 150 mm vertical clearance shall be maintained between two cables. Where cables are laid on cable brackets, the brackets shall not be fixed more than 500 mm apart to avoid sag in the cables. Where cables are laid on cable tray /ladder /troughs /racks, minimum 300 mm distance shall be observed between adjacent tier of tray/ladder /troughs /racks, and cable shall be fixed minimum 25 mm away from wall and minimum 150 mm distance shall be observed between two adjacent cables. Cable shall be properly fixed with the tray /ladder /troughs /racks with cable tie or saddles.
- 6.3.5 The dimensions of the trenches shall be determined depending upon the maximum number of cables that is expected to be accommodated. Wherever specified,

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trenches shall be filled with fine sand and covered with RCC or steel chequered trench covers.

6.3.6 Where cables are to be installed under floors or above suspended ceilings or below ceiling, they shall be laid on a cable tray and shall be run in such positions that they are not liable to be damaged by contact with the floor or the ceiling or their fixture. The cable tray shall be properly fixed with tie rod to the ceiling. The concrete inserts for fixing the tie rod shall be put in place while casting the slab. The cable tray route shall be co-ordinated with other services. While laying the cables on the tray minimum 150 mm distance shall be observed between two adjacent cables. At least 25 % space shall be kept spare for any future installation.

6.3.7 The cable reaching for the motors in the mechanical room or plant room or machine room or service area shall be laid on cable tray. The cable reaching to motors shall be protected by rigid galvanized conduits up to a height of 300 mm above the floor. Above that height, the cable shall be protected by means of oil tight flexible metallic conduits fixed to the terminal box of the motor. The connection between the rigid conduit and the flexible conduit shall be done by a screwed coupling of an approved type. The flexible conduit shall be properly fixed with the terminal box of the motor by means of double hexagonal check nut.

6.4 Duct System:

Wherever specified cables shall be laid in underground ducts. The duct system shall consist of a required number of reinforced Hume pipes with simplex joints. Wherever asbestos cement pipes are used, the pipes shall be encased in concrete of 75 mm thick. The ducts shall be properly anchored to prevent any movement. The top surface of the cable ducts shall not be less than 60 cm below the ground level. The duct shall be at a gradient of at least 1:300.

The ducts shall be provided with inspection manholes at all direction changes and at required regular intervals for drawing the cables. The manholes shall be of reinforced concrete either cast-in-situ or precast. The manhole covers shall be cast iron and

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machine finished to ensure a perfect joint. The manhole covers shall be installed flush with the ground or paved surface. The ducts shall be properly plugged at the ends to prevent entry of water, rodents etc. Suitable duct markers shall be placed along the run of the cable ducts. The duct markers shall at least be 15 cm square embedded in concrete, indicating the voltage, number of ducts and the direction of run of the cable duct. Suitable cable supports made of angle iron shall be provided in the manholes for supporting the cables. Proper identification tags shall be provided for each cable in the manholes.

6.5 Cables on Trays / Racks:

6.5.1 Cable shall be laid on cable trays/racks wherever specified. Cable racks/trays shall be of ladder, trough or channel design suitable for the purpose. The nominal depth of the trays/racks shall be 150 mm. The width of the trays shall be as per the design shown on drawing.

The cable trays shall be made of steel or Aluminum as specified. The trays/racks shall be completed with end plates, tees, elbows, risers, and all necessary hardware. Steel trays shall be hot dip galvanized. Cable trays shall be erected properly to present a neat and clean appearance. Suitable cleats or saddles made of Aluminum strips with PVC covering shall be used for securing the cables to the cable trays. The cable trays shall comply with the following requirements.

- a. The tray shall have suitable strength and rigidity to provide adequate support for all contained cables.
- b. It shall not present sharp edges, burrs or projections injurious to the insulation of the wiring/cables.
- c. If made of metal, it shall be adequately protected against corrosion or shall be made of corrosion resistant material.
- d. It shall have side rails or equivalent structural members.
- e. It shall include fittings or other suitable means for changes in direction and elevation of runs.

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6.5.2 Installation of cable trays/racks:

- a. Cable trays shall be installed as a complete system. Trays shall be supported properly from the building structure. The entire cable tray system shall be rigid.
- b. Each run of the cable tray shall be completed before the installation of cables.
- c. In portions where additional protection is required, non-combustible enclosures to be used.
- d. Cable trays shall be exposed and accessible.
- e. Where cables of different system are installed on the same cable tray, non-combustible, solid barriers shall be used for segregating the cables.
- f. Cable trays shall be grounded by two nos. earth continuity wires. Cable trays shall not be used as equipment grounding conductors.

7 Cable trenches (excavated):

- 7.1 The cable trenches shall be excavated 60 cms below the finished ground level and shall have a minimum width of 300 mm for laying of single cable. When more than one cable are laid in the same trench, the width of the trench shall be increased such that the spacing between the cables is 200 mm and the end cables are at minimum 100 mm from the side of the trench. At the turning of the cable route the trench shall be dug with radius equal to 15 times the cable diameter.
- 7.2 The trenches shall be cut square with vertical sidewalls and with uniform depth. Suitable shoring and propping may be done to avoid caving in of trench walls. The floor of the trench shall be rammed and leveled. The bottom of the cable trench shall be prepared with 100 mm sand bed for laying the cables.
- 7.3 The cables shall be laid in trenches over the rollers. After the cable is laid and straightened it shall be covered with sand, and bricks shall be placed on top and at the side of the cable.
- 7.4 Wherever specified, half round RCC pipes shall be placed above the cables.

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- 7.5 The cable trench then shall be refilled with excavated materials after removing the stones and other sharp materials and the refilled materials shall be compacted with light ramming.
- 7.6 Approved Cable markers made of Aluminum or CI with 15 cms crown shall be provided along the route of cables at a spacing of 25 - 30 meters and also at both ends of crossings or at the cable turning point. The class, type, No. of cables shall be indicated on markers.
- 7.7 Cable shall be laid in Hume pipes at all road crossings and in GI pipes at the wall entries or at the crossing of the drains/gutters.

8. Cable jointing:

- 8.1 The straight joint in cable shall be avoided as far as possible by correctly apportioning the cable lengths. If unavoidable following precautions shall be taken while jointing.
- 8.2 Cable jointing shall be done as per the recommendations of the cable manufacturer. Jointing shall be done by qualified cable jointer. The location of the cable joint shall not be where the cable takes a bend also where the soil is loose and shows signs of subsidence.
- 8.3 Cable jointing boxes shall be of appropriate size suitable for PVC insulated cables of particular voltage ratings and shall be of approved make.
- 8.4 Jointing of cables in the joint boxes and the filling of the compound shall be done in accordance with the manufacturer instructions and in an approved manner. All straight or T joints shall be done in epoxy mould boxes. All terminal leads of conductors shall be heavily soldered up to at least 50 mm length.
- 8.5 All cables shall be joined colour-to-colour and tested for insulation resistance and continuity before commencing the jointing. The seals of cables shall not be removed

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until preparations for jointing are completed. Joints shall be finished on the same day, as commenced and sufficient protection from the weather shall be arranged.

8.6 Joints shall be made by means of suitable solder for conductor, the conductors being firmly bolted into the connections or ferrule and the whole end soldered with proper solder and flux or resin. Conductors shall be properly insulated with high voltage insulating tape and by using separators of approved size and pattern. The joints shall be completely filled with epoxy compound (with necessary tapping) to ensure proper filling of the box.

8.7 Epoxy compound shall be prepared as per manufacturer instructions. Oil, water or any other liquid shall not be added to the mixture and which shall be used within 30 minutes of mixing. The surface on which epoxy is to be used shall be free from dust, rust, oil, grease and shall be dry. Joint shall not be moved or disturbed until the epoxy has completely hardened.

9 Cable Termination. :

9.1 All cable terminations for conductors' up to 4 sq.mm may be insertion type and all higher sizes shall have finned copper compression lugs.

9.2 Cable termination shall be done in cable end box or in terminal box or in pillars etc. The end terminations shall be insulated with a minimum of six half lapped layers of PVC tape.

9.3 Cable terminations are to be made with flange type brass cable glands so as to grip inner and outer PVC sheaths and also the cable armour. Cable gland shall be bonded to earth.

9.4 The cable conductor ends are to be connected by crimping finned heavy-duty copper lugs. Hydraulic crimping tool shall be used.

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9.5 Every connection at a cable termination shall be mechanically and electrically sound and protected against mechanical damage and any vibration liable to occur shall not impose any harmful mechanical damage to the cable conductor

10 Testing of cable before laying and commissioning:

All tests shall be carried out in accordance with relevant IS codes of practice, IE rules and specifications.

10.1 100% cable drums shall be checked for continuity and cross continuity tests to ensure that there is no internal damage to the cable during transportation.

10.2 Prior to burying of cables, insulation resistance shall be measured with 500 V megger between the cores and all the cores to earth (amour) and results shall be recorded.

10.3 On completion of cable laying work, all the tests such as insulation resistance test, continuity test, sheathing continuity test, earth test etc. shall be conducted in the presence of the Architects.

10.4 After the cables are installed, before commissioning it shall be tested for high DC voltage test. The recommended volts and duration of the test between each core and metallic amour (earth) at 3 KV DC is for 5 minutes. During high voltage test all electrical equipments related to the cable installation must be earthed and adequate clearance shall be maintained from the other equipments and from work to prevent flash over.

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SECTION – II

Specifications for Earthing and Lightning Protection

1 Scope:

This specification covers supply of necessary materials, and erection at site, of complete earthing system including earth pits at the locations indicated, earth conductors from earth pit to the respective equipments, switchgears, pillars etc. and making connections, testing at site, commissioning and handing over.

2 Applicable standards:

The entire work of earthing system, shall conform to IS 3043, Indian Electricity Act and Rules and relevant regulations. The work of Lightning protection shall conform to IS 2309.

3 General requirements:

- 3.1 The earthing shall generally be carried out in accordance with the requirements of Indian Electricity Rules 1956 as amended from time to time and relevant regulations. Following IE rules are particularly applicable. IE Rule Nos. 32, 51, 61, 62, 67, 69, 88(2) & 90.
- 3.2 All earth connections shall be carefully made, visible for inspection, and the testing of individual earth electrode shall be possible.
- 3.3 All materials, fittings etc. used in earthing shall conform to IS specifications and in the absence of which the approval of competent authority shall be obtained.
- 3.4 The earthing electrode shall be at a minimum distance of 2 metres away from the outer face of the building wall. A minimum clearance of twice the depth of the electrode shall be maintained between two earthing stations.
- 3.5 A brick masonry chamber to facilitate easy identification and for carrying out periodical tests and inspection shall be constructed on top of the earth pit.
- 3.6 All metal conduits, trunkings, cable sheaths, HT and MV switchgears, Transformers, distribution boards, meters, light fixtures, fans, and all other metal parts forming part of the work shall be bonded together and connected to earthing network as specified.

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- 3.7 Earthing system shall be mechanically robust and the joints shall be capable of retaining low resistance even after passage of fault currents.
- 3.8 Joints shall be soldered, tinned and double riveted. All the joints shall be mechanically, electrically continuous and effective. Joints shall be provided against corrosion.

4 Earth Electrodes:

- 4.1 The materials of earth electrode and earth conductors shall be galvanised iron unless specified otherwise in Bill of Quantities, specifications or drawings.
- 4.2 The earth electrodes shall be free from paint, enamel, grease etc.
- 4.3 The earth electrode shall be embedded as far as practicable in a moist soil and below permanent moist level.
- 4.4 The earth electrode shall not be installed in the proximity of a metal fence.

5 Types of earth electrodes:

The earth electrodes shall be either a pipe electrode or plate electrode, the details of which are as given in the following sections of specifications, drawings and BOQ.

6 Pipe electrode:

- 6.1 Pipe electrode shall consist of 2.5 meter long single piece G.I. pipe of min. 40 mm dia. as specified and shall be cut tapered at the bottom. 12 mm dia. holes shall be drilled with 75 mm spacing between the holes and in a staggered manner as indicated in IS 3043.
- 6.2 The electrode shall be buried vertically in a specially prepared earth pit of size 35 cm x 35 cm and the earth pit shall be filled with alternate layers of charcoal, salt and fine washed sand for a minimum thickness of 150 mm. A funnel with wire mesh inside shall be fixed to the top of the GI pipe for watering purpose.

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- 6.3 The earth conductor of 25 x 3 mm GI strip shall be connected to the electrode just below the funnel with proper terminal lugs and check nuts and the other end of earth conductor shall be connected to the equipotential bus of the equipments.
- 6.4 A masonry chamber with a cast iron cover hinged to the cast iron frame embedded in the top portion of the masonry shall be constructed on top of the GI pipe to house the funnel and the earth connection. The approximate size of the chamber shall be 300 mm x 300 mm and 300 mm deep.
- 6.5. The earth conductor from electrode shall be taken out of the masonry chamber through a protecting pipe embedded in the masonry.
- 6.6 The top of the masonry chamber shall be 50 mm above the finished ground level.

7 Plate Electrode:

- 7.1 The plate electrode shall consist of either copper plate of size 60cm x 60 cm x 3.15 mm or GI plate of size 60 cm x 60 cm x 6.3 mm, and as specified in the BOQ or drawings.
- 7.2 The electrode shall be buried vertically in a specially prepared earth pit, which shall be dug up to required depth, from the ground level. The earth plate shall be placed in the earth pit with its face vertical and embedded in the alternate layers of coal and salt for a minimum thickness of 15 cms.
- 7.3 The earth conductor shall of same material as of the earth electrode. For copper earth electrode copper strips shall be provided as conductor and for GI earth electrode GI strips shall be used as earth conductor. The size and material of the earth conductor shall be as specified separately in the Bill of Quantities or drawings. The earth conductors shall be connected to the earth electrode (plate) with G.I. nut bolts, check nuts and washers and welded at the edges and shall be brought up in the masonry chamber at the ground level.
- 7.4 The earth conductor shall be extended via the earth link provided in the masonry chamber. This link shall be connected to earth conductors from the earth plate and earth conductor going to equipments with two Nos. of nut bolts, check nuts

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and washers (all of GI) to make secured connections. This link can be removed for testing the earthing.

- 7.5 A 20 mm dia. G.I. pipe shall be provided from the masonry chamber to the top of the earth plate for watering purpose. The G.I. pipe shall be provided with a funnel at the top with wire mesh inside.
- 7.6 A masonry chamber with a cast iron cover hinged to the cast iron frame embedded in the top portion of masonry shall be constructed on top of GI pipe to house the funnel & the earth connection. The approx. size of the chamber shall be 300mmx300mmx300mm deep.
- 7.7 The earth conductor from electrode shall be taken out of the masonry chamber through a protecting pipe embedded in the masonry.
- 7.8 The top of the masonry chamber shall be 50 mm above the finished ground level.

8 Earth conductor:

All earthing conductors shall be of high conductivity copper and or GI as specified and shall be protected against mechanical injury or corrosion. The connection of earth continuity conductors of earth bus and earth electrodes shall be strong and sound and shall be rigidly fixed to the walls, cable trenches, cable trays or conduits and cables by using suitable clamps made of non ferrous metals.

- 8.1 The cross-sectional area of earthing conductor shall not be smaller than half that of the largest current carrying conductor, subject to the minimum size being not less than 1.5 sq.mm for copper and 2.5 sq.mm for Aluminium conductors and the upper limit being 70 sq.mm for copper and 120 sq.mm for Aluminium. The size of the galvanised iron earth continuity conductors may be equal to the size of the current carrying conductors with which they are to be used.
- 8.2 As a guideline the following sizes of earth continuity conductors shall be used for earthing installation

onward

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8.2.1 Size of earth conductors for lighting and power circuits.

Cross sectional area of current carrying Cu conductor Size in sq.mm	Cross sectional area of earth continuity Cu conductor Size in Sq.mm
1.5	1.5
2.5	2.5
4.0	4.0
6.0	6.0

8.2.2 Size of earth conductors from main switchboard to sub main switches or distribution boards.

Cross sectional area of current carrying conductor Copper/Alum. Size in sq.mm	Cross sectional area of earth continuity conductor Copper/Alum. Size in sq.mm
4	4.0
6	6.0
10	6.0
16	10
25	16
35	16
50	25
70	35
95	50
120	70

The size of an earth continuity conductor contained in a flexible cable or flexible cord shall be equal to that of the current carrying conductor.

9 **Earth connection:**

9.1 All metal clad switches and other equipment carrying single-phase current shall be connected to earth by a single connection. All metal clad switches carrying three-phase medium voltage and high voltage shall be connected with earth by two separate and distinct connections.

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9.2 The earthing conductors inside the building, wherever exposed shall be properly protected from mechanical injury by running the same in G.I. pipe of adequate size. Earthing conductors outside the building shall be laid 600 mm below the finished ground level.

9.3 The over lapping of strips at joints where required shall be minimum 75 mm. The joints shall be revetted in an approved manner. Lugs of adequate capacity and size shall be used for all termination of wires above 6 sq.mm size and bare copper wire above 2.5 mm dia. Lugs shall be bolted to the equipment body to be earthed after the metal body is cleaned of paint and other oily substance and properly tinned.

10 Connection of earthing conductor:

The earthing conductors are broadly divided in the following categories:

10.1 Main earthing conductor shall be taken from the earth electrode to the earth bus/connection at the main switchboard.

10.2 Sub-main earthing conductor shall run from the main switchboard to the sub-distribution boards.

10.3 Final earthing conductor shall run from the sub distribution boards to the final distribution boards.

10.4 Circuit earthing conductor shall run from the final distribution board to the exposed metal of the equipment to be earthed. This may run directly from final distribution boards or through earth leakage circuit breaker.

10.5 Metal conduits, cable sheathing and armouring shall be earthed at the ends adjacent to switch boards at which they originate or at the commencement of the run by an earthing conductor.

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- 10.6 Earthing conductor enclosed with the current carrying conductors within the flexible cord shall be used only in case of equipments connected by flexible cord.
- 10.7 Lighting fittings, switches and accessories shall also be provided with an earthing conductor even though they may be rigidly secured / fixed with metallic conduit.
- 10.8 The electrical resistance of earthing conductors shall be low enough to permit passage of fault current necessary to operate a fuse, protective device or a circuit breaker.

11 Prohibited Connection:

Use of following as earth conductor is not recommended, and strictly prohibited for earthing an installation or even as a link in an earthing system. Neutral conductor, sprinkler pipes or pipes conveying gas, water or inflammable liquid, structural steel work, metallic enclosures or armour of cables and conductors, metallic conduits and lightning protection system conductors are all prohibited to be used as earth conductor.

12 Earth Resistance:

The earth resistivity of the soil where the earthing stations are located shall be submitted to the Architect before the earthing work starts and the approval shall be taken. If the earth resistance is too high and multiple electrode earthing does not give adequate low resistance to earth, then the soil resistivity immediately surrounding the earth electrodes shall be reduced by adding sodium chloride, calcium chloride, sodium carbonate, copper sulphate, salt and soft coke or charcoal in suitable proportions.

13 Testing:

On completion of the entire installation, the earthing network shall be tested for their resistance to earth in accordance with IS 3043. The contractor shall provide all meters, instruments & labour required for the test. The test results shall be submitted in triplicate to the Architects for approval. The following tests shall be conducted.

- a. Earth resistance of electrodes
- b. Impedance of earth continuity conductors.
- c. Effectiveness of earthing.

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14 Lightning Protection:

Lightning protection network shall be provided for the specified buildings and locations for protection against lightning strikes. The network shall essentially consist of Air-termination units, down conductors, roof conductors, test terminals and earth electrodes etc. The entire system shall conform to IS requirements.

14.1 Air-terminations:

- a) An air-termination shall consist of a 1200 mm long, 25 mm dia 14 SWG Cu tube with 100 mm dia Cu sphere fixed at the top of the tube. The Cu sphere shall be fixed with 5 nos. 125 mm long and 12.5 mm dia threaded Cu spikes.
- b) The complete assembly shall be fixed at a highest possible location and shall project at least 1500 mm above the network on which it is fixed.
- c) All air termination shall be effectively secured against overturning by means of rod brackets and additional supports as required, which shall be permanently and rightly attached to the building. The method and nature of fixing should be simple, solid and permanent.

14.2 Down Conductors and Roof Conductors:

- a) GI strip of specified size shall be used as down / roof conductors and the conductors shall be without sharp bends, upturns and kinks.
- b) As far as possible, the joints shall be avoided in down/roof conductors. In down conductor below ground level there shall be no joint. However in a total system where joints are unavoidable, the jointing shall be with approved method only. The joints shall be mechanically and electrically effective. The joints may be clamped, screwed, bolted, but preferably welded. The length of overlap at the joints shall not be less than 200 mm. Contact surface at joint shall be cleaned and then inhibited from oxidation with suitable non corrosive compound.

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- c) The conductors shall be adequately protected against mechanical damage but for which metal pipes shall not be used.

14.3 Test Links and Testing:

Each down conductor will be provided with a testing point in a position convenient for testing but inaccessible for interference. No connection other than one direct to an earth electrode shall be made below a testing point. Testing points shall be with Copper. The ohmic resistance of the lightning protective system with air termination but without earth connection shall be measured and should be a fraction of an ohm. Earth resistance shall be measured in accordance with IS: 3043.

14.4 Earth Terminations and Electrodes:

Each down conductor shall have an independent earth termination. It should be capable of isolation for testing purposes. Earth electrodes shall be constructed and installed in accordance with IS: 3043.

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SECTION – III

Specifications for MCB DB, MCB, RCCB, Panel Boards and other electrical works

1 Miniature Circuit Breaker Distribution boards:

- 1.1 Miniature circuit breaker distribution boards shall conform to IS 2675, IS 8623 and shall be suitable for operation on three phase, 4 wire, 415 V, 50 Hz, AC supply or single phase, 2 wire, 230 V, 50 Hz, AC supply.
- 1.2 The MCB distribution board shall be in sheet steel enclosures with removable type cover with additional door for protecting accidental operation.
- 1.3 Enclosure and door shall be made out of 16 SWG CRCA sheet steel and powder coated and of approved shade. The interior shall be off white finish. The DB shall be totally enclosed with dust and vermin proof construction and shall be of double door type. The DB boxes shall be as supplied by the original manufacturer.
- 1.4 Where distribution boards are specified to be complete with an isolator as incomer, the isolator shall be double pole for SP and N distribution boards and 4 pole for TP and N distribution boards.
- 1.5 Where distribution boards are specified to be complete with MCB + ELCB as incomer, the MCB + ELCB shall be double pole for SP and N distribution boards and 4 pole for TP and N distribution boards.
- 1.6 Bus bars shall be finned copper. The internal connections in the DB shall be by using stranded copper conductor, FRLS insulated wire with copper lugs crimped at both ends. Neutral busbar and earth busbars shall also be provided in the enclosure. Neutral busbar shall have equal rating of phase busbars.
- 1.7 Distribution boards shall be provided with circuit identification by means of directory on the front cover. Upon completion of the works, the contractor shall provide and fix accurate framed circuit lists for all distribution boards. These shall consist of perspex

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envelopes, fixed securely by an approved method on the inside face of each distribution board front cover into which shall be inserted a neatly typed list of circuits, indicating the number of circuits, phase, cable, size, number of points connected, circuit rating and the loading. The contractor, shall also provide and fix by means of brass screws tapped into the D.B. cover, labels, with black letter on a white background for all distribution boards, MCB + ELCB, Isolators etc. The engraving on the labels and the inscription on the circuit lists shall be approved by the Architects before the work is carried out.

- 1.8 All incoming terminals shall be fully shrouded.
- 1.9 The conduit entry plates shall be removable type and shall be provided at top and bottom. All the conduits shall be properly terminated using glands, grips, checknuts, female adapters with bush etc.
- 1.10 Wiring shall be terminated properly using crimping type copper lugs/sockets. Identification ferrules shall be provided on all wires. Each circuit shall have an independent neutral.
- 1.11 Two No. Earth terminals shall be provided on each Distribution Board.
- 1.12 Distribution boards shall be installed surface mounted or recessed mounted as specified and erected at the locations shown.

Surface mounted DB shall be mounted on a suitable size frame made out of GI ZED section. The hole fasts of the frame shall be grouted in the wall with cement mortar and the frame shall be painted with two coats of red oxide and two coats of enamel paint of approved shade. The DB shall be mounted on this frame with proper size nut bolts.

Recessed mounted DB shall be erected in the chase/cut portion of the wall. The cutting of the walls shall be done while constructing the wall and shall be of adequate size to comfortably accommodate the DB. The cut portion shall be smoothed and made

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plain and shall be fine finished. The DB shall be fixed in this chased portion with suitable clamps and bolts. The top cover of the DB cabinet shall be projecting out of the wall surface and free from any obstruction so as to open the same smoothly.

2 Miniature Circuit Breakers:

- 2.1 MCB's shall be manufactured in accordance with IS 8828 having a short circuit breaking capacity category 10 kA at both 240 volts 50 Hz. and 240/415 V, 50 Hz and complying with the test requirements for both reference calibration temperatures of 20 degree C and 40 degree C.
- 2.2 All miniature circuit breakers shall be rated to withstand the fault currents of the circuits they protect without causing any interference in any other protective device associated with the distribution system. At the same time the design of the circuit breakers shall be such that, it will protect the circuit for which it is intended and not cause or allow other protective devices to operate when fault conditions apply.
- 2.3 Miniature circuit breakers shall be capable of carrying its full rated current continuously without tripping out.
- 2.4 All the miniature circuit breakers shall be fitted with a magnetic undelayed tripping mechanism. These shall have overload and short circuit elements.
- 2.5 Time current characteristic of the MCB shall match with that of HRC fuses.

3 Residual current operated circuit breakers (RCCB)

- 3.1 RCCB's shall be manufactured in accordance with IS 12640 and IS 8828 having a short circuit breaking and earth fault protection up to 9 KA at both 240 Volts 50 Hz and 240/415 V, 50 Hz and complying with the test requirements as per IS 2640.
- 3.2 RCCB shall be designed to interrupt the circuit during an earth fault, overload or short circuit. All RCCB shall be high sensitive and calibrated to trip the power supply when the residual current is more than 50 % of its calibrated rating. This means that a 30 mA sensitivity RCCB should trip when the residual current is in the range of 15 to 30 mA and a 300 mA RCCB should trip when the residual current is in the range of 150 to 300 mA.

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- 3.3 The RCCB's shall be truly current operated, which means that it shall be totally independent of the main voltage for tripping. RCCB must operate for nominal voltage well below the maximum safe value of 10 volts. RCCB shall interrupt the circuit within 30 milisec at a leakage current of 30 mA.
- 3.4 RCCB shall be provided with a neutral advance mechanism. RCCB shall be functioning even in the event of failure of neutral and/or any one or two of phase supply conductor. RCCB shall be provided with trip free mechanism ensuring that the device cannot be reclosed / reset if the fault persists. RCCB shall be functioning even in the case of interchange of load and supply side connections.
- 3.5 Test button shall be provided to check the correct operation of the unit.
- 3.6 RCCB shall be designed for a very long life of a minimum of 20,000 operations and shall be capable of withstanding inrush current of 4 to 8 times the rated current. For the proper functioning the RCCB should not require any connection of earthing on the device.
- 3.7 The device should have high tripping accuracy of less than 5% of rated tripping current. The RCCB shall be provided with clear indication to show whether the tripping is due to current leakage or overload/short circuit.
- 3.8 The MCB section of RCCB shall be provided with arc chambers and vents are also to be provided to release the arcing products in the atmosphere, so as to increase contact lift and to prevent damage to the insulation. The self-extinguishing thermoset plastic material shall be used for body and shall have a modular construction. The device should be vibration proof.

4 Moulded Case Circuit Breakers (MCCB)

MCCB's used shall be suitable for 440 V, AC, 50 Hz supply and shall be capable of withstanding electrical and mechanical stress due to short circuit capacity as specified for individual requirement. The MCCB shall be compact in size, dust and vermin proof with quick make and break operating mechanism. The construction shall be such as to

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ensure maintenance and current setting adjustment without removing the MCCB from the panel. The MCCB shall be suitable for interlock with panel door on which it is mounted

SECTION - IV

Specifications for Medium Voltage Distribution Panel Boards

1 Scope:

This section shall cover supply, assembly, installation, connection, testing and commissioning of medium voltage distribution panel boards as described in this specifications, drawings and schedule of quantities.

2 System:

All the medium voltage distribution panel boards shall be suitable for operation on three phase, 4 wire or single phase, 2 wire with normal system voltage of 415/240 volts, 50 Hz, A.C. supply with solidly grounded neutral system.

3 Weather condition at site:

The panel boards shall be suitable for continuous operation and designed to withstand heaviest conditions at site.

- a) Temperature range: 40 to 45 ° C
- b) Relative humidity: 50 to 80 %
- c) Weather: Dusty

4 Applicable IS Standards:

The panel boards to be supplied under this specification shall confirm to latest editions of relevant Indian Standards and Indian Electricity rules and regulations. The following Indian Standards shall be complied with.

IS 4237: General requirements for switch gear and control gear for voltage not exceeding 1000 V.

IS 2208: HRC cartridge fuse links upto 610 V.

IS 2705: Current transformers

IS 1248: Electrical Indicating Instruments.

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- IS 375:** Switch gear bus-bars, main connection and auxiliary wiring, marking and arrangement for.
- IS 2147:** Degree of protection provided by enclosures for low voltage switchgear and control gear.
- IS 2675:** Enclosed distribution fuse boards and cutouts.
- IS 2557:** Danger notice plates.
- IS 1567/4047:** Specifications for switch fuse units.
- IS 3072 (I):** Installation and maintenance of switchgears.

TECHNICAL CONDITIONS ELECTRICAL

5 General:

5.1 Shop drawing:

Prior to fabrication of the panel boards, the contractor shall submit for the approval of Engineer In-charge, the shop / vendor drawing and design calculations indicating type, size, short circuit rating of all the electrical components used, busbar size, internal wiring size, panel board dimension, colour, mounting detail etc. The contractor shall submit manufacturer's catalogues of the electrical components installed in the panel boards.

5.2 Inspection:

At all reasonable times during production and prior to transport of the panel boards to site, the contractor shall arrange and provide all the facilities at manufacturer's plant for inspection and testing and any stage inspection agreed upon.

5.3 Test certificates:

Testing of panel boards shall be carried out at factory or at site as specified in Indian Standards in the presence of LIC Representative. The test results shall be recorded on prescribed forms. The test certificates for the test carried out at factory or at site shall be submitted in duplicate to the Engineer-Incharge for approval.

6 Cubical type Panel boards:

6.1 Construction:

6.1.1 Structure

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The panel board shall be metal enclosed sheet cubical, compartmentalized suitable for indoor or outdoor installation having dead front, floor mounting type. All M.S. sheets used in the construction of panel boards shall be 16 SWG (1.6 mm) thick unless specified otherwise in the item and shall be folded and braced as necessary to provide a rigid support for all components. Joints of any kind in sheet steel shall be seam welded, all welding slag ground off and welding pits wiped smooth with plumber metal.

The panel boards shall be totally enclosed, completely dust and vermin proof. Gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust proof. All doors and covers shall be lockable and fully gasketed with foam rubber or neoprene rubber strips.

All panels and covers shall be properly fitted and secured with the frame, and holes in the panel correctly positioned. Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with bolt and nuts. Self-threading screws shall not be used in the construction of panel boards. Suitable base channels (min size 75 mm x 75 mm x 5 mm thick) shall be provided at the bottom. A Clearance of 300 mm between the floor of the panel board and the bottom of the lower most units shall be provision Panel boards, if necessary shall be preferably arranged in multitier formation. The panel boards shall be of adequate size with a provision of spare space (as jointly decided with the Architect) to accommodate possible future additional switchgear. The size of the panel boards shall be designed in such a way that the internal space is sufficient for hot air movement, and the electrical component does not attain temperature more than 40 degree Celsius. Opening for natural ventilation shall be provided and shall have screens or grills made of brass or stainless steel wire mesh.

The panel boards shall be provided with removable sheet steel plates at top and bottom with knockout holes of appropriate size and number in conformity with the number, and size of incoming and outgoing conduits /cables.

The panel boards shall be designed to ensure maximum safety during operation, inspection, connection of cables, maintenance and repairs etc. with bus bar system

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energised. Means shall be provided to prevent shorting of power and /or control terminals due to accidental drop of maintenance tools etc. inside the panel board. Partitions between feeder compartments, busbar chamber, cable alleys, vertical panels etc. shall be provided to take care of this aspect. The panel boards shall be sufficiently rigid to support the equipment without distortion under normal and short circuit condition; they shall be suitably braced for short circuit duty.

For buses and cables, access shall be limited from front and top only. All other equipment shall be mounted on the front side, (unless specified otherwise for any specific panel) and shall be accessible from the front. All joints and connections shall be made by cadmium plated high tensile steel bolts, nuts and washers secured against loosening.

It shall be possible to insert any new cable and to connect all load side wiring with the bus bar energized, without any special precautions. Opening of the bus bar chamber shall be possible with special tools only.

6.1.2 **Protection clause:**

All the outdoor panel boards shall have protection clause of IP 55. The complete board shall be double jacketed with insulation material to withstand outdoor temperature. All the indoor panel boards shall have protection clause IP 52.

6.1.3 **Powder coating:**

All sheet steel work shall undergo a seven tank process of degreasing pickling in acid, cold rinsing, phosphatising, passivating and then treated with powder coating treatment. The finishing shall be of shade as approved by the Architect. The interior surface shall have similar finish.

6.1.4 **Circuit compartments:**

Each switch fuse units and meters shall be housed in a separate compartment and shall be enclosed on all sides. Sheet steel hinged lockable door shall be duly inter locked with the breaker/switch fuse units in "ON" and "OFF" position. However it shall be possible to bypass this interlock for inspection purpose.

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6.1.5 **Instrument compartment:**

Separate and adequate compartment shall be provided for accommodating instruments, indicating lamps, control contactors /relays, and control fuses etc. These components shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker/switch fuse units bus bar and connections.

6.1.6 **Bus bars and wiring:**

The bus bars shall be of three-phase four wire system with separate neutral and earth bar. The bus bar and interconnection between bus bars and various components shall be with high conductivity, hard drawn, electrolytic copper strips.

The bus bar shall be of rectangular cross section designed to withstand full load current for phase bus bars and full rated current for neutral bus bars and shall be extensible on either side. The bus bar shall have uniform cross-section through out the length. The rating of the bus bars shall be as specified in BOQ and/or drawings.

The bus bars and interconnections shall be insulated with color coded insulation tapes/covers. The bus bars shall be supported on unbreakable, non-hygroscopic insulated supports at sufficiently close intervals to prevent sagging and shall effectively withstand electromagnetic stresses in the event of short circuit. The bus bars shall be housed in a separate compartment. The busbar shall be isolated with 3 mm thick hylum sheet to avoid any accidental contact. All bus bars connection shall be done by drilling holes in busbars & connecting by chromium plated brass bolt and nuts. Additional cross section of bus bars shall be provided in all distribution boards to cover up the holes drilled in the bus bars. Spring and flat washers shall be used for tightening the bolts. All interconnections between bus bars and circuit breakers/switches and between circuit breakers/switches and cable terminals shall be through solid copper strips of proper size to carry full rated current. These strips shall be insulated with insulating tapes/covers.

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All interconnections in the panel shall be with Cu busbars for switchgears of ratings 63 A and above. For switch gears below 63 A, flameproof Cu wires to be used with lugs crimped at both ends.

All busbars shall be tinned copper strips of the given cross section. Unless otherwise specified all bus bars are to be designed taking maximum current density of 800 Amp per sq inch.

All bus bars are to be covered with heat shrinkable PVC sleeves of red, yellow, blue and black colours to indicate various phases and neutral bar clearly.

6.1.7 **Terminals:**

The outgoing terminals and neutral link shall be brought out to a cable alley suitably located and accessible from the panel front. The current transformers for instruments metering shall be mounted on the terminal blocks. No direct connection of incoming or outgoing cables to internal components of the panel board is permitted. Only one conductor may be connected in one terminal. Adequate no of spare terminals of required size shall be left in each compartment.

6.1.8 **Wire ways:**

A horizontal wire way with screwed covers shall be provided at the top to take interconnecting control wiring between different vertical sections.

6.1.9 **Cable compartments:**

Cable compartments of adequate size shall be provided for easy termination of all incoming and outgoing cables entering from bottom or top. Adequate proper supports shall be provided in the cable compartments to support cables. All outgoing and incoming feeder terminals shall be brought out to terminal blocks in the cable compartment.

6.1.10 **Earthing:**

Tinned copper earth bars of suitable size shall be provided for the entire length of the panel. Provision shall be made for connection from this horizontal earth bar to the earth

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pit on both side of panel board. The earth continuity conductor of each incoming and outgoing feeder shall be connected to the vertical earth bar.

All non-current carrying parts and the framework of panel board shall be connected to this earth bar. All doors and movable parts shall be connected to earth bus with flexible copper connections. Armour of the cable shall be properly connected with earthing clamp, and the clamp shall be bonded with the earth bar.

6.1.11 **Name plate, labels and directory:**

A nameplate with switchgear designation shall be fixed at the top of the panel board. A separate nameplate giving feeder details shall be provided for each panel. Engraved nameplates shall be of 3-ply (red-white-red or black-white-black) lamicoid sheets. Size of the letters shall be 5 mm. Nameplates shall be fastened by screws and not by adhesive. Size of letter for Main nameplate shall not be less than 20 mm.

Engraved PVC labels shall be provided on all incoming and outgoing feeders. Single line circuit diagram showing the arrangements of circuit inside the panel board shall be pasted on inside of the panel door and covered with transparent laminated plastic sheet. PVC labels shall be provided for spare circuits also.

Panel boards shall be provided with a directory indicating the area or loads served by each circuit breaker, the rating of breakers, size of conductors, etc. The directory shall be mounted in metal holder with a clear plastic sheet on inside surface of the front door.

6.1.12 **Danger notice plates:**

Danger notice plates with symbol as per IS shall be provided on panel boards.

6.1.13 **Internal components:**

The panel boards shall be equipped complete with all type of required number of circuit breakers, switch fuse units, contactors, relays, fuses, meters, instruments, indicating lamps, push buttons, equipment, fittings, busbars, cable boxes, cable

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glands etc., and all the necessary internal connections/wiring as required and as indicated on relevant drawings.

Components necessary for proper complete functioning of the panel boards, but not indicated on the drawings and specifications shall be supplied and installed.

All part of the panel board carrying current including the components, connections, joints and instruments shall be capable of carrying their specified rated current continuously, without temperature rise exceeding the acceptable values of the relevant specifications at any part of the panel boards.

The de rating of the different items resulting from the prevailing conditions like room temperature shall be allowed for while selecting the components.

All units of the same rating and specifications shall be fully interchangeable.

1. Switches:

Switches shall be air break type as per IS 4047. The switch operating handle shall be front mounted and interlocked with the door when the switch is in ON position. The live parts shall be shrouded with suitable insulating barrier so as to prevent accidental contact with the live parts after opening the cubicle front door.

3. Control switches:

Ammeter selector switches shall have make before break feature on its contacts. The selector switches shall generally have four positions for reading three phase currents and neutral. The voltmeter selector switch shall also have four positions and the fourth shall be OFF position. Remote trip /off selector switch shall be lockable in OFF position.

4. Indicating lamps:

The indicating lamps shall be LED type.

5. Measuring and Indicating instruments:

All measuring and indicating instruments shall be Digital type, in square pattern moving from 90 deg. scale, 96mm x 96mm, flush mounting type. Instrument shall be of accuracy class 1 as per IS 1248. Ammeters for motor and other feeders shall be graduated for full load current of motor with a compressed scale at the end for at least 6 times full load current. The KW meter and PF meter shall be suitable to measure

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unbalanced loads on 3-phase 4 wire system. PF meter shall be in 0.5 - 1 - 0.5 range. CT's shall be resin cast, with class 1 accuracy and 15 VA burden. The energy meters shall be CT operated electrolytic type.

6. Push buttons:

Push buttons shall be suitable for panel mounting type and comprise of a contact element and an actuator. The contacts shall be of silver alloy and of 10 A continuous current rating. Each push button shall be provided with 1 NO + 1 NC contacts, but if required 2 NO + 2 NC contacts be provided. Colour of the knob shall be as per IS.

7. Packing and transport:

The bigger size panel boards shall be shipped to site in wooden crates. They shall be wrapped with polythene sheets before being placed in crates to prevent damage to the finish. Crates shall have skid bottoms for handling. All panels shall have one set of two silica gel bags, which shall be checked periodically both while in storage and while in service. The smaller size panel boards shall be transported to site with polythene sheets wrapped all along and wooden frame to cover the same.

8 Storage at site:

The panels shall be stored in a well ventilated, dry place and suitable polythene covers shall be provided for necessary protection against moisture.

9 Installation:

The panel boards shall be installed at the location as indicated in the drawings. The contractor shall submit for approval a shop drawing indicating room size, panel size and method of installation prior to installation. The cubicle type panel board shall be installed on suitable foundation. Foundation shall be as per the dimensions supplied by the panel manufacturer. The foundation shall be flat and level. Suitable grouting holes shall be provided in the foundation. Suitable MS base channel shall be embedded in foundation on which the panel can be directly installed. If the panel is provided with an angle iron pedestal or base plate the same shall be grouted firmly in the floor. The panel boards shall be properly aligned and erected in plumb and bolted to the foundation by bolt parallel to the walls.

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After installation of the panel boards, various components of the boards shall be checked and be put in working order. The cables laid through cable trench or on cable trays/racks etc. shall be terminated on the bottom plate or top plate as the case may be, by using siemens type brass compression glands. The individual cables shall then be led through the panels to the required feeder compartments for necessary terminations. The cables shall be clamped to the supporting arrangement. The switchboard earth bus shall be connected to the local earth grid. Connection of cables shall be by crimping type Cu lugs using hand operated or hydraulic crimping tool as per cable sizes.

10 **Testing:**

1) **Testing at factory:**

Panel boards shall be inspected at factory at pre-assembly stage and any modifications or changes as suggested shall be incorporated. The panel boards shall be again inspected and tested at the factory after assembly of all components and completion of all inter-connections and wiring. The tests shall include all routine and type tests as per relevant ISS.

2) **Testing and pre-commissioning checks at site:**

Panels shall be commissioned only after the successful completion of the following tests. The tests shall be carried out in the presence of the Architect.

2.1 **Pre-commissioning checks:**

- 1) Check all panels are aligned in line and properly erected in plumb.
- 2) All withdrawals portions shall be capable of smooth extraction and isolation.
- 3) All main and auxiliary bus bar connections shall be checked and tightened.
- 4) All wiring terminations and bus bar joints shall be checked and tightened.
- 5) Wiring shall be checked to ensure that it is according to the drawing.

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- 6) Before fitting the covers, all chambers, compartments, cable alleys etc. shall be checked for complete cleanliness and removal of foreign matter if any, particularly the tools used for erection, cut pieces of cable armour etc. Covers shall be properly fixed with all fixing screws in places.
- 7) All mechanical interlocks shall be checked and all fuses and links shall be inserted.
- 8) Earthing connections shall be checked.
- 9) Operational checks on all circuit breakers or switchgear shall be carried out, both mechanically and electrically to check that correct indications are provided for closed and open positions.
- 10) The panels shall be checked to ensure that moisture ingress has not taken place during transit and storage.

2.2 Testing at site:

- 1) Insulation of the main circuit, that is, the insulation resistance of each pole to the earth and that between the poles shall be measured.
- 2) All wiring shall be tested for insulation resistance by a 1000 volts megger.
- 3) All relays and protective devices shall be tested for correctness of settings and operation by introducing a current generator and an ammeter in the circuit.
- 4) Insulation test shall be carried out both before and after high voltage test.

A high voltage test with 2.5 KV for one minute shall be applied between the poles and earth. Test shall be carried out on each pole in turn with the remaining poles earthed, all units racked in position and the breakers closed. Original test certificate shall be submitted along with panel.



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LIST OF PRINCIPAL MAKES / AGENCIES / BRANDS OF VARIOUS MATERIALS

SR. NO.	MATERIAL	MAKES		
1	COPPER CONDUCTOR PVC INSULATED FR / FRLS GRADE WIRES	(a) Finolex (b) Havells (c)V Guard (d) R R Cable (e) KEI (f) Svarn (g) Rallison (h) Polycab (i) Delton		
2	PVC INSULATED ARMoured CABLES (LT/HT)	(a) Finolex (b) Fort Gloster (c) CCI (d) R R Cable (e) Delton (f) KEI (g) Havells (h) Svarn (i) Rallison (j) Polycab		
3	MAIN SWITCH WITH HRC FUSES	(a) L & T	(b)SIEMENS	(c) Havells
4	MAIN SWITCHES WITH REWIRABLE FUSE	(a) L & T	(b) CROMPTON	(c) HAVELLS
5	MCCB	(a) SIEMENS	(b) L & T	(c) SCHNIED-ER MJ
		(d) LEGRAND	(e)Havells	
6	MCB / ELCB / ELMCB / DB	(a) LEGRAND	(b) SIEMENS	(c) SCHNEIDER MJ
		(d) L&T	(e)Havells	
7	CHANGE OVER SWITCH / SWITCH FUSE UNIT UPTO 100 AMP	(a) HPL	(b) L & T	(c) HAVELLS
		(e) SIEMENS		
8	CHANGE OVER SWITCH / SWITCH FUSE UNIT ABOVE 100 AMP	(a) HPL	(b) L & T	(c) SIEMENS
		(e) HAVELLS		
9	RISING MAINS	(a) GEC	(b) SCHNIEDER-M J	(c) L&T
		(d) Siemens	(e) Legrand	
10	PVC CONDUIT (ISI MARK)	(a) PRECISION	(b) AVON PLAST	(c) ESSARKE
		(d) SUDHAKAR	(e) KALINGA	(f) AKG
		(g) Finolex		
11	PVC CASING CAPING	(a) PRECISION	(b) KALINGA	(c) AKG

		(d) SUDHAKAR	(e) Diamond	(f) Modi
12	M.S. CONDUIT	(a) SUPREME	(b) BEC	(c) NIC
		(d) AKG		
13	FLOOR TRUNKING SYSTEM	(a) LEGRAND	(b) Honey Well	(c) PRECISION
		(d) MODI		
14	G.I. PIPE	(a) JINDAL	(b) SENITH	(c) PRAKASH
		(d) TATA	(e) GST	(f) APOLLO
15	MODULAR SWITCHES, ACCESSORIES & ELECTRONIC REGULATOR	(a) ANCHOR ROMA	(b) SSK	(c) LEADER
		(d) Havells	(e) Honey Well	(f) L & T
16	NON MODULAR SWITCHES, ACCESSORIES & ELECTRONIC REGULATOR	(a) ANCHOR	(b) LEADER	(c) SSK
		(d) CPL	(e) Havells	(f) L & T
17	INDUSTRIAL PLUG & SOCKET	(a) LEGRAND	(b) HAVELLS	(c) CROMPTON
		(d) L & T	(e) Anchor	(f) Honey Well
18(i)	CEILING / EXHAUST / WALL FAN	(a) USHA	(b) CROMPTON	(c) ORIENT
		(d) BAJAJ	(e) ALMONARD	(f) Havelles
		(g) Rallison		
18(ii)	BLDC FANS	(a) USHA	(b) CROMPTON	(c) ORIENT
		(d) BAJAJ	(e) ALMONARD	(f) Havelles
		(g) Rallison	(h) Atomberg	
19	INDOOR LIGHT FITTINGS	(a) PHILIPS	(b) WIPRO	(c) CROMPTON
		(d) GE	(e) Havells	(f) Osram
		(g) Bajaj	(h) Elenserve	(i) Jaquare
		(j) Banburry		
20	OUTDOOR LIGHT FITTINGS	(a) PHILIPS	(b) WIPRO	(c) CROMPTON
		(d) GE	(e) Havells	(f) Osram
		(g) Bajaj	(h) K- LITE	(i) Elenserve



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		(j) Jaquare	(k) Banburry	
SR. NO.	MATERIAL	MAKES		
21	CABLE GLANDS	(a) COMET (d) SIEMENS	(b) DOWELLS	(c) BRACO
22	LUGS	(a) DOWELLS	(b) COMET	(c) Braco
23	CONNECTORS	(a) ELMEX (d) Wago	(b) CONNECTWELL	(c) PHOENEX
24	MOTOR STARTER	(a) SIEMENS (d) Kriloskar (g) KSB (j) Decon	(b) L & T (e) Texmo (h) Sharp	(c) CROMPTON (f) Sugana (i) Mahindra
25	MONOBLOCK PUMP	(a) KIRLOSKAR (d) Wilo (g) Suguna (j) Mahindra	(b) CROMPTON (e) Grundfos (h) KSB (k) Decon	(c) CRI (f) Texmo (i) Sharp
26	LIGHTENING ARRESTOR	(a) PACTIL (d) G.K. ELECTRICALS	(b) HECO	(c) ATLAS
27	TRANSFORMER	(a) PACTIL (d) KIRLOSKAR (g) Voltamp	(b) EMCO (e) GEC (h) BHEL	(c) CROMPTON (f) TESLA (i) Areva
28	A.B. SWITCH & D.O. FUSE	(a) PACTIL (d) ATLAS	(b) JENCO	(c) CROMPTON
29	SELECTOR SWITCH	(a) KAYCEE (d) AE	(b) SIEMENS (e) L&T	(c) C & S
30	INDICATING LAMPS	(a) VAISHNO (d) L&T	(b) ESSEN (e) GE	(c) PHILIPS
31	CONTACTORS	(a) SIEMENS (d) Schnieder-MJ	(b) L & T	(c) ABB
32	MEASURING INSTRUMENTS	(a) AMP	(b) MECO	(c) AE

		(d) ENERCON	(e) PROK-DV's	(f) L & T
33	PF IMPROVEMENT CAPACITOR & APFC PANEL	(a) EPCOS	(b) NEPTUNE	(c) L & T
		(d) CROMPTON	(e) Havells	
34	RELAY FOR AUTOMATIC PF IMPROVEMENT	(a) EPCOS	(b) CONZERVE	(c) L & T
		(d) Havells		
35	CURRENT TRANSFORMER	(a) AE	(b) RISHABH	(c) KUPPA
		(d) L & T		
36	DATA CABLES & FACTORY MADE PATCH CHORDS	(a) LEGRAND	(b) D LINK	(c) FINOLEX
		(d) MOLEX	(e) AMP	(f) KEI
			(g) Poly Cab	
37	INFORMATION OUTLET / RJ 45 CONNECTORS / RJ – 11 SOCKETS	(a) D LINK	(b) LEGRAND	(c) MOLEX
		(d) SYSTEMAX	(e) AMP	
38	TELEPHONE WIRES	(a) FINOLEX	(b) DELTON	(c) HAVELLS
		(d) RR KABLE	(e) KEI	(f) Poly Cab
			(g) Rallison	
39	RG 6 CABLE FOR TV	(a) FINOLEX	(b) DELTON	(c) NATIONAL
			(d) KEI	(e) Poly Cab
40	JACK PANEL	(a) D LINK	(b) LEGRAND	(c) MOLEX
		(d) SYSTEMAX	(e) VALRACK	(f) AMP
41	RACK	(a) VALRACK	(b) DIGITRON	(c) HCL
		(d) A LINK	(e) D-Link	
42	FIRE ALARM PANEL	(a) oneywell/System Sensor	(b) Notifier	(c) Mircom/Secutron
		(e) Ravel	(f) Agni	
43	SMOKE/HEAT DETECTOR	a) Apollo	b) Morley ias	c) Edward
		d) System sensor/Honey well	e) Mircom/secutron	f) Notifier
		g) Ravel	h) Agni	
44	MANUAL CALL POINT/HOOTER/RESPONSE INDICATOR	a) Honeywell/System Sensor	b) Notifier	c) Simplex
		d) Mircom/secutron	e) Morley ias	f) Ravel
		g) Agni		

Note:

All Switch-gear and the Distribution Boards should be clearly marked with Red, Yellow, Blue and Black colour for phases and neutral. All busbar enclosures Angle iron frame and switch-gears should be painted with battleship grey oil paint. Danger and caution boards at appropriate places on main boards and Distribution Boards should be fixed. All controlling main switches on main boards and distribution boards should clearly indicate with white oil paint lettering the floor and section controlled by it. All equivalent alternative materials used on the job will have to be approved by Engineer In-charge of LIC before it is actually used. If any item is installed without prior approval, the contractor will be asked to dismantle the installation and use materials as specified. The insulated wire used for concealed wiring shall be with Red, Yellow, Blue colour for respective phases, Black for neutral & Green for earth wires.

E-Tender for ARC (Annual Rate Contract) of Electrical Repair & Maintenance Works at DO & its Properties ,Dehradun for FY 2023-24 & onward**Properties area wise in three groups' i.e. Group-A, Group- B & Group-C**

Name of Group	Number of Branches under the Group.
GROUP-A	D.O.Building, CBO-I,CBO-II, CBO-III, CAB, P&GS, (Dehradun), LIC Colony, all S.Os(S.O.Doiwala, ISBT, Survey Chowk, Nehru colony etc.) & Guest Houses EDMS /RMF centre Kunwa Wala, and other property in local area of Dehradun
GROUP-B	B.O.-I, B.O-II (Haridwar), BO-I, BO-II (Roorkie), BO-I, BO-II (Saharnpur), B.O.Deoband, B.O.Gangoh. B.O.Vikasnagar, B.O. Kotdwar. B.O.Rishikesh. S.O Lakhsar, Bahadrabad , CLIA-Sahranpur, Saharanpur and all other properties in these areas.
GROUP-C	B.O.Srinagar, B.O.Gopeshwar, B.O.Uttarkashi, B.O.New Tehri & Staff qtrs at New Tehri, B.O.Mussoorie & Guest house with other property at Mussoorie , all S.Os. (Naugaon, Pauri, Rudraprayag etc.) and other properties in these area.

Location in the above areas (hills and mufasil / Plane / local) may increase of decrease. Rates will be unified for all branches on over all basis including transport /loading/ connections / removing old unserviceable material as per detailed out in tender.



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**LIFE INSURANCE CORPORATION OF INDIA
ENGINEERING DEPARTMENT**

Divisional Office,Dehradun

GENERAL TENDER RATES-ELECTRICAL 2023-24

Schedule of GTR Rates.

S.No	DESCRIPTION	UNIT	ITEM RATE
	1 -WIRING		
	WIRING IN STEEL & PVC CONDUIT		
1.1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with piano type switch, phenolic laminated sheet, suitable size MS box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1285.00
1.2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface /recessed steel conduit, 2 way piano type switch, phenolic laminated sheet, suitable size MS box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1609.00
1.3	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1305.00
1.4	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface /recessed steel conduit, 2 way 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.	Point	1737.00

1.5	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	meter	380.00
1.6	Wiring for light/ power plug with 4X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit alongwith 2 Nos. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	meter	580.00
1.7	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required.		
1.7.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	meter	287.00
1.7.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	meter	324.00
1.7.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	meter	375.00
1.7.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	meter	516.00
1.7.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	meter	623.00
1.7.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire	meter	826.00
1.7.7	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	meter	491.00
1.7.8	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	meter	594.00
1.7.9	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	meter	810.00
1.7.10	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	meter	1022.00
1.7.11	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	meter	1442.00
1.8	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 piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1017.00
1.9	Wiring for twin control light point with 1.5 sq.mm FRLS 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 FRLS PVC insulated copper conductor the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1278.00

1.10	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.	Point	1036.00
1.11	Wiring for twin control light point with 1.5 sq.mm FRLS 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 FRLS PVC insulated copper conductor single core cable etc. as required.	Point	1370.00
1.12	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	meter	293.00
1.13	Wiring for light/ power plug with 4X4 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.	meter	471.00
1.14	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
1.14.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	meter	204.00
1.14.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	meter	241.00
1.14.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	meter	293.00
1.14.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	meter	385.00
1.14.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	meter	500.00
1.14.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire	meter	677.00
1.14.7	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	meter	359.00
1.14.8	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	meter	471.00
1.14.9	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	meter	661.00
1.14.10	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	meter	881.00
1.14.11	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	meter	1197.00



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1.15	Rewiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/recessed steel/PVC conduit including dismantling as required.	Point	559.00
1.16	Rewiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel/PVC conduit including dismantling as required.	Point	784.00
1.17	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/recessed steel/ PVC conduit as required.		
1.17.1	1 x 1.5 sq. mm	meter	39.00
1.17.2	2 x 1.5 sq. mm	meter	61.00
1.17.3	3 x 1.5 sq. mm	meter	83.00
1.17.4	4 x 1.5 sq. mm	meter	105.00
1.17.5	5 x 1.5 sq. mm	meter	136.00
1.17.6	6 x 1.5 sq. mm	meter	159.00
1.17.7	7 x 1.5 sq. mm	meter	189.00
1.17.8	8 x 1.5 sq. mm	meter	211.00
1.17.9	9 x 1.5 sq. mm	meter	250.00
1.17.10	10 x 1.5 sq. mm	meter	273.00
1.17.11	2 x 2.5 sq. mm	meter	86.00
1.17.12	3 x 2.5 sq. mm	meter	120.00
1.17.13	4 x 2.5 sq. mm	meter	155.00
1.17.14	5 x 2.5 sq. mm	meter	198.00
1.17.15	6 x 2.5 sq. mm	meter	232.00
1.17.16	7 x 2.5 sq. mm	meter	275.00
1.17.17	8 x 2.5 sq. mm	meter	310.00
1.17.18	9 x 2.5 sq. mm	meter	361.00
1.17.19	10 x 2.5 sq. mm	meter	395.00
1.17.20	2 x 4 sq. mm	meter	129.00
1.17.21	3 x 4 sq. mm	meter	181.00
1.17.22	4 x 4 sq. mm	meter	241.00
1.17.23	5 x 4 sq. mm	meter	295.00
1.17.24	6 x 4 sq. mm	meter	347.00
1.17.25	7 x 4 sq. mm	meter	401.00
1.17.26	8 x 4 sq. mm	meter	452.00
1.17.27	9 x 4 sq. mm	meter	508.00
1.17.28	10 x 4 sq. mm	meter	568.00



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1.17.29	2 x 6 sq. mm	meter	189.00
1.17.30	3 x 6 sq. mm	meter	267.00
1.17.31	4 x 6 sq. mm	meter	352.00
1.17.32	5 x 6 sq. mm	meter	431.00
1.17.33	6 x 6 sq. mm	meter	524.00
1.17.34	7 x 6 sq. mm	meter	602.00
1.17.35	8 x 6 sq. mm	meter	688.00
1.17.36	9 x 6 sq. mm	meter	766.00
1.17.37	10 x 6 sq. mm	meter	848.00
1.21	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
1.21.1	20 mm	meter	112.00
1.21.2	25 mm	meter	127.00
1.21.3	32 mm	meter	161.00
1.21.4	40 mm	meter	200.00
1.21.5	50 mm	meter	249.00
1.22	Supplying and fixing metal box of following sizes (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including painting etc. as required.		
1.22.1	75 mm X 75 mm X 60 mm deep	Each	156.00
1.22.2	100 mm X 100 mm X 60 mm deep	Each	183.00
1.22.3	150 mm X 75 mm X 60 mm deep	Each	189.00
1.22.4	150 mm X 150 mm X 60 mm deep	Each	273.00
1.22.5	180 mm X 100 mm X 60 mm deep	Each	215.00
1.22.6	200 mm X 125 mm X 60 mm deep	Each	283.00
1.22.7	200 mm X 150 mm X 60 mm deep	Each	311.00
1.22.8	200 mm X 150 mm X 75 mm deep	Each	318.00
1.22.9	200 mm X 250 mm X 60 mm deep	Each	410.00
1.22.10	200 mm X 250 mm X 75 mm deep	Each	428.00
1.22.11	200 mm X 150 mm X 100 mm deep	Each	361.00
1.22.12	200 mm X 250 mm X 100 mm deep	Each	444.00
1.22.13	200 mm X 300 mm X 60 mm deep	Each	460.00
1.22.14	200 mm X 300 mm X 100 mm deep	Each	492.00
1.22.15	250 mm X 300 mm X 60 mm deep	Each	532.00
1.22.16	250 mm X 300 mm X 100 mm deep	Each	573.00
1.23	Supplying and fixing following piano type switch/ socket on the existing switch box/ cover including connections etc. as required.		
1.23.1	5/6 A switch	Each	46.00



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1.23.2	2 way 5/6 A switch	Each	56.00
1.23.3	15/16 A switch	Each	106.00
1.23.4	3 pin 5/6 A socket outlet	Each	60.00
1.23.5	6 pin 15/16 A socket outlet	Each	120.00
1.23.6	Telephone socket outlet	Each	96.00
1.23.7	TV antenna socket outlet	Each	83.00
1.23.8	Bell push	Each	73.00
1.23.9	Electronic fan regulator switch type	Each	198.00
1.24	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
1.24.1	5/6 A switch	Each	90.00
1.24.2	2 way 5/6 A switch	Each	130.00
1.24.3	15/16 A switch	Each	137.00
1.24.4	3 pin 5/6 A socket outlet	Each	107.00
1.24.5	6 pin 15/16 A socket outlet	Each	173.00
1.24.6	Telephone socket outlet	Each	130.00
1.24.7	TV antenna socket outlet	Each	130.00
1.24.8	Bell push	Each	123.00
1.25	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.	Each	324.00
1.26	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	35.00
1.27	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
1.27.1	1 or 2 Module (75 mmX75 mm)	Each	261.00
1.27.2	3 Module (100 mmX75 mm)	Each	287.00
1.27.3	4 Module (125 mmX75 mm)	Each	301.00
1.27.4	6 Module (200 mmX75 mm)	Each	352.00
1.27.5	8 Module (125 mmX125 mm)	Each	398.00
1.27.6	12 Module (200 mmX150 mm)	Each	480.00
1.28	Supplying and fixing following Modular base & cover plate on existing modular metal boxes etc. as required.		
1.28.1	1 or 2 Module	Each	117.00
1.28.2	3 Module	Each	132.00
1.28.3	4 Module	Each	139.00



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1.28.4	6 Module	Each	160.00
1.28.5	8 Module	Each	185.00
1.28.6	12 Module	Each	238.00
1.29	Supplying and fixing metal box of 150 mm X 75 mm X 60 mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 A socket outlet and 5/6 A piano type switch, connections, painting etc. as required.	Each	314.00
1.29A	Supplying and fixing of suitable PVC / wooden Box heavy duty on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 A socket outlet and 5/6 A piano type switch, connections, painting etc. as required.	Each	187.00
1.30	Supplying and fixing metal box of 180 mm X 100 mm X 60 mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6 A & 15/16 A socket outlet and 15/16 A piano type switch, connections, painting etc. as required.	Each	428.00
1.30A	Supplying and fixing of suitable PVC / wooden Box Heavy duty on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6 A & 15/16 A socket outlet and 15/16 A piano type switch, connections, painting etc. as required.	Each	299.00
1.31	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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	484.00
1.32	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 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	514.00
1.33	Supplying and fixing 3 pin, 5 A ceiling rose on the existing junction box/ wooden block including connections etc. as required	Each	76.00

1.34	Supplying and fixing brass batten/ angle holder including connections etc. as required.	Each	115.00
1.35	Installation, testing and commissioning of wall fan/wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/ LED lamps per fitting, complete with all accessories including connections etc. as required	Each	104.00
1.36	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required	Each	267.00
1.37	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	Each	87.00
1.38	Providing and fixing plain 16/0.20 mm (0.50 sq.mm) twin flat flexible, FRLS PVC insulated, copper conductor cable, in PVC sleeve of suitable size on the floor/ wall, or side of the table/ door etc. as required	meter	39.00
1.39	Providing and fixing plain 16/0.20 mm (0.50 sq.mm) twin circular flexible FRLS PVC insulated, PVC sheathed copper conductor cable direct on the wall with PVC clips etc. as required.	meter	35.00
1.40	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube/lamp etc. directly on ceiling/ wall, including connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	Each	181.00
4.41	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube etc., including supplying and fixing ball and socket arrangement, 2 Nos. down rods of 20 mm dia X 1.6 mm thick steel conduit upto 30 cm length, painting and wiring the down rods and connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	Each	413.00

1.42	Providing and fixing extra conduit down rod of 20 mm dia, 2 X 10 cm length, wiring with 2 X 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable including painting etc. as required. (Note: More than 5 cm length shall be rounded to the nearest 10 cm and 5 cm or less shall be ignored)	Each	48.00
1.43	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 etc. as required.	Each	187.00
1.44	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.	Each	297.00
1.45	Supplying and fixing extra down rod of 10 cm length G.I. pipe, 15 mm dia, heavy gauge including painting etc. as required. (Note: More than 5 cm length shall be rounded to the nearest 10 cm and 5 cm or less shall be ignored)	Each	40.00
1.46	Supplying and fixing extra conduit down rod of 20 cm length G.I. pipe 15 mm dia, heavy gauge including painting etc. as required. (Note : More than 5 cm length shall be rounded to the nearest 10 cm and 5 cm or less shall be ignored)	Each	46.00
1.47	Numbering of ceiling fan/ exhaust fan/ fluorescent fittings as required.	Each	50.00
1.48	Installation of exhaust fan after making the suitable opening, including making good the damage, connection, testing, commissioning etc. as required		
1.49.1	Upto 450 mm sweep	Each	395.00
1.49.2	510 mm sweep	Each	564.00
1.50	Extra for fixing the louvers/ shutters complete with frame for a exhaust fan of all sizes.	Each	182.00
1.51	Painting of ceiling fan in installed position with one or more coats of spray painting with synthetic enamel paint of approved brand and manufacture to give an even shade, including cleaning of surface with detergent etc. as required	Each	135.00

1.52	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	823.00
1.53	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	660.00
1.54	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 Nos. 3 pin 5/6 A modular socket outlet and 2 Nos. 5/ 6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	Each	593.00
1.55	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, “C” curve including connections, painting etc. as required	Each	637.00
1.56	Supplying and fixing PVC batten/ angle holder including connections etc. as required.	Each	96.00
1.57	Dismantling of ceiling fan and painting the same with with one or more coats of spray painting with synthetic enamel paint of approved brand and manufacture to give an even shade, including cleaning of surface with detergent and replacing the damaged rubber reel, nuts and bolts with washers and safety pins, reinstalling the same as required	Each	229.00
2.00	MCCB, MCB & DB'S		
2.1	Providing and fixing following capacity TP&N disconnecter fuse switch unit inside the existing panel board with ISI marked HRC fuses including drilling holes in cubicle panel, making connections, etc. as required.		0.00
2.1.1	32 A, TP&N	Each	1887.00
2.1.2	63 A, TP&N	Each	2757.00
2.1.3	100 A, TP&N	Each	5335.00
2.1.4	125 A, TP&N	Each	6303.00



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2.1.5	160 A, TP&N	Each	7116.00
2.1.6	200 A, TP&N	Each	8495.00
2.1.7	320 A, TP&N	Each	12772.00
2.1.8	400 A, TP&N	Each	15618.00
2.2	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminalspreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.		
2.2.1	63 /100 A, 16 kA,TPMCCB	Each	3312.00
2.2.2	125 A, 16 kA,TPMCCB	Each	4227.00
2.2.3	160 A, 16 kA,TPMCCB	Each	5254.00
2.2.4	200 A, 16 kA,TPMCCB	Each	6744.00
2.2.5	200 A, 25 kA,TPMCCB	Each	9659.00
2.2.6	250 A, 25 kA,TPMCCB	Each	11385.00
2.2.7	250 A, 35 kA,TPMCCB	Each	12171.00
2.2.8	315 A, 35 kA,TPMCCB	Each	18927.00
2.2.9	400 A, 35 kA,TPMCCB	Each	18927.00
2.2.10	500 A, 35 kA,TPMCCB	Each	22406.00
2.2.11	630 A, 50 kA,TPMCCB	Each	24428.00
2.2.12	800 A, 50 kA,TPMCCB	Each	31705.00
2.2.13	63 /100 A, 30kA, FPMCCB	Each	6772.00
2.2.14	125 A, 36kA, FPMCCB	Each	7198.00
2.2.15	200 A, 36kA, FPMCCB	Each	13333.00
2.2.16	250 A, 36kA, FPMCCB	Each	15353.00
2.2.17	250 A, 50kA, FPMCCB	Each	16143.00
2.2.18	400 A, 50kA, FPMCCB	Each	37410.00
2.2.19	630 A, 50kA, FPMCCB	Each	37783.00
2.3	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)		
2.3.1	6 way, Double door	Each	1934.00
2.3.2	8 way, Double door	Each	2256.00
2.3.3	12 way, Double door	Each	2030.00
2.3.4	16 way, Double door	Each	2754.00

2.4	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
2.4.1	4 way (4 + 12), Double door	Each	3587.00
2.4.2	6 way (4 + 18), Double door	Each	4361.00
2.4.3	8 way (4 + 24), Double door	Each	5232.00
2.5	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.)		
2.5.1	4 way (4 + 12), Double door	Each	6587.00
2.5.2	8 way (4 + 24), Double door	Each	8913.00
2.5.3	12 way (4 + 36), Double door	Each	11252.00
2.6	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.		
2.6.1	Single pole	Each	224.00
2.6.2	Single pole and neutral	Each	525.00
2.6.3	Double pole	Each	575.00
2.6.4	Triple pole	Each	883.00
2.6.5	Triple pole and neutral	Each	1077.00
2.7	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	11.00
2.8	Supplying and fixing following rating, double pole, 240 V, MCB in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
2.8.1	40 A	Each	1160.00
2.8.2	63 A	Each	1160.00
2.9	Supplying and fixing following rating, TPN, 415 V, MCB in the existing MCB DB complete with connections, testing and commissioning etc. as required.		



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2.9.1	40 A	Each	2302.00
2.9.2	63 A	Each	2302.00
2.10	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.		
2.10.1	25 A	Each	1778.00
2.10.2	40 A	Each	2317.00
2.10.3	63 A	Each	2387.00
2.11	Supplying and fixing following rating, four pole, (three phase and neutral), 415 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.		
2.11.1	25 A	Each	2267.00
2.11.2	40 A	Each	2795.00
2.11.3	63 A	Each	2518.00
2.12	Supplying and fixing DP sheet steel enclosure on surface/recess along with 25/32 A, 240 V “C” curve DP MCB complete with connections, testing and commissioning etc. as required.	each	1025.00
2.13	Supplying and fixing TP sheet steel enclosure on surface/ recess along with 16/25/32 A, 415 V “C” curve TP MCB complete with connections, testing and commissioning etc. as required.	each	1396.00
2.14	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 A, “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.	Each	1421.00
2.15	Supplying and fixing 20 A, 415 V, TPN Industrial type socket outlet, with 4 pole and earth, metal enclosed plug top alongwith 20 A, “C” curve, TPMCB, 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.	Each	2271.00

2.16	Supplying and fixing 30 A, 415 V, TPN Industrial type socket outlet, with 4 pole and earth, metal enclosed plug top alongwith 30 A, “C” curve, TPMCB, 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.	Each	3601.00
2.17	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	236.00
2.18	Providing and fixing H.T. danger notice plate of 250 mm X 200 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	256.00
2.19	Supplying and fixing Cable End Box (Loose wire box)(IP 43) suitable for following single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with testing and commissioning etc. as required.		
2.19.1	For 6 way, Double door SPN MCBDB	Each	659.00
2.19.2	For 8 way, Double door SPN MCBDB	Each	730.00
2.19.3	For 10 way, Double door SPN MCBDB	Each	710.00
2.19.4	For 14 way, Double door SPN MCBDB	Each	791.00
2.20	Supplying and fixing Cable End Box (Loose wire box)(IP 43) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with testing and commissioning etc. as required.		
2.20.1	For 4 way, Double door TPN MCBDB	Each	947.00
2.20.2	For 6 way, Double door TPN MCBDB	Each	986.00
2.20.3	For 8 way, Double door TPN MCBDB	Each	1175.00
2.21	Supplying and fixing Cable end Boxes (IP43) suitable for tripple pole and neutral, sheet steel, vertical MCB distribuion board, 415 volt, on surface / recess complete with testing and commissioning etc.	Each	1026.00
2.22	Supply and Fixing of following sheet steel enclosure for moounting of MCB as required as directed.		
2.22.1	Double Pole	Each	371.00
2.22.2	Three / Four Pole	Each	441.00

3.1	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors,suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
3.1.1	100 mm width X 50 mm depth X 1.6 mm thickness	meter	476.00
3.1.2	150 mm width X 50 mm depth X 1.6 mm thickness	meter	530.00
3.1.3	225 mm width X 50 mm depth X 1.6 mm thickness	meter	604.00
3.1.4	300 mm width X 50 mm depth X 1.6 mm thickness	meter	681.00
3.1.5	375 mm width X 50 mm depth X 2.0 mm thickness	meter	890.00
3.1.6	450 mm width X 50 mm depth X 2.0 mm thickness	meter	997.00
3.1.7	600 mm width X 50 mm depth X 2.0 mm thickness	meter	1198.00
3.1.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	meter	814.00
3.1.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	meter	928.00
3.1.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1073.00
3.1.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1283.00
3.1.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1477.00
3.1.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1712.00
3.1.14	600 mm width X 75 mm depth X 2.0 mm thickness	meter	1313.00
3.1.15	750 mm width X 75 mm depth X 2.0 mm thickness	meter	1490.00
3.1.16	900 mm width X 75 mm depth X 2.0 mm thickness	meter	2219.00
3.2	Supplying and installing following size of perforated painted with powder coating M.S. cable trays bends with perforation not more than 17.5%,, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
3.2.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	761.00
3.2.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	893.00
3.2.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1076.00
3.2.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1261.00
3.2.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	1759.00
3.2.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2011.00
3.2.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	2490.00
3.2.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	1584.00
3.2.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	1848.00
3.2.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2174.00
3.2.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2666.00
3.2.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3137.00
3.2.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	5738.00
3.2.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	2741.00
3.2.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	3214.00
3.2.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	3714.00

3.3	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Tee with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
3.3.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	879.00
3.3.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1040.00
3.3.3	200 mm width X 50 mm depth X 1.6 mm thickness	Each	1268.00
3.3.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1498.00
3.3.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2111.00
3.3.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2418.00
3.3.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3010.00
3.3.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	1900.00
3.3.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2219.00
3.3.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2601.00
3.3.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3204.00
3.3.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3786.00
3.3.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4399.00
3.3.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	3297.00
3.3.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	3881.00
3.3.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	4494.00
3.4	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Cross Member with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
3.4.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	999.00
3.4.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1189.00
3.4.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1462.00
3.4.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1735.00
3.4.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2464.00
3.4.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2827.00
3.4.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3529.00
3.4.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2215.00
3.4.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2591.00
3.4.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3027.00
3.4.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3742.00
3.4.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4436.00
3.4.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	5159.00
3.4.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	3854.00
3.4.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	4549.00
3.4.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	5273.00

3.5	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Reducer with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
3.5.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	879.00
3.5.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1040.00
3.5.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1277.00
3.5.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1506.00
3.5.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2120.00
3.5.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2427.00
3.5.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3010.00
3.5.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	1900.00
3.5.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2219.00
3.5.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2601.00
3.5.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3204.00
3.5.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3786.00
3.5.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4399.00
3.5.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	3297.00
3.5.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	3881.00
3.5.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	4494.00
	Hot Dipped Galvanized Iron Cable Tray		
3.6	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray (galvanisation thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.		
3.6.1	100 mm width X 50 mm depth X 1.6 mm thickness	meter	587.00
3.6.2	150 mm width X 50 mm depth X 1.6 mm thickness	meter	628.00
3.6.3	225 mm width X 50 mm depth X 1.6 mm thickness	meter	785.00
3.6.4	300 mm width X 50 mm depth X 1.6 mm thickness	meter	844.00
3.6.5	375 mm width X 50 mm depth X 2.0 mm thickness	meter	1064.00
3.6.6	450 mm width X 50 mm depth X 2.0 mm thickness	meter	1162.00
3.6.7	600 mm width X 50 mm depth X 2.0 mm thickness	meter	1569.00
3.6.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1043.00
3.6.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1193.00
3.6.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1380.00
3.6.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1674.00
3.6.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	meter	1979.00

3.6.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	meter	2286.00
3.6.14	600 mm width X 75 mm depth X 2.0 mm thickness	meter	1714.00
3.6.15	750 mm width X 75 mm depth X 2.0 mm thickness	meter	1990.00
3.6.16	900 mm width X 75 mm depth X 2.0 mm thickness	meter	2290.00
3.7	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray “bends” (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required		
3.7.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	1016.00
3.7.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1114.00
3.7.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1485.00
3.7.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1624.00
3.7.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2130.00
3.7.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2352.00
3.7.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3309.00
3.7.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2094.00
3.7.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2437.00
3.7.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2848.00
3.7.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3272.00
3.7.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4242.00
3.7.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4922.00
3.7.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	3622.00
3.7.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	4271.00
3.7.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	4943.00
3.8	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray “Tee” (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.		
3.8.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	1164.00
3.8.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1213.00
3.8.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1725.00
3.8.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	1890.00
3.8.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2493.00
3.8.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	2754.00
3.8.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3898.00
3.8.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2453.00
3.8.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2907.00



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3.8.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3333.00
3.8.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4210.00
3.8.12	750 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4991.00
3.8.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	5805.00
3.8.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	4255.00
3.8.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	5029.00
3.8.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	5829.00
3.9	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray “Cross member” (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc.as required.		
3.9.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	1164.00
3.9.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1213.00
3.9.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	1742.00
3.9.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	2075.00
3.9.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	2725.00
3.9.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	3129.00
3.9.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	3911.00
3.9.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2459.00
3.9.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2858.00
3.9.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3338.00
3.9.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4139.00
3.9.12	750 mm width X 62.5 mm depth X 2 mm thickness	Each	4991.00
3.9.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	5805.00
3.9.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	4258.00
3.9.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	3725.00
3.9.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	4305.00
3.10	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray “Reducer” (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.		
3.10.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	1451.00
3.10.2	150 mm width X 50 mm depth X 1.6 mm thickness	Each	1684.00
3.10.3	225 mm width X 50 mm depth X 1.6 mm thickness	Each	2123.00
3.10.4	300 mm width X 50 mm depth X 1.6 mm thickness	Each	2475.00
3.10.5	375 mm width X 50 mm depth X 2.0 mm thickness	Each	3006.00
3.10.6	450 mm width X 50 mm depth X 2.0 mm thickness	Each	3263.00
3.10.7	600 mm width X 50 mm depth X 2.0 mm thickness	Each	4511.00

3.10.8	300 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2972.00
3.10.9	375 mm width X 62.5 mm depth X 2.0 mm thickness	Each	3471.00
3.10.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	4139.00
3.10.11	600 mm width X 62.5 mm depth X 2.0 mm thickness	Each	5223.00
3.10.12	750 mm width X 62.5 mm depth X 2 mm thickness	Each	5615.00
3.10.13	900 mm width X 62.5 mm depth X 2.0 mm thickness	Each	6511.00
3.10.14	600 mm width X 75 mm depth X 2.0 mm thickness	Each	4616.00
3.10.15	750 mm width X 75 mm depth X 2.0 mm thickness	Each	5685.00
3.10.16	900 mm width X 75 mm depth X 2.0 mm thickness	Each	6584.00
EARTHING			
4.1	Earthing with G.I. earth pipe 4.5 meter long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal/ coke and salt) as required.	Set	4707.00
4.2	Earthing with G.I. earth pipe 4.5 meter 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.	Each	6011.00
4.3	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 meter long etc. (but without charcoal/ coke and salt) as required.	Set	5485.00
4.4	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 meter long etc. with charcoal/ coke and salt as required.	Set	6552.00
4.5	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. (but without charcoal/ coke and salt) as required.	Set	11067.00
4.6	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. with charcoal/ coke and salt as required.	Set	12133.00

4.7	Supplying and laying 6 SWG G.I. wire at 0.50 meter below ground		
	level for conductor earth electrode, including connection/		
	termination with GI thimble etc. as required.	meter	45.00
4.8	Supplying and laying 25 mm X 5 mm copper strip at 0.50 meter		
	below ground as strip earth electrode, including connection/		
	terminating with nut, bolt, spring, washer etc. as required.		
	(Jointing shall be done by overlapping and with 2 sets of brass		
	nut bolt & spring washer spaced at 50 mm)	meter	852.00
4.9	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 meter		
	below ground as strip earth electrode, including connection/		
	terminating with G.I. nut, bolt, spring, washer etc. as required.		
	(Jointing shall be done by overlapping and with 2 sets of G.I. nut		
	bolt & spring washer spaced at 50 mm)	meter	126.00
4.10	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia		
	G.I. pipe from earth electrode including connection with brass		
	nut, bolt, spring, washer excavation and re-filling etc. as required.	meter	1360.00
4.11	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.	meter	619.00
4.12	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.	meter	252.00

4.13	Providing and laying earth connection from earth electrode with 4.00 mm dia copper wire in 15 mm dia G.I. pipe from earth electrode including connection with copper thimble excavation and re-filling as required.	meter	324.00
4.14	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	meter	1019.00
4.15	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	meter	214.00
4.16	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	meter	61.00
4.17	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required.	meter	136.00
4.18	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	meter	37.00
4.19	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	meter	112.00
4.20	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	meter	1853.00
4.21	S/I/T/C of Chemical Gel Earthing using GI Earth Electrode of minimum size 50 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	6800.00
4.22	S/I/T/C of Chemical Gel Earthing using GI Earth Electrode of minimum size 80 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	8300.00
4.23	S/I/T/C of Chemical Gel Earthing using Copper bonded Earth Electrode of minimum size 50 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	8000.00

4.24	S/I/T/C of Chemical Gel Earthing using Copper bonded Earth Electrode of minimum size 80 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	9500.00
4.25	S/I/T/C of Chemical Gel Earthing using Copper Earth Electrode of minimum size 50 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	10200.00
4.26	S/I/T/C of Chemical Gel Earthing using Copper Earth Electrode of minimum size 80 mm dia and 3.0 mtr long including required quantity of chemical including making bores etc complete as required as directed.	Each	11700.00
5-LIGHTNING			
CONDUCTOR			
5.1	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.	Each	454.00
5.2	Fixing of lightning conductor finial (single prong) with base plate including holes etc. complete as required.	Each	316.00
5.3	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/ sweating and soldering etc. as required.	Each	99.00
5.4	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required.(For horizontal run)	meter	110.00
5.5	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required. (For vertical run)	meter	173.00
5.6	Fixing of copper/ G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required. (For horizontal run)	meter	70.00
5.7	Fixing of copper/ G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required.(For vertical run)	meter	142.00

5.8	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 Nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	Each	106.00
5.9	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	meter	171.00
5.10	Laying copper/ G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	meter	66.00
6- MV CABLE LAYING			
6.1	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.		
6.1.1	Upto 35 sq. mm	meter	339.00
6.1.2	Above 35 sq. mm and upto 95 sq. mm	meter	355.00
6.1.3	Above 95 sq. mm and upto 185 sq. mm	meter	370.00
6.1.4	Above 185 sq. mm and upto 400 sq. mm	meter	416.00
6.2	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc. as required.		
6.2.1	Upto 35 sq. mm	meter	236.00
6.2.2	Above 35 sq. mm and upto 95 sq. mm	meter	251.00
6.2.3	Above 95 sq. mm and upto 185 sq. mm	meter	267.00
6.2.4	Above 185 sq. mm and upto 400 sq. mm	meter	312.00
6.3	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 and refilling the trench etc. as required, but excluding sand cushioning and protective covering.		
6.3.1	Upto 35 sq. mm	meter	175.00

6.3.2	Above 35 sq. mm and upto 95 sq. mm	meter	190.00
6.3.3	Above 95 sq. mm and upto 185 sq. mm	meter	205.00
6.3.4	Above 185 sq. mm and upto 400 sq. mm	meter	252.00
6.4	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation and refilling the trench etc. as required, but excluding sand cushioning and protective covering.		
6.4.1	Upto 35 sq. mm	meter	110.00
6.4.2	Above 35 sq. mm and upto 95 sq. mm	meter	125.00
6.4.3	Above 95 sq. mm and upto 185 sq. mm	meter	141.00
6.4.4	Above 185 sq. mm and upto 400 sq. mm	meter	187.00
6.5	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
6.5.1	Upto 35 sq. mm	meter	32.00
6.5.2	Above 35 sq. mm and upto 95 sq. mm	meter	50.00
6.5.3	Above 95 sq. mm and upto 185 sq. mm	meter	68.00
6.5.4	Above 185 sq. mm and upto 400 sq. mm	meter	117.00
6.6	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size in the existing masonry open duct as required.		
6.6.1	Upto 35 sq. mm	meter	25.00
6.6.2	Above 35 sq. mm and upto 95 sq. mm	meter	39.00
6.6.3	Above 95 sq. mm and upto 185 sq. mm	meter	55.00
6.6.4	Above 185 sq. mm and upto 400 sq. mm	meter	101.00
6.7	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size on wall surface as required.		

6.7.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	meter	48.00
6.7.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm		
	MS flat clamp)	meter	114.00
6.7.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/		
	40x3mm MS flat clamp)	meter	134.00
6.7.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm		
	MS flat clamp)	meter	198.00
6.8	Laying and fixing of one number PVC insulated and PVC		
	sheathed / XLPE power cable of 1.1 kV grade of following size		
	on cable tray as required.		
6.8.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	meter	39.00
6.8.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm		
	MS flat clamp)	meter	81.00
6.8.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/		
	40x3mm MS flat clamp)	meter	101.00
6.8.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm		
	MS flat clamp)	meter	162.00
6.9	Supplying and making cable route marker with cement concrete		
	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20		
	mm nominal size) of size 60 cm X 60 cm at the bottom and 50		
	cm X 50 cm at the top with a thickness of 10cm including		
	inscription duly engraved as required.	meter	513.00
6.10	Supplying and fixing cable route marker with 10 cm X 10 cm X 5 mm thick G.I. plate with inscription there on, bolted /welded to 35 mm X 35 mm X 6 mm angle iron, 60 cm and fixing the same in ground as required	meter	445.00
	ALUMINIUM CABLES		
6.11	Supply of following PVC/XLPE insulated aluminium Conductor armoured cable of 1.1KV Grade as required.		
6.11.1	Supply of 3.5c x 240 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV	Rm	1031.00

	grade Cable.		
6.11.2	Supply of 3.5c x 185 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	820.00
6.11.3	Supply of 3.5c x 150 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	657.00
6.11.4	Supply of 3.5c x 120 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	555.00
6.11.5	Supply of 3.5c x 95 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	444.00
6.11.6	Supply of 3.5c x 70 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	368.00
6.11.7	Supply of 3.5c x 50 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	271.00
6.11.8	Supply of 3.5c x 35 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	208.00
6.11.9	Supply of 4.0c x 25 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	179.00
6.11.10	Supply of 4.0c x 16 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	139.00
6.11.11	Supply of 4.0c x 10 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	125.00
6.11.12	Supply of 4.0c x 6 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	98.00
6.11.13	Supply of 2.0c x 10 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	93.00
6.11.14	Supply of 2.0c x 6 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	78.00
6.11.15	Supply of 2.0c x 4.0 sq. mm. XLPE insulated PVC sheathed Aluminium Conductor armoured LT, 1.1KV grade Cable.	Rm	67.00
	COPPER CABLES		
6.12	Supply of following PVC/XLPE insulated Copper Conductor armoured cable of 1.1KV Grade as required.		

6.12.1	Supply of 4.0c x 10.0.0sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	445.00
6.12.2	Supply of 4.0c x 6.0sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	277.00
6.12.3	Supply of 4.0c x 4.0 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	199.00
6.12.4	Supply of 4.0c x 2.5 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	146.00
6.12.5	Supply of 2.0c x 10.0 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	257.00
6.12.6	Supply of 2.0c x 6.0 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	162.00
6.12.7	Supply of 2.0c x 4.0 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	121.00
6.12.8	Supply of 2.0c x 2.5 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	93.00
6.12.9	Supply of 2.0c x 1.5 sq. mm. XLPE insulated PVC sheathed Copper Conductor armoured LT, 1.1KV grade Cable.	Rm	71.00
6.12.10	Supply of 2.0c x 2.5 sq. mm. XLPE insulated PVC sheathed Copper Conductor un-armoured LT, 1.1KV grade Cable.	Rm	76.00
6.12.11	Supply of 2.0c x 1.5 sq. mm. XLPE insulated PVC sheathed Copper Conductor un-armoured LT, 1.1KV grade Cable.	Rm	54.00
	CHAPTER 7-MV CABLE JOINTING & END TERMINATION		
7.1	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.		
7.1.1	2 X 6 sq. mm (19mm)	Each	210.00
7.1.2	2 X 10 sq. mm (19mm)	Each	211.00
7.1.3	2 X 16 sq. mm (22mm)	Each	224.00
7.1.4	2 X 25 sq. mm (22mm)	Each	227.00
7.1.5	2 X 35 sq. mm (25 mm)	Each	272.00
7.1.6	2 X 50 sq. mm (28mm)	Each	308.00
7.1.7	3 X 10 sq. mm (22mm)	Each	225.00
7.1.8	3 X 16 sq. mm (25 mm)	Each	237.00
7.1.9	3 X 25 sq. mm (25 mm)	Each	241.00



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7.1.10	3 X 35 sq. mm (28mm)	Each	308.00
7.1.11	3 X 50 sq. mm (32mm)	Each	327.00
7.1.12	3 X 70 sq. mm (35 mm)	Each	372.00
7.1.13	3 X 95 sq. mm (38mm)	Each	475.00
7.1.14	3 X 120 sq. mm (45 mm)	Each	523.00
7.1.15	3 X 150 sq. mm (50 mm)	Each	597.00
7.1.16	3 X 185 sq. mm (57mm)	Each	752.00
7.1.17	3 X 225 sq. mm (62mm)	Each	852.00
7.1.18	3 X 240 sq. mm (62mm)	Each	880.00
7.1.19	3 X 300 sq. mm (70 mm)	Each	1021.00
7.1.20	3½ X 25 sq. mm (28mm)	Each	274.00
7.1.21	3½ X 35 sq. mm (32mm)	Each	324.00
7.1.22	3½ X 50 sq. mm (35 mm)	Each	362.00
7.1.23	3½ X 70 sq. mm (38mm)	Each	410.00
7.1.24	3½ X 95 sq. mm (45 mm)	Each	516.00
7.1.25	3½ X 120 sq. mm (45 mm)	Each	537.00
7.1.26	3½ X 150 sq. mm (50 mm)	Each	611.00
7.1.27	3½ X 185 sq. mm (57mm)	Each	767.00
7.1.28	3½ X 225 sq. mm (62mm)	Each	872.00
7.1.29	3½ X 240 sq. mm (62mm)	Each	900.00
7.1.30	3½ X 300 sq. mm (70 mm)	Each	1048.00
7.1.31	3½ X 400 sq. mm (82mm)	Each	1364.00
7.1.32	4 X 10 sq. mm (25 mm)	Each	236.00
7.1.33	4 X 16 sq. mm (28mm)	Each	271.00
7.1.34	4 X 25 sq. mm (28mm)	Each	276.00
7.1.35	4 X 35 sq. mm (32mm)	Each	324.00
7.1.36	4 X 50 sq. mm (35 mm)	Each	367.00
7.2	Supplying and making outdoor end termination with cast resin compound including aluminium lugs and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.		
7.2.1	2 X 16 sq. mm	Each	1149.00
7.2.2	2 X 25 sq. mm	Each	1236.00
7.2.3	2 X 35 sq. mm	Each	1236.00
7.2.4	2 X 50 sq. mm	Each	1236.00
7.2.5	3 X 16 sq. mm	Each	1236.00
7.2.6	3 X 25 sq. mm	Each	1236.00
7.2.7	3 X 35 sq. mm	Each	1236.00
7.2.8	3 X 50 sq. mm	Each	1318.00
7.2.9	3 X 70 sq. mm	Each	1318.00
7.2.10	3 X 95 sq. mm	Each	1577.00
7.2.11	3 X 120 sq. mm	Each	1577.00
7.2.12	3 X 150 sq. mm	Each	1577.00
7.2.13	3 X 185 sq. mm	Each	2097.00



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7.2.14	3 X 225 sq. mm	Each	2097.00
7.2.15	3 X 240 sq. mm	Each	2421.00
7.2.16	3 X 300 sq. mm	Each	2421.00
7.2.17	3½ X 25 sq. mm	Each	1236.00
7.2.18	3½ X 35 sq. mm	Each	1318.00
7.2.19	3½ X 50 sq. mm	Each	1318.00
7.2.20	3½ X 70 sq. mm	Each	1442.00
7.2.21	3½ X 95 sq. mm	Each	1577.00
7.2.22	3½ X 120 sq. mm	Each	1577.00
7.2.23	3½ X 150 sq. mm	Each	2097.00
7.2.24	3½ X 185 sq. mm	Each	1656.00
7.2.25	3½ X 225 sq. mm	Each	2421.00
7.2.26	3½ X 240 sq. mm	Each	2421.00
7.2.27	3½ X 300 sq. mm	Each	2708.00
7.2.28	3½ X 400 sq. mm	Each	3087.00
7.2.29	4 X 16 sq. mm	Each	1236.00
7.2.30	4 X 25 sq. mm	Each	1236.00
7.2.31	4 X 35 sq. mm	Each	1318.00
7.2.32	4 X 50 sq. mm	Each	1318.00
7.3	Supplying and making straight through joint with cast resin compound including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.		
7.3.1	2 X 16 sq. mm	Each	2344.00
7.3.2	2 X 25 sq. mm	Each	2344.00
7.3.3	2 X 35 sq. mm	Each	2344.00
7.3.4	2 X 50 sq. mm	Each	2665.00
7.3.5	3 X 16 sq. mm	Each	2665.00
7.3.6	3 X 25 sq. mm	Each	2344.00
7.3.7	3 X 35 sq. mm	Each	2344.00
7.3.8	3 X 50 sq. mm	Each	2665.00
7.3.9	3 X 70 sq. mm	Each	3106.00
7.3.10	3 X 95 sq. mm	Each	3313.00
7.3.11	3 X 120 sq. mm	Each	3710.00
7.3.12	3 X 150 sq. mm	Each	3710.00
7.3.13	3 X 185 sq. mm	Each	4399.00
7.3.14	3 X 225 sq. mm	Each	4970.00
7.3.15	3 X 240 sq. mm	Each	4970.00
7.3.16	3 X 300 sq. mm	Each	6400.00
7.3.17	3½ X 25 sq. mm	Each	2665.00
7.3.18	3½ X 35 sq. mm	Each	2665.00
7.3.19	3½ X 50 sq. mm	Each	3106.00
7.3.20	3½ X 70 sq. mm	Each	3044.00
7.3.21	3½ X 95 sq. mm	Each	3710.00



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7.3.22	3½ X 120 sq. mm	Each	4399.00
7.3.23	3½ X 150 sq. mm	Each	4399.00
7.3.24	3½ X 185 sq. mm	Each	4970.00
7.3.25	3½ X 225 sq. mm	Each	5058.00
7.3.26	3½ X 240 sq. mm	Each	6113.00
7.3.27	3½ X 300 sq. mm	Each	7500.00
7.3.28	3½ X 400 sq. mm	Each	4416.00
7.3.29	4 X 16 sq. mm	Each	2344.00
7.3.30	4 X 25 sq. mm	Each	2665.00
7.3.31	4 X 35 sq. mm	Each	2665.00
7.3.32	4 X 50 sq. mm	Each	3106.00
7.4	Supplying and making straight through joint with heat shrinkable kit including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.		
7.4.1	2 X 16 sq. mm	Each	1901.00
7.4.2	2 X 25 sq. mm	Each	2173.00
7.4.3	2 X 35 sq. mm	Each	2173.00
7.4.4	2 X 50 sq. mm	Each	2173.00
7.4.5	3 X 16 sq. mm	Each	1901.00
7.4.6	3 X 25 sq. mm	Each	2173.00
7.4.7	3 X 35 sq. mm	Each	2173.00
7.4.8	3 X 50 sq. mm	Each	2173.00
7.4.9	3 X 70 sq. mm	Each	2949.00
7.4.10	3 X 95 sq. mm	Each	3084.00
7.4.11	3 X 120 sq. mm	Each	3979.00
7.4.12	3 X 150 sq. mm	Each	3979.00
7.4.13	3 X 185 sq. mm	Each	3979.00
7.4.14	3 X 225 sq. mm	Each	4313.00
7.4.15	3 X 240 sq. mm	Each	4313.00
7.4.16	3 X 300 sq. mm	Each	5355.00
7.4.17	3½ X 25 sq. mm	Each	2173.00
7.4.18	3½ X 35 sq. mm	Each	2173.00
7.4.19	3½ X 50 sq. mm	Each	2173.00
7.4.20	3½ X 70 sq. mm	Each	2949.00
7.4.21	3½ X 95 sq. mm	Each	3084.00
7.4.22	3½ X 120 sq. mm	Each	3979.00
7.4.23	3½ X 150 sq. mm	Each	3979.00
7.4.24	3½ X 185 sq. mm	Each	3979.00
7.4.25	3½ X 225 sq. mm	Each	4313.00
7.4.26	3½ X 240 sq. mm	Each	4313.00
7.4.27	3½ X 300 sq. mm	Each	5355.00
7.4.28	3½ X 400 sq. mm	Each	6985.00
7.4.29	4 X 16 sq. mm	Each	1901.00

7.4.30	4 X 25 sq. mm	Each	2173.00
7.4.31	4 X 35 sq. mm	Each	2949.00
7.4.32	4 X 50 sq. mm	Each	2949.00
7.5	Supplying and making end termination with brass cable gland and tinned copper lugs for following sizes of cable		
7.5.1	3.5 x 50 sqmm	Each	465.00
7.5.2	3.5 x 35 sqmm	Each	350.00
7.5.3	3.5 x25 sqmm	Each	310.00
7.5.4	4 x 16 sqmm	Each	245.00
7.5.5	4 x 10 sqmm	Each	200.00
	8-HV CABLE JOINTING & END TERMINATION		
8.1	Supplying and making indoor cable end jointing with cast resin compound, including lugs and other jointing materials, for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.1.1	70 sq. mm	Each	1819.00
8.1.2	120 sq. mm	Each	2326.00
8.1.3	240 sq. mm	Each	3112.00
8.1.4	300 sq. mm	Each	3164.00
8.2	Supplying and making outdoor cable end jointing with cast resin compound, including lugs and other jointing materials, for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.2.1	70 sq. mm	Each	4181.00
8.2.2	120 sq. mm	Each	4733.00
8.2.3	240 sq. mm	Each	5518.00
8.2.4	300 sq. mm	Each	5518.00
8.3	Supplying and making straight through cable jointing with cast resin compound, including ferrule and other jointing materials, for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.3.1	70 sq. mm	Each	3968.00
8.3.2	120 sq. mm	Each	4504.00
8.3.3	240 sq. mm	Each	6677.00



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8.3.4	300 sq. mm	Each	7599.00
8.4	supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.4.1	70 sq. mm	Each	10680.00
8.4.2	120 sq. mm	Each	13124.00
8.4.3	240 sq. mm	Each	14247.00
8.4.4	300 sq. mm	Each	14247.00
8.5	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.5.1	70 sq. mm	Each	16000.00
8.5.2	120 sq. mm	Each	17624.00
8.5.3	240 sq. mm	Each	19987.00
8.5.4	300 sq. mm	Each	19987.00
8.6	Supplying and making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core, XLPE aluminium conductor cable of 11 kV grade as required.		
8.6.1	70 sq. mm	Each	25551.00
8.6.2	120 sq. mm	Each	33391.00
8.6.3	240 sq. mm	Each	36731.00
8.6.4	300 sq. mm	Each	36731.00
9- MISC. CIVIL ITEMS			
9.1	Filling available excavated earth (excluding rock) in trenches, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 meter	cum	224.00
9.2	Excavation for cable trenches in soft soil, depth upto 1.2 m including dressing of sides lift upto 1.5 m, including	cum	573.00

	getting out		
	the excavated soil, refilling with sand and or good soil after laying		
	of cable/ pipe etc. in layers of 20 cm, ramming, watering and		
	disposal of surplus excavated soil as directed, within a lead of		
	50 meter.		
9.3	Deduct for not consolidation by ramming and watering while re-filling with sand and or good soil in cable/ pipe laying.	cum	127.00
9.4	Excavation of the cable trenches in hard rock not exceeding 1.5 meter in width, and lift upto 1.5 meter, including getting out the excavated soil and disposal of excavated soil as directed within a lead of 50 meter.	cum	1065.00
9.5	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep) and re-filling etc. as required		
9.5.1	100 mm dia	meter	1584.00
9.5.2	150 mm dia	meter	2402.00
9.6	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc. as required.		
9.6.1	100 mm dia	meter	580.00
9.6.2	150 mm dia	meter	635.00
9.6.3	250 mm dia	meter	855.00
9.6.4	300 mm dia	meter	1000.00
9.7	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and		

	cutting, jointing etc. in the existing trench, complete as required.		
9.7.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	meter	111.00
9.7.2	90 mm dia (OD-90 mm & ID-76 mm nominal)	meter	149.00
9.7.3	120 mm dia (OD-120 mm & ID-103 mm nominal)	meter	217.00
9.7.4	160 mm dia (OD-160 mm & ID-135 mm nominal)	meter	317.00
9.7.5	200 mm dia (OD-200 mm & ID-175 mm nominal)	meter	480.00
9.8	Supplying and laying of following size DWC HDPE pipe ISI		
	marked along with all accessories like socket, bend, couplers		
	etc. conforming to IS 14930, Part II complete with fitting and		
	cutting, jointing etc..direct in ground (75 cm below ground level)		
	including excavation and refilling the trench but excluding sand		
	cushioning and protective covering etc., complete as required.		
9.8.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	meter	217.00
9.8.2	90 mm dia (OD-90 mm & ID-76 mm nominal)	meter	254.00
9.8.3	120 mm dia (OD-120 mm & ID-103 mm nominal)	meter	323.00
9.8.4	160 mm dia (OD-160 mm & ID-135 mm nominal)	meter	422.00
9.8.5	200 mm dia (OD-200 mm & ID-175 mm nominal)	meter	524.00
10.0	FANS		
10.1	Supply and Erection of ceiling fans 48" double ball bearing, including providing necessary down wiring connector from ceiling roses to motor.	Each	1822.00
10.2	--do-- as above but 56" ceiling fan	Each	1961.00
10.3	P/F rubber roll for ceiling fan.	Each	66.00
10.4	Supplying and fixing of wall fans 400 mm sweep with metal blade	Each	2522.00
10.5	Supplying and fixing of wall fans 450 mm sweep with metal blade	Each	3333.00
10.6	Supplying and fixing of pedestal fans 400 mm sweep	Each	2924.00
10.7	Supplying and fixing of pedestal fans 300 mm sweep	Each	2810.00
10.8	Supplying and fixing of wall fans 300 mm sweep	Each	2300.00
10.9	S/f of wall fans 150 mm sweep	Each	1200.00
10.10	S/f of wall fans 225 mm sweep	Each	2000.00
10.11	Erection of wall braket fan and making connections	Each	120.00
10.12	Providing and fixing of 300 mm fresh air fan light duty alongwith grill including providing and fixing commercial ply and wooden frame or making hole and making good the damage.	Each	1836.00

10.13	Providing and fixing of 300 mm fresh air fan light duty alongwith grill on existing ply / Hole.	Each	1586.00
10.14	Providing and fixing of 225 mm fresh air fan light duty alongwith grill on existing ply / Hole .	Each	1632.00
10.15	Supply and Fixing of 300 mm , 1400 RPM Heavy Duty Exhaust Fan with metal blade including connection etc as required complete.	Each	3842.00
10.16	Supply and Fixing of 300 mm , 900 RPM Heavy Duty Exhaust Fan with metal blade including connection etc as required complete.	Each	3000.00
10.17	Supply and Fixing of 450 mm , 1400 RPM Heavy Duty Exhaust Fan with metal blade including connection etc as required complete.	Each	5310.00
10.18	Supply and Fixing of 450 mm , 900 RPM Heavy Duty Exhaust Fan with metal blade including connection etc as required complete.	Each	4500.00
10.19	S/f of fresh air fan 150 mm sweep with louver decorative	Each	1603.00
10.20	S/f of fresh air fan 200 mm sweep with louver decorative	Each	1684.00
10.21	S/F exhaust fan louver shutter suitable for 12" to 18" exhaust fan	Each	263.00
10.22	P/F fan hooks after cutting of slab and making good the damages.	Each	180.00
11.0	FITTINGS.		
11.1	Supplying and fixing with angle type/ mirror fitting with brass holder and 9W Retrofit type CFL & 6 "Dia Glass Globe , connections etc. as reqd..	Each	535.00
11.2	Supplying and fixing bulk head fittings with 10W LED	Each	1251.00
11.3	Supplying and fixing 9" dia surface type ceiling fitting with aluminium base with cylindrical moulded glass globe complete. with brass holder and 9 watts retrofit type CFL,necessary connections etc. as reqd	Each	709.00
11.4	Supplying and fixing fancy type wall bracket fittings with 9 watts Retrofit type CFL including connections etc as reqd.	Each	674.00
11.5	SITC of LED post top luminaire with minimum lumen output of 2000 and lumen efficacy should be minimum 80 lumens per watt including drivers with diffused acrylic globe etc complete including connection as required as directed.	Each	4500.00
11.6	Supply and fixing of recessed mountable LED luminaire size 595 X 595 (approx) full glow type with Min Lumen Output 3500 and lumen efficacy 90 lumen per watt on false ceiling complete including drivers etc. in all respects with necessary support from ceiling. The connection shall be made by providing 3 x 1.0sqmm. Cu.wires. Ref Model Philips RC380B G2 LED35S	Each	2850.00

11.7	Supply and Fixing of surface mountable LED Down Lighter fittings with minimum Lumen output of 1200 Lumens and lumen efficacy 90 lumen per watt including driver and connection etc. Complete as require	Each	1532.00
11.8	Supply and Fixing of surface mountable LED Down Lighter fittings with minimum Lumen output of 600 Lumens and lumen efficacy 90 lumen per watt including driver and connection etc. Complete as require	Each	1037.00
11.9	Supply and Fixing of 1200 MM long LED light fittings (Box type) with driver etc complete directly on wall including connection with 1.0sq.mm. Cu. wires. (The LED lamp and fixture shall be indivisual item.)	Each	891.00
11.10	- do - as above but with 20mm. dia MS Down Rod(1.5ft long) Ball socket, Round Block,check nuts, screws etc.	Each	1025.00
11.11	Supply and Fixing of 1200 MM long LED light fittings (integrated type) with driver etc as required complete directly on wall including connection with 1.0sq.mm. Cu. wires.	Each	431.00
11.12	Supply and Fixing of 10 W, 600 MM long LED light fittings (Box type) with driver etc as required complete directly on wall including connection with 1.0sq.mm. Cu. wires.(The LED lamp and fixture shall be indivisual item.)	Each	574.00
11.13	Supply and Fixing of LED flood light luminaire with minimum lumen output of 9000 lumens and lumen efficacy 90 l/w, IP 66 protection including drivers etc complete of approved make.	Each	9400.00
11.14	Supply and fixing of 2X36 W box type tube light fitting complete with connection with tube rod etc complete.	Each	700.00
11.15	Supply and fixing of 1X36 W box type tube light fitting complete with connection with tube rod etc complete.	Each	595.00
11.16	Supply and Fixing of LED Street Light Fitting with min 3600 Lumen output Ref. Model Philips BRP 409 LED CW 036 MR FG S1 PSU GR on 04 Mtr Hight GI pole including foundation plate, connection etc.complete as required.	Each	8002.00
11.17	Supply and Fixing of LED Street Light Fitting with min 3600 Lumen output Ref. Model Philips BRP 409 LED CW 036 MR FG S1 PSU GR.including connection etc.complete as required.	Each	6840.00
11.18	Supply and Fixing of LED Street Light Fitting with min 2000 Lumen output comply IP 65 with driver etc complete as required as directed.	Each	2586.00
11.19	Supply and Fixing of LED Flood Light Fitting of 45 watt with lumen efficacy of 90 lumen per watt comply IP 65 with driver etc including connection complete as required as directed.	Each	5115.00

11.20	Supply and Fixing of LED Flood Light Fitting of 70 watt with lumen efficacy of 90 lumen per watt comply IP 65 with driver etc including connection complete as required as directed.	Each	6276.00
11.21	Supply and Fixing of electronic driver for LED mirror optic fitting upto 36 watt capacity.	Each	886.00
11.22	Supply and fixing of 09 -14 W Compact Flouresent lamp (CFL)	Each	179.00
11.23	Supply and fixing of 09 -14 W PL	Each	144.00
11.24	Supply andf Fixing of 09-14 W LED Lamp	Each	192.00
11.25	Supply and fixing of 09-14 W PL ballast	Each	161.00
11.26	Supply and fixing of 15 -20 W Compact Flouresent lamp (CFL)	Each	255.00
11.27	Supply and fixing of 15 -20 W P.L.	Each	173.00
11.28	Supply and fixing of 15-20 W PL ballast	Each	207.00
11.29	supply and fixing of 36 Watt PL	Each	199.00
11.30	Supply and fixing of 40/60 / 100 W incandescent bulb	Each	40.00
11.31	Supplying and fixing 36/40 watt low loss Electronics / copper ballast as directed.	Each	252.00
11.32	Supplying and fixing 2 X36/40 wattas low loss Electronics Ballast.	Each	431.00
11.33	S/F of low watt loss copper wound / electronic Choke suitable for 11 to 20 watt flourescent lamp	Each	205.00
13.34	Supply and fixing of 5 W LED Bulb	Each	96.00
13.35	Supply and fixing of 9 W LED Bulb	Each	107.00
13.36	Supply and fixing of 10 W LED Bulb	Each	130.00
13.37	Supply and fixing of 12 W LED Bulb	Each	200.00
13.38	Supply and fixing of 15 W LED Bulb	Each	247.00
13.39	Supply and fixing of 18 W LED Bulb	Each	305.00
13.40	Supply and fixing of 20 W LED Bulb	Each	328.00
13.41	Supply and fixing of 25 W LED Bulb	Each	386.00
12.0	T 5 & CFL FITTINGS.		
12.1	S/F of 28 Watt electronic ballast for T-5 28 watt Fittings	Each	397.00
12.2	S/F of 1 x 14 Watt T-5 electronic ballast	Each	344.00
12.3	S/F of 14 Watt T-5 Tube	Each	146.00
12.4	S/F of 28 Watt T-5 Tube	Each	152.00
12.5	S/F 2x14watt, electronic chowk/Ballast	Each	513.00
13.0	GEYSER		
13.1	Supply and fixing of new Geyser of 25 litre with SS tank including inlet and outlet PVC connections at both sides.(Crompton, Bajaj, Venus, Racold)	Each	8261.00
13.2	Supply and fixing of new Geyser of 15 litre with SS tank including inlet and outlet PVC connections at both sides.(Crompton, Bajaj, Venus, Racold)	Each	7625.00

13.3	Supply and fixing of instant type water Geyser of 3 litre capacity including connection etc complete.(Crompton, Bajaj, Venus, Racold)	Each	3070.00
13.4	Supply and fixing of instant type water Geyser of 1 litre capacity including connection etc complete.(Crompton, Bajaj, Venus, Racold)	Each	2478.00
13.5	S/F geyser element after dismantling the existing element for 1.5 KW.	Each	550.00
13.6	S/F geyser element after dismantling the existing element for 2.0 / 3.0 KW.	Each	712.00
13.7	Dismantling of existing worn out thermostate of geyser and S/F new thermostate including making connections of make of repute.	Each	367.00
13.8	Overhauling of 25 / 15 Litre Capacity Water storage Geyser including cleaning and removing scaling deposited on element and tank of Geyser including required gaskets etc as required.	Each	384.00
13.9	S/F of geyser assembly.	Each	1006.00
13.10	S/F of indicator lamp for geyser .	Each	46.00
13.11	S/F of Safety Switch in the geyser	Each	84.00
13.12	S/f of Hot & Cold Water pipe (Set)	Each	154.00
14.0	CHANGEOVER		
14.1	Supply and Fixing of 63 Amp DP change over switch in sheet steel enclosure side handle type including connections as required complete.	Each	3118.00
14.2	Supply and Fixing of 32 Amp DP change over switch in sheet steel enclosure side handle type including connections as required complete.	Each	1763.00
14.3	Supply and Fixing of 63 Amp DP change over switch MCB Type in existing enclosure and connections as required complete.	Each	2030.00
14.4	Supply and Fixing of 40 Amp DP change over switch MCB Type in existing enclosure and connections as required complete.	Each	1150.00
14.5	Supply and Fixing of 100 Amp Four Pole On load change over switch in sheet steel enclosure including connection complete as required.	Each	6845.00
14.6	Supply and Fixing of 200 Amp Four Pole On load change over switch in sheet steel enclosure including connection complete as required.	Each	12085.00
14.7	Supply and Fixing of 400 Amp Four Pole On load change over switch in sheet steel enclosure including connection complete as required.	Each	26061.00
14.8	Supply and Fixing of 630 Amp Four Pole On load change over switch in sheet steel enclosure including connection complete as required.	Each	29658.00

14.9	Supply and Fixing of 100 Amp Four Pole On load change over switch in existing panel including making necessary holes etc complete.	Each	5330.00
14.10	Supply and Fixing of 200 Amp Four Pole On load change over switch panel including making necessary holes etc complete.	Each	9773.00
14.11	Supply and Fixing of 400 Amp Four Pole On load change over switch panel including making necessary holes etc complete.	Each	21787.00
14.12	Supply and Fixing of 630 Amp Four Pole On load change over switch panel including making necessary holes etc complete.	Each	25384.00
15	BUSBAR		
15.1	P/F Bus-Bar chamber of 63 Amp. 4 Way including connection etc. of approved make as required.	Each	5221.00
15.2	P/F Bus-Bar chamber of 100 Amp. 4 Way including connection etc. of approved make as required.	Each	5779.00
15.3	P/F Bus-Bar chamber of 200 Amp. 6 Way including connection etc. of approved make as required.	Each	9465.00
15.4	P/F Bus-Bar chamber of 400 Amp. 8 Way including connection etc. of approved make as required.	Each	25353.00
15.5	P/F 2mm thick M.S sheet Panel Board including painting etc complete with required insulators but excluding Bus Bars etc. complete.	Cuft	1200.00
16	P/F of copper bus-Bar mounted on porcelain insulator in existing encl.		
16.1	25mm x 3mm copper busbar	RM	846.00
16.2	20mm x 3mm copper busbar	RM	701.00
16.3	25mm x 5mm copper busbar	RM	1197.00
16.4	32mm x 5mm copper busbar	RM	1496.00
16.5	40mm x 5mm copper busbar	RM	1824.00
17.00	Providing and laying of following flexible cables:		
17.1	P/F 3 core 2.5 sqmm copper conductor flexible copper wire	RM	102.00
17.2	P/F 3 core 1.5 sqmm copper conductor flexible copper wire	RM	69.00
17.3	P/F 3 core 4.0 sqmm copper conductor flexible copper wire	RM	155.00
17.4	P/F 3 core 6 sqmm copper conductor flat cable for submersible pump	RM	227.00
17.5	P/F 3 core 10 sqmm copper conductor flat cable	RM	371.00
18	Supply and Fixing of following Digital Meters:		
18.1	Supply and Installation 3"sq. Digital Voltmeter 4 digit housed in MS box	Set	1260.00

18.2	Supply and Installation 3"sq. Digital Ammeter 4 digit housed in MS box	Set	1215.00
18.3	Supply and Installation 3"sq. Digital Frequency 4 digit housed in MS box	Set	2070.00
18.4	SITC of Multifunctional meter showing Voltage, Current and Power in MS Box	Set	2450.00
19	Supplying and replacing HRC fuses (Bolt Type) after dismantling existing fuses restoring supply after testing the installations .		
19.1	630 amps	Each	987.00
19.2	400 amps	Each	526.00
19.3	300 amps	Each	308.00
19.4	125 to 250 amps	Each	236.00
19.5	100 / 125 amps	Each	236.00
19.6	6 to 63 amps	Each	197.00
20	Supplying and replacing HRC fuses (DIN Type) after dismantling existing fuses restoring supply after testing the installations .		
20.1	630 amps	Each	839.00
20.2	400 amps	Each	603.00
20.3	200 to 315 amps	Each	566.00
20.4	32 to 200 amps	Each	392.00
20.5	6 -32 amps	Each	221.00
21	Supplying and replacing HRC fuses (RH Type) after dismantling existing fuses restoring supply after testing the installations . 2 to 40 Amp	Each	136.00
22	Supplying and replacing HRC fuses base after dismantling existing fuses base		
22.1	630 amps	Each	984.00
22.2	400 amps	Each	789.00
22.3	250 / 300 amps	Each	526.00
22.4	6 to 200 amps	Each	317.00
23	Suppling and fixing of following:		
23.1	S/F Neutral link	Each	100.00
23.2	S/F indicating lamp	Each	80.00
23.3	S/F switch of indicating lamp	Each	75.00
23.4	15 amps plug top	Each	89.00
23.5	5 amps plug top	Each	67.00
23.6	6 and 16 amps socket and 15/16 Amp switch combined unit	Each	196.00
23.7	P/F Tube holders	Each	43.00

23.8	Replacement of damage electrical call bell of fish, buzzer, ding-dong of anchor or other approved make.	Each	140.00
23.9	S/F remote call bell with remote of approved make.	Each	424.00
23.10	S/F of industrial type 25 Amp. Metal clad top for AC points	Each	175.00
24	Supplying & fixing following accessories including making connections		
24.1	S/F of 60A 1-Phase, 230V Electronic Energy Meter on wooden board/ panel incl. connection and arranging sealing certificate from electricity Board, if required. (Make: HPL-Socomech / Havells/GEC).	Each	1226.00
24.2	Same as above but for 60Amp, 3-phase 415V, Electric Meter.	Each	4044.00
24.3	S/F Metallic/ PVC/Acrylic Box for energy meter with din rail, neutral and earth link complete as required and approved electricity authority.	Each	1653.00
24.4	Hylem sheet (3mm) cover including screws with cup washers	Sq. inch	2.00
25	P/F of Control Gear ballast for following existing Sodium / Metal Hallide Flood Light Fitting		
25.1	70W	Each	955.00
25.2	150W	Each	1370.00
25.3	250W	Each	1370.00
26	Ignitor for 70W / 150 W / 250W/ 400W sodium / Metal Hallide flood light fittings as directed as required..	Each	528.00
27	Supply/fixing of following Sodium/Murcury Vapour Light Fittings :		
27.1	SON-T 250 watt lamp of flood light fittings.	Each	468.00
27.2	SON-T 70 watt lamp of flood light fittings.	Each	325.00
27.3	SON-T 150 watt lamp of flood light fittings.	Each	430.00
27.4	70 watt Metal Hallide lamp for flood light fittings. (white light)	Each	646.00
27.5	150 watt Metal Hallide lamp for flood light fittings. (white light)	Each	765.00
27.6	250 watt Metal Hallide lamp for flood light fittings. (white light)	Each	817.00
28	P & F of suitable Holder for 70W / 150W / 250 W sodium / Matal Hallide Street Light Fittings.	No	190.00
29	P/F of post top lantern cover for spherical type outdoor light fittings min 1200 MM dia as required.	No.	2030.00

30	P/F of angle iron/MS Bracket with required size of GI pipe 25/40 mm Dia) for mounting of above light fixture as required as directed. The entire angle iron / MS Bracket / GI pipe shall be painted with two coats of acrylic paints complete.	Job	450.00
31	S/F Fluorescent tube rod of 20 watt	Each	61.00
32	S/F Fluorescent tube rod of 40 watt	Each	58.00
33	Supply and Fixing of 1200 MM long 20 Watt LED lamp in existing light fixturesincluding connection etc complete.	Each	477.00
34	S/F 40/20 watt tube starter	Each	26.00
35	Dismantling of ceiling fan and painting the same with one or more coats of spray painting with synthetic enamel paint of approved brand and manufacture to give an enen shade, including cleaning of surface with detergent and replacing the damaged rubber reel, nut and bolts with washers and safety pins, reinstalling the same as required.	Each	265.00
36	Dismantling of Mirror Optic /box type fittings with/without down rods and handing over the same to LIC	Each	93.00
37	Dismantling and handing over ceiling fans / exhaust fans to LIC	Each	93.00
38	Removing the following existing old cable & depositing at LIC Store:-		
38.1	Upto 25 sq.mm cable	RM	12.00
38.2	From 35 sq.mm to 95 sq mm.	RM	18.00
38.3	Beyond 95 sq.mm	RM	24.00
39	Taking shut down from electricity board (Local D.O. H.Q.)	Job	1000.00
40	Taking shut down from electricity board (Outside of D.O. HQ.)	Job	1200.00
41	Attending complaint of electrical failure and restoring the supply including replacing fuse etc. in the Juridication of Dehradun during office Hours. i.e 9.30 A.M to 6.0 PM	per job	214.00
42	Attending complaint of electrical failure and restoring the supply including replacing fuse after office Hours as above and on holidays in the Juridiction of Dehradun	Per Job	427.00
42(a)	Attending complaints received from Diff Deptt. In DO Buld. For non availability of power Supply with Minnor repair without any materials	Each	100.00
42.1	Providing skilled wiremen/Electrician for one day	Per day	897.00
42.2	Providing unskilled labour/helper for one days.	Per day	736.00

42.3	S/F Digital three phase Multi-Function Meter	Each	1604.00
42.3	S/F Analog type Ameter meter 0-300A Range	Each	396.00
42.4	S/F Analog type Voltmeter 0-500 Volt Range	Each	402.00
42.5	S/laying Electrical rubber mats at Electrical panel Room 2mm thick size	Sq.mtr	298.00
REPAIR OF FANS			
43	GROUP A		
	Rewinding of ceiling fans/exhaust fans/cabin fan etc. with varnished copper wire of standard size varnishing, baking etc. including dismantling from site, reinstalling testing and commissioning.		
43.1	Ceiling fan 36"	Each	509.00
43.2	-- do -- 48 "	Each	624.00
43.3	----d0 -- 56"/60"	Each	750.00
43.4	Cabin/wall mounting fan 12"/16"	Each	450.00
43.5	Exhaust fan 24"	Each	1984.00
43.6	Exhaust fan 18"	Each	1754.00
43.7	Exhaust fan 15"/16"	Each	1524.00
43.8	Exhaust fan 12"	Each	1108.00
43.9	Fresh Air Fan 12"	Each	451.00
44	GROUP 'B'		
44.1	Supplying and fixing ball bearing of SKF, NBC or NORMA make only including dismantling existing Ball bearings (Rate per no.)		
44.2	Ceiling fan 36"	Each	198.00
44.3	-- do -- 48 "	Each	210.00
44.4	----d0 -- 56"/60"	Each	245.00
44.5	Exhaust fan 24"	Each	396.00
44.6	Exhaust fan 18"	Each	326.00
44.7	Exhaust fan 12"/15"/16"	Each	280.00
44.8	Fresh Air Fan 12"	Each	158.00
45	GROUP C. BUSHES		
	Supplying and fixing Bush bearing after dismantling existing bushes (Rates per no.)		
45.1	Ceiling fan 36"	Each	125.00
45.2	-- do -- 48 "	Each	125.00
45.3	----d0 -- 56"/60"	Each	150.00
45.4	Cabin/wall mounting fan 12"/16"	Each	150.00
46	GROUP D. REPLACEMENT OF CONDENSER(PER NO.)		
46.1	Ceiling fan 48"/56"/60"	Each	83.00
46.2	Cabin fan 12"/16"	Each	83.00
46.3	Exhaust fan 24"	Each	196.00
46.4	Exhaust fan 18"/15"	Each	167.00

46.5	Raplacement of 400mm sweep wall fan PVC Blade	Each	227.00
47	GROUP - F. OVERHAULING		
	Over hauling of ceiling fans/exhaust fans/cabin fans etc. including oiling, greasing and cleaning with surf.		
47.1	Ceiling fan 36"/48"/56"/60"	Each	124.00
47.2	Cabin fan/wall mounting/ Fresh Air Fan 300 mm	Each	92.00
47.3	Exhaust fan 24"	Each	150.00
47.4	Exhaust fan 18"/15"/12"	Each	135.00
	PUMPS		
48	Supply, Installation, Testing and Commissioning of Monoblock Pump Set suitable for operation on A.C. supply of following sizes (CROMPTON / KIRLOSKAR / BEACON Make)		
48.1	0.5 HP single phase pump	Each	3459.00
48.2	1.0 HP single phase pump	Each	5554.00
48.3	2.0 HP single phase pump	Each	9942.00
48.4	3.0 HP single phase pump	Each	18393.00
48.5	5.0 HP three phase pump	Each	26523.00
48.6	10.0 HP three phase pump	Each	38876.00
19	Supply, Installation, Testing and Commissioning of Sumersible Pump Set as following sizes(CROMPTON/KIRLOSKAR/KSB Make)		
49.1	1 HP single phase Sumersible Pump Set	Each	12826.00
49.2	1.5 HP single phase Sumersible Pump Set	Each	15614.00
49.3	2.0 HP single phase Sumersible Pump Set	Each	18285.00
49.4	3.0 HP three phase Sumersible Pump Set	Each	25536.00
49.5	5.0 HP three phase Sumersible Pump Set	Each	30608.00
	REPAIR OF MOTORS AND PUMPS		
50	GROUP A (REWINDING)		
50.1	Rewinding of any type pump upto 1.0 H.P capacity.	Each	1775.00
50.2	Rewinding of any type pump above 1.0 H.P and upto 2.0 H.P capacity.	Each	2555.00
50.3	Rewinding of any type pump above 2.0 H.P and upto 5.0 H.P capacity.	Each	4654.00
51	GROUP B (REPLACEMENT OF BALL BEARING) Rate per no.		
51.1	Motor 0.5 HP	Each	254.00
51.2	-- do -- 1.0/1.5/2.0 HP	Each	360.00
51.3	-- do -- 3.0 HP	Each	442.00
51.4	-- do -- 5.0 HP	Each	510.00

52	GROUP B (REPLACEMENT OF Bush) Rate per no.		
52.1	Motor 0.5 HP	Each	190.00
52.2	-- do -- 1.0/1.5/2.0 HP	Each	270.00
52.3	-- do -- 3.0 HP	Each	330.00
52.4	-- do -- 5.0 HP	Each	382.00
53	GROUP C (REPLACEMENT OF CONDENSOR)		
53.1	Single phase motor 0.5 HP	Each	210.00
53.2	-- do -- 1.0/1.5/2.0 HP	Each	274.00
53.3	Single phase motor 3.0 HP	Each	326.00
54	GROUP - D (motors etc)		
54.1	Pump set upto 3.0 HP	Each	230.00
54.2	-- do -- above 3.0 HP	Each	394.00
55	Motor P.F. water seal set for 1 HP sigle phase, pump set.	Each	375.00
56	Motor P.F. MK-1 spare contractor Kit L&T make for starter	Each	375.00
57	Motor P.F. overload relay 9 to 16 amps for starter 3 phase.	Each	750.00
58	P/ F of impeller for upto 2.0 H.P Single phase Monoblock / Submersible pump	Each	362.00
59	Repairing of Shaft of any type pump upto 5 HP Capacity.	Each	602.00
60	Repairing of all impellers of any type of pump upto 5.0 H.P capacity.	Each	1702.00
61	GROUP F		
61.1	P/F of Timer Switch for starter	Each	299.00
61.2	Fan cover for upto 2.0HP motor	Each	253.00
61.3	Cooling fan for motor	Each	259.00
61.4	Rubber coupling for upto 3HP pumpset	Each	52.00
61.5	No volt cut off switch	Each	233.00
61.6	Starter for 0.5HP to 3.0 Hp single phase pump	Each	2082.00
61.7	Starter for 2 ,3.0HP and 5.0 HP three phase pump (DOL type)	Each	2467.00
61.8	Starter for 10.0HP three phase pump (Star-delta type)	Each	6942.00
61.9	SITC of Direct on line submersible pump starter for submersible pump upto 5.0 H.P Capacity	Each	5289.00
62	Servicing, oiling and greasing of Monoblock pump upto 5.0 H.P capacity without dismantling the pump mptor housing.	Job	315.00
62.1	Providing Gland packing upto 5.0 H.P pump set.	Each	295.00
62.2	Lowering of submersible pump upto 5HP capacity with	Job	1450.00

	PVC pipe(Cost without PVC pipe is not included)		
2.3	Lowering of submersible pump upto 5HP capacity with GI pipe(Cost without GI pipe is not included)	Job	1750.00
63	SITC of Power capacitor MPP type heavy duty.	Per Kvar	300.00
64	SITC of following 4 pole contactor as required including connection etc complete.		
64.1	25 Amp.	Each	980.00
64.2	40 Amp.	Each	1650.00
64.3	63 Amp.	Each	3850.00
64.4	80 Amp.	Each	5670.00
64.5	125 Amp.	Each	8720.00
65	SITC of passive infrared (PIR) technology based occupancy sensor without day light dimming control.	Each	2800.00
66	SITC of passive infrared (PIR) technology based occupancy sensor with day light dimming control.	Each	3917.00
67	Supply and Fixing of 100 Amp. 415 V Kit-Kat porcelin base fuse unit complete.	Each	998.00
68	Supply and Fixing of 200 Amp. 415 V Kit-Kat porcelin base fuse unit complete.	Each	1869.00
	Telephone Wiring & IT Cabling		
69.00	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required		
69.1	1 run of cable	meter	50.00
69.2	2 run of cable	meter	84.00
69.3	3 run of cable	meter	117.00
70.0	PVC Cassing and Capping		
70.1	Providing and fixing 20 mm X 12 mm PVC cassing and capping on surface on wall or laid in slab including providing and fixing necessary Jn.Box as reqd.	Rm	45.00
70.2	P/F 25 mm X 12 mm PVC cassing and capping	Rm	48.00
70.3	P/F 36 mm X 16 mm PVC cassing and capping	Rm	51.00
71.0	I.T.CABLING		
71.1	Supply, Installation, Testing and Commissioning of Information Outlet & Face Plate and Gang Box of D link make suitable for Cat 6 cable.	Each	499.00
71.2	Supply, Installation, Testing and Commissioning of Mounting cord 1 meter, Cat 6 cable of D link make (Company made).	Each	201.00
71.3	Supply, Installation, Testing and Commissioning of Mounting cord 2 meter, Cat 6 cable of D link make	Each	236.00

	(Company made).		
71.4	Supply, Installation, Testing and Commissioning of 24 Port Jack Panel of D link make suitable for Cat 6 cable.	Each	5463.00
71.5	Supply and Installation of 9 'U' Rack with accessories, glass door etc. complete.	Each	4996.00
71.6	Supply and Installation of 6 'U' Rack with accessories, glass door etc. complete.	Each	4039.00
71.7	Supply and fixing of RJ-45 Connector complete.	Each	30.00
72.00	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
72.1	1 Pair	meter	27.00
72.2	2 Pair	meter	33.00
72.3	4 Pair	meter	47.00
72.4	10 Pair	meter	65.00
75.00	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	meter	41.00
76	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.		
76.1	20 mm	meter	112.00
76.2	25 mm	meter	126.00
76.3	32 mm	meter	156.00
76.4	40 mm	meter	224.00
76.5	50 mm	meter	282.00
	Fire Alarm Work		
76.7	SITC of Ionization/Optical type Smoke Detector with base, single/twin indicator as required	Each	1344.00
76.7	SITC of complete response indicator house in 16SWG sheet steel enclosure along with 2mm thick acrylic sheet & LED	Each	165.00
76.8	SITC of solid state control panel for 4 Zone on wall/Floor mounting made from 16SWG MS sheet , with audio/Visual indication for each Zone ,2 Nos 7AH, 12V, SMF battery, Zone Cards, hooter complete as required	Each	11092.00
76.9	SITC of MCP in MS Box incl. Push botton switch with NO/NC contact complete	Each	414.00
76.10	SITC of 7AH, SMF Battery	Each	715.00
76.11	SITC of Electronic hooter cum speaker with 4 watt	Each	470.00

	output housed in 20SWG sheet enclosure with stove enamel painting suitable for all mounting complete as required		
	INVERTER & BATTERY (REPAIRING/SERVICING)		
	SITC of new Inverter including connections with batteries		
77.0	800 VA Inverter	Each	4182.53
78.0	1400 VA Inverter	Each	4685.37
79.0	150 Ah, 12 V tubular battery	Each	12692.81
80.0	Trolley for mounting inverter & battery	Each	1328.83
81.0	Dismantling, transporting, Installation, testing & commissioning of Inverter/batteries or complete set (up to 1500 VA) as required/ directed from one location to other complete as required.	Each	704.95
82.0	Repairing of Blower / Room Heater		
a)	Repairing of room heater by replacing heating element of 500 watt capacity	Each	94.00
b)	Do as above but for 1000 watt capacity	Each	140.00
c)	Repairing of blower by replacing heating element up 2 kW	Each	642.00
d)	Repairing of blower by replacing thermostate	Each	240.00
e)	Rewinding of blower motor	Each	520.00
f)	Repairing of bush & bearing of blower motor	Each	60.00
83.0	S/f Wooden Board on surface incl. making good the same		
a)	Board Size 4"x4"	Each	59.00
b)	Board Size 7"x4"	Each	68.00
c)	Board Size 8"x6"	Each	75.00
d)	Board Size 8"x10"	Each	117.00
e)	Board Size 10"x12"	Each	124.00
f)	Board Size 18"x12"	Each	144.00
	Pole Erection		
84.00	Erection of RCC/ PCC pole of following length in brick ballast and ramming the foundation, finishing with 150mm thick cement concrete (1:3:6) layer on top with including excavation and refilling etc as required.		
84.1	Above 4.5 metre and upto 6.5 metre	Each	4880.32
84.2	Above 6.5 metre and upto 8.0 metre	Each	5416.05
84.3	Above 8.0 metre and upto 11.0 metre	Each	6500.66
84.4	Above 11.00 metre and upto 13.00 metre	Each	7133.71
84.A	Erection of RCC/ PCC pole strut in brick ballast and ramming the foundation including	Each	8393.69

	excavation and refilling and secured with holding clamps, bolts, nuts, etc. as required.		
84.B	Erection of metallic pole of following length in cement concrete 1:3:6 (1 cement : 3		
	coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including		
	excavation and refilling etc. as required.		
84.B1	Above 4.5 metre and upto 6.5 metre	Each	4490.14
84.B2	Above 6.5 metre and upto 8.0 metre	Each	5318.72
84.B3	Above 8.0 metre and upto 11.0 metre	Each	6205.17
84.B4	Above 11.00 metre and upto 13.00 metre	Each	7169.66
84.C	Erection of steel tubular or rail pole strut in cement concrete 1:3:6 (1 cement : 3	Each	7604.56
	coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including		
	excavation and refilling and secured with holding clamps, bolts, nuts, etc. as required.		
84.D	Providing and making steel pole collar with cement concrete (1 cement : 3 coarse	Each	7132.84
	sand : 6 stone aggregate 20mm) of specified size and shape including form work,		
	plastering if required, curing etc as required. (volume of pole/ pipe not to be deducted)		
84.E	Supplying and embedding following dia G.I. pipe (medium class) in pole collar/		
	foundation (during casting) for cable entry including bending the pipe to the required		
	shape complete as required.		
	32 mm dia	Each	460.32
	40 mm dia	Each	516.44
	MV over head line work		
85.1	Supplying and erection of stay set complete (galvanised) with 19/20 mm dia X 1.8	Each	4910.13
	metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, turn buckle (20 mm X 60 cm), 7/ 4.00 mm dia G.I. stay wire and strain insulator		
	etc in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate		
	40 mm nominal size) foundation including excavation and refilling etc. as required.		

85.2	Supplying and erection of stay set complete (galvanised) with 19/20 mm dia X 1.8	Each	4795.27
	metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, turn buckle (20 mm X 60 cm), 7/ 3.15 mm dia G.I. stay wire and strain insulator		
	etc in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate		
	40 mm nominal size) foundation including excavation and refilling etc. as required.		
85.3	Supplying and erection of stay set complete (galvanised) with 19/20 mm dia X 1.8	Each	4745.29
	metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, bow tightener, 7/ 4.00 mm dia G.I. stay wire and strain insulator etc in cement		
	concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal		
	size) foundation including excavation and refilling etc. as required.		
85.4	Supplying and erection of stay set complete (galvanised) with 19/20 mm dia X 1.8	Each	4626.04
	metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, bow tightener, 7/ 3.15 mm dia G.I. stay wire and strain insulator etc in cement		
	concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal		
	size) foundation including excavation and refilling etc. as required.		
85.5	Supplying and erection of bow stay set complete (galvanised) with 19/20 mm dia X	Each	5233.67
	1.8 metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, turn buckle (20 mm X 60 cm), 7/ 4.00 mm dia G.I. stay wire and strain insulator		
	etc in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate		
	40 mm nominal size) foundation including excavation and refilling and also with 0.6		
	m long brace of size 50 mm X 50 mm X 6 mm angle iron with 50 mm dia pulley fixed		
	at one end of the brace as required.		

85.6	Supplying and erection of bow stay set complete (galvanised) with 19/20 mm dia X	Each	5113.55
	1.8 metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, turn buckle (20 mm X 60 cm), 7/ 3.15 mm dia G.I. stay wire and strain insulator		
	etc in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate		
	40 mm nominal size) foundation including excavation and refilling and also with 0.6		
	m long brace of size 50 mm X 50 mm X 6 mm angle iron with 50 mm dia pulley fixed		
	at one end of the brace as required.		
85.7	Supplying and erection of bow stay set complete (galvanised) with 19/20 mm dia X	Each	5068.83
	1.8 metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, bow tightener), 7/ 4.00 mm dia G.I. stay wire and strain insulator etc in cement		
	concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal		
	size) foundation including excavation and refilling and also with 0.6 m long brace		
	of size 50 mm X 50 mm X 6 mm angle iron with 50 mm dia pulley fixed at one end of		
	the brace as required.		
85.8	Supplying and erection of bow stay set complete (galvanised) with 19/20 mm dia X	Each	4948.71
	1.8 metres long stay rod, anchor plate of size 45 cm X 45 cm X 7.5 mm, thimble, stay		
	clamps, bow tightener), 7/ 3.15mm dia G.I. stay wire and strain insulator etc in cement		
	concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal		
	size) foundation including excavation and refilling and also with 0.6 m long brace		
	of size 50 mm X 50 mm X 6 mm angle iron with 50 mm dia pulley fixed at one end of		
	the brace as required.		
85.9	Erection of stay set complete (galvanised) in cement concrete 1:3:6 (1 cement : 3	Each	3645.77

	coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including		
	excavation and refilling etc. as required.		
85.10	Supplying of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre) cross arm for	Set	680.40
	2 wire over head line complete with clamps, bolts, nuts and washer etc including		
	drilling of holes for insulator pins etc (as per drawing) and painting with primer and		
	finished paint as required		
85.11	Supplying of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre) cross arm for	Set	1121.44
	4 wire over head line complete with clamps, bolts, nuts and washer etc including		
	drilling of holes for insulator pins etc (as per drawing) and painting with primer and		
	finished paint as required		
85.12	Erection of angle iron/ channel iron cross arm on wood/ RCC/ PCC/ steel tubular/	Set	270.06
	rail pole etc. as required.		
85.13	Supplying and erection of galvanised 'D' iron clamps complete with shackle insulator	Set	236.74
	(75 mm X 90 mm),G. I. bolts, nuts and washers, coach screws etc. as required.		
85.14	Supplying and erection of galvanised 'D' iron clamps complete with shackle insulator	Set	261.29
	(100 mm X 110 mm), G.I. bolts, nuts and washers, coach screws etc. as required.		
85.15	Erection of galvanised 'D' iron clamps and insulator on pole as required.	Set	67.51
85.16	Supplying and erection of 75 mm X 90 mm shackle insulator with G. I. Bolt, nuts and	Set	157.83
	straps etc. as required.		
85.17	Supplying and erection of 100 mm X 110 mm shackle insulator with G. I. Bolt, nuts	Set	181.50
	and straps etc. as required.		

85.18	Supplying and erection of 100 mm X 65 mm pin insulator complete with G. I. Spindle and nuts etc. as required.	Set	131.52
85.19	Supplying and erection of 100 mm X 80 mm pin insulator complete with G. I. Spindle and nuts etc. as required.	Set	131.52
85.20	Erection of LV/MV shackle/pin insulator etc. as required.	Set	73.65
85.21	Erection of ACSR conductor of 7/2.11 mm to 7/3.00 mm diameter including binding etc. as required.	kg	177.99
85.22	Erection of ACSR conductor of 7/3.35 mm to 7/4.00 diameter and above including binding etc. as required.	kg	234.98
85.23	Erection of all aluminium conductor of 7/1.96 mm to 7/3.10 mm diameter including binding etc. as required.	kg	234.98
85.24	Erection of all aluminium conductor of 7/3.40 mm to 7/4.00 mm diameter and above including binding etc. as required.	kg	179.75
85.25	Erection of G.I. Wire No. 8 SWG including binding etc. as required.	kg	35.95
85.26	Erection of hexagonal type guard as required.	Each	192.90
85.27	Erection of ring type guard as required.	Each	64.01
85.28	Erection of cradle guard as required.	Each	128.89
85.29	Supplying and erection of 15 A aerial fuse complete as required.	Each	113.11
85.30	Supplying and erection of 30 A aerial fuse complete as required.	Each	121.00
85.31	Erection of aerial fuse as required.	Each	98.20
85.32	Supplying and fixing MV horn gap lightning arrester as required.	Each	239.37



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85.33	Fixing of MV lightning arrester as required.	Each	147.30
85.34	Supplying and fixing of 32 mm dia X 2.00 metres long G.I. pipe (medium class) bracket	Each	1295.05
	for mounting of fluorescent / HPMV / HPSV street light fitting on pole including		
	bending the pipe to the required shape, 2 nos 40 mm X 3 mm flat iron clamps with		
	nuts, bolts and washer, painting the flat iron with primer and finish paint etc. as		
	required.		
85.35	Providing and fixing 50 mm dia X 3.2 metres G.I. pipe (including accessories) complete	Each	2657.61
	with 50 mm X 50 mm X 6 mm angle iron bracket on wall and 75 mm X 90 mm shackle		
	insulator with straps for house service connection including painting the angle and		
	flat iron with primer and finish paint etc. as required.		
85.36	Providing and fixing 50 mm dia X 5.6 metres G.I. pipe (including accessories) complete	Each	4220.96
	with 50 mm X 50 mm X 6 mm angle iron cross arm and 40 mm X 3mm M.S. flat iron		
	clamps bends for guard wire, 75 mm X 90 mm shackle insulator and straps, 7/ 3.15		
	mm G.I. wire stay set for house service connection including painting the angle and		
	flat iron with primer and finish paint etc. as required.		
85.37	Supplying and fixing of light class G.I. pipe of 50 mm dia. (nominal) 3 metres length	Each	2248.14
	along the pole for protection of under ground cable as required.		
85.38	Supplying and fixing of light class G.I. pipe of 80 mm dia. (nominal) 3 metres length	Each	3161.77
	along the pole for protection of under ground cable as required.		
85.39	Supplying and fixing of light class G.I. pipe of 100 mm dia. (nominal) 3 metres length	Each	4302.50
	along the pole for protection of under ground cable as required.		

85.40	Dismantling of over head lines comprising of copper/ aluminium over head	Kg	76.28
	conductor, G.I. wire, cross arms, insulators etc. as required.		
85.41	Dismantling of pole/ street light standard/ strut embedded in brick ballast foundation	Each	1756.25
	etc. as required.		
85.42	Dismantling of pole/ street light standard/ strut embedded in cement concrete	Each	2334.06
	foundation etc. as required.		
	HV Over Head Line Work		
86.1	Supplying and erection of galvanised stay set for 11 KV over head lines complete	Set	4782.99
	with 19/ 20 mm dia X 1.8 metres long stay rod, anchor plate of size 45 cm X 45 cm X		
	7.5 mm thick, thimble, stay clamps, turn buckle (20 mm X 600 mm), 7/ 4.00 mm dia		
	G.I. stay wire and 11 KV strain insulator etc in cement concrete 1:3:6 (1 cement : 3		
	coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including		
	excavation and refilling etc. as required.		
86.2	Supplying of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre) pole top	Each	519.07
	bracket/ cross arm for single 11 KV over head line conductor complete with 50 mm		
	X 6mm flat iron clamp, bolts, nuts and washers including drilling holes for insulator		
	pins, bolts and nuts etc and painting with primer and finish paint as required.		
86.3	Supplying of 50 mm X 8 mm M.S. flat iron pole top bracket/ cross arm for single 11/	Each	539.24
	22/33 KV over head line conductor complete with fixing clamps, bolts, nuts and		
	washers drilling holes for insulator pins, bolts and nuts etc and painting with primer		
	and finish paint as required.		
86.4	Supplying of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre) cross arm for	Each	2046.47
	two 11 KV over head line conductors complete with 50 mm X 50 mm X 6 mm (angle		

	iron bracket welded to the channel iron and complete with 50 mm X 6mm M.S. flat		
	iron clamps, bolts and nuts including drilling holes for insulator pins, bolts, nuts		
	and washers etc (as per drawing) and painting with primer and finish paint as		
	required.		
86.5	Supplying of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre) V shape cross	Each	1765.89
	arm for two 11 KV over head line conductors complete with 50 mm X 6mm M.S. flat		
	iron clamps, bolts and nuts including drilling holes for insulator pins, bolts, nuts		
	and washers etc (as per drawing) and painting with primer and finish paint as		
	Required.		
86.6	Erection of pole top/ straight two wire/ V shape two wire, angle iron/ channel iron,	Set	490.14
	cross arm on steel tubular/ rail/ PCC pole for 11/22/33 KV as required.		
86.7	Supplying of two lengths of channel iron 75 mm X 40 mm X 6 mm (7.14 kg per metre)	Set	4493.64
	double pole cross arm for three wire 11KV over head line conductors complete with		
	through bolts and nuts for clamping to the poles, 50 mm X 6 mm M.S. flats welded		
	on one side to the channel iron and with bolts and nuts on the other side for tying		
	the cross arms together, including drilling holes for insulator pins/ fittings, bolts,		
	nuts and washers etc (as per drawing) and painting with primer and finish paint as		
	required.		
86.8	Supplying and erection of a set of cross bracing frame work for 11 KV over head	Set	6848.75
	line double pole structure having four members fabricated out of 50 mm X 50 mm X		
	6 mm angle iron to form a rectangle of minimum size 1400 mm width X 2500 mm		
	height, complete with 50 mm X 6mm M.S. flat iron clamps, bolts and nuts including		

	drilling holes for insulator pins, bolts and nuts etc (as per drawing) and painting		
	with primer and finish paint as required.		
86.9	Erection of double pole 3 wire cross arm for 11KV/ 22KV/ 33 KV over head lines as required.	Each	1124.95
86.10	Supplying and erection of 11 KV pin insulator complete with large steel head G.I. pin, nuts, washers etc. as required.	Set	273.56
86.11	Supplying and erection of 11 KV disc insulator for 11 KV over head lines with galvanised insulator fittings, ball and socket type and complete with galvanised strain clamps, bolts, nuts, washers etc. as required.	Set	857.52
86.12	Erection of disc/ pin insulator for 11 KV over head lines as required.	Set	147.30
86.13	Supplying and erection of three piece nonlinear resistor type lightning arrestor suitable for 3 wire, 11 KV overhead lines with rated voltage 9 KV (rms) with a nominal discharge current rating of 5 KA and complete with galvanised clamping arrangement, G.I. bolts, nuts, washers etc. as required.	Set	2304.25
	LIGHTING CONTROLS		
87.1	Supplying, installation, testing and commissioning of Passive Infrared (PIR) technology based occupancy sensor having high performance, non regulating programmable type, suitable for connected load upto 10Amp, for mounting height up to 2.8 mtr and for 5 m diameter coverage area along with necessary fixing arrangements i/c programming at site etc. complete as required.	Each	4035.07
87.2	Supplying, installation, testing and commissioning of Passive Infrared (PIR) technology based occupancy sensor with day light dimming (lighting level shall be	Each	8041.21

	regulated as per availability of natural day light in an area along with occupancy		
	detection.) having high performance, regulating programmable type, suitable for		
	connected load upto 10Amp , for mounting height up to 2.8 mtr and for 5 m		
	diameter coverage area along with necessary fixing arrangements i/c programming		
	at site etc. complete as required.		
87.3	Supplying,installation,testing and commissioning of Microwave technology based	Each	10427.88
	occupancy sensor having high performance, non regulating programmable type,		
	suitable for connected load upto 10Amp , for mounting height up to 2.6 mtr and		
	for 5m X 20m coverage area along with necessary fixing arrangements i/c		
	programming at site etc. complete as required.		
87.4	Supplying,installation,testing and commissioning of Astronomical time switch		
	capable of following output in feeder pillars / Lighting DBs for automatic switching		
	On & OFF of street lights at sun set & sun rise or twilight(Auto ON, Auto OFF, Auto)		
	with manual override facility with 12/24 hour display format with suitable battery		
	and indication for relay status i/c programming at site complete as required.		
87.4.1	1 output per phase and suitable for single phase supply	Each	3848.31
87.4.2	2 output per phase and suitable for single phase supply	Each	7502.85
87.4.3	3 output(1output per phase) and suitable for three phase supply	Each	9291.54
87.43	Deep Cleaning of Lift Car and landing door 1- Extract loose dust & debris from car and door track with vacuum pump 2- Deep Cleaning track floor, wall and door 3- Clean and polish all surfaces with environmental friendly solutions 4- Thoroughly wipe down all surfaces with hygienic microfiber towel	Each Lift	1000.00
87.44	Cleaning & washing of Each Solar Panel Installed at terrace of LIC Building.	Each Panel	4.00
88	This item is to be operated on specific instructions of the Competent Authority		

	PRIME COST ITEMS: Switch gear / fixtures etc item if ordered to be purchased from market shall be paid as per paid voucher plus overheads.		25%
	REBATE FOR OLD MATERIALS (Solvage Value)		
89	Rebate for taking away old dismantled material		Rebate
a	Old Aluminium wiring with accessories replaced with Copper wiring		@2%
b	Old Copper wiring with accessories replaced with Copper wiring, Old Inverter		@5%
c	Old copper chokes		@10%
d	Old fans & Gyser		@10%
e	Old ball bearing, Motor windings		@10%
f	Old Pumps and Motors, Battery		@10%
90	In addition to above if any items is required to be provided by the contractor has to produce cash memo/bill on which 15% shall be allowed as their overhead& proffit charges on material and labour charges as applicable on assesment basis.		
Note:			
	The GST is not included in the above rates and shall be payable extra as per applicable rate.		
	The schedule rates are subject to terms & conditions of the contract as enclosed		
	<u>Declaration by the contract</u>		
	i) I/We have carefully studied the entire tender documents.		
	ii) We accept all the terms & conditions of the tender and adhere to the same during the whole contractual period.		
	iii) Our rates shall be firm through out the currency of contract.		
	iv) We shall be ready to attend all emergency breakdown calls round the clock and nothing extra shall be payable on this count.		
	v) We are quoting our rates after visiting the actual site/s is as under:- (Except than item no. 89 & 90)		

Formats for measurements and payments



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E-MEASUREMENT SHEET							Annexure-A1	
Bill No:								
i	Name of the work							
ii	Agreement No & date / Contract Ref:							
iii	Name of the Construction Associate & address							
iv	Name and Designation of LIC measurer with S.R. No.							
v	Period of measurement							
vi	Name of the Construction Associate's authorised Engineer/s attending measurement. Authorisation letter ref:							
Item no	Description of Item	Unit	No	Length	Breadth	D/H	Qty	Remarks / Notes.

Signature of Construction Associate's Engineer. (Name)

Signature of LIC Site Engineer (Name & S.R. No)

Signature of LIC Test Checking Engineer (Name & S.R. No)



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E-MEASUREMENT SHEET / Reinforcement
R.A. BILL..... / FINAL BILL

Annexure-A2

- i) Name of the work
- ii) Agreement No & date / Contract Ref:
- iii) Name of the Construction Associate & address
- iv) Name, Designation of LIC measurer with S.R. No
- v) Period of measurement
- vi) Name of the Construction Associate's authorised Engineer/s attending measurement.
- Authorisation letter ref:

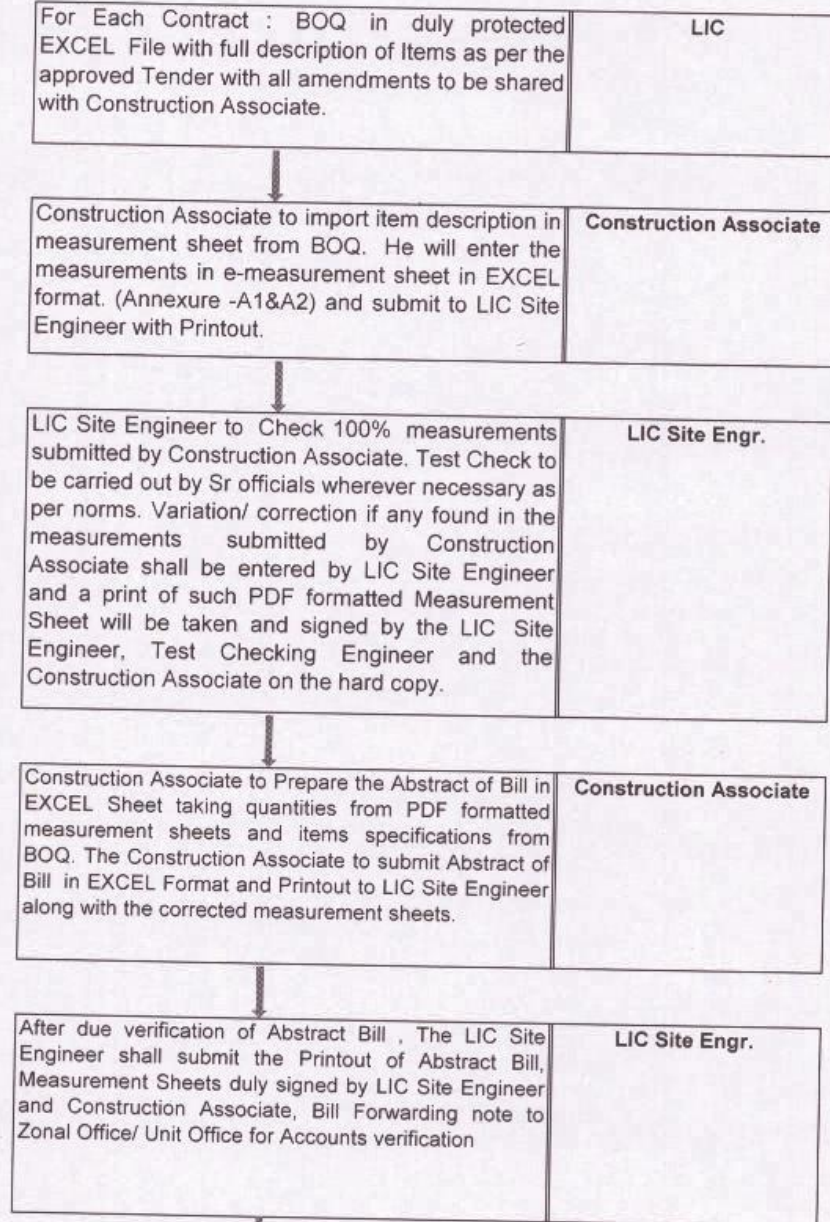
Location Description and size of RCC Member.	Number of RCC members	Sketch of reinforcement bar and position in RCC member if possible to draw.	Reinforcement bar as marked on the drawing / Position of bar	Number of bars	Length of bars	Total length of bars, col (2)x(5)x(6)	Remarks											
							8 mm	10 mm	12 mm	15 mm	20mm	25mm	32mm					
1	2																	

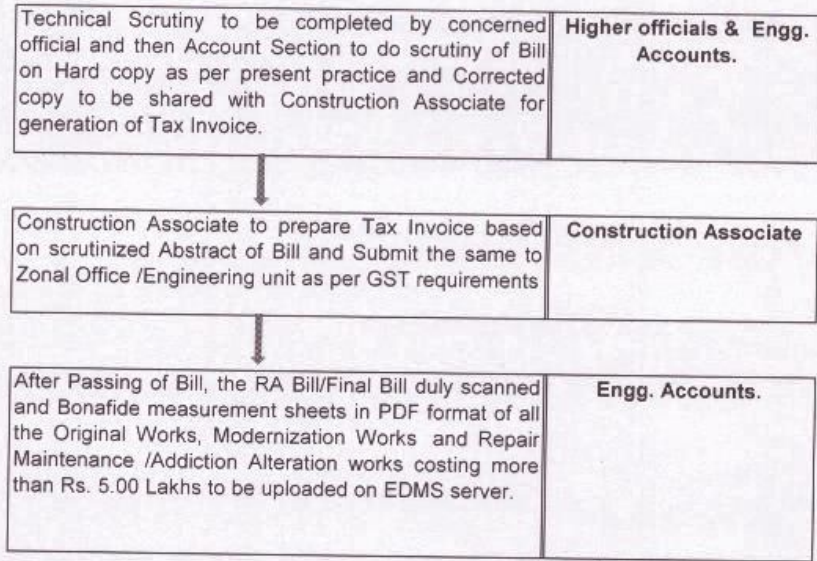
Signature of Construction Associate's Engineer.
(Name)

Signature of LIC Site Engineer
(Name & S.R. No)

Signature of LIC Test Checking Engineer
(Name & S.R. No)



Annexure-D
FLOWCHART OF e-MEASUREMENT PROCESS.
ACTION BY
MASTER FOLDER





Template to quote the offer/ rates

1. The Vendors are requested to quote %age rate and evaluation will be done on the basis of quoted percentage on basic rates of the above Schedule. Hence, contractors are requested to quote their lowest percentage offer in the following specified location otherwise the tender shall be rejected.
2. The percentage to be quoted in words and figure. The Contractor is advised to clearly mention offered in % age BELOW /AT PAR / ABOVE in the specified locations GROUPS.
3. The rates are to be quoted after ascertaining yourself with locations of various offices of LIC of India as follows:

Properties area wise in three groups' i.e. Group-A, Group- B & Group-C

Name of Group	Number of Branches under the Group.
GROUP-A	D.O.Building, CBO-I,CBO-II, CBO-III, CAB, P&GS, (Dehradun), LIC Colony, all S.Os(S.O.Doiwala, ISBT, Survey Chowk, Nehru colony etc.) & Guest Houses EDMS /RMF centre Kunwa Wala, and other property in local area of Dehradun
GROUP-B	B.O.-I, B.O-II (Haridwar), BO-I, BO-II (Roorkee), BO-I, BO-II (Saharnpur), B.O.Deoband, B.O.Gangoh. B.O.Vikasnagar, B.O. Kotdwar. B.O.Rishikesh. S.O Lakhsar, Bahadrabad , CLIA-Sahranpur, Saharanpur and all other properties in these areas.
GROUP-C	B.O.Srinagar, B.O.Gopeshwar, B.O.Uttarkashi, B.O.New Tehri & Staff qtrs at New Tehri, B.O.Mussoorie & Guest house with other property at Mussoorie , all S.Os. (Naugaon, Pauri, Rudraprayag etc.) and other properties in these area.

Location in the above areas (hills and mufasil / Plane / local) may increase of decrease. Rates will be unified for all branches on over all basis including transport /loading/ connections / removing old unserviceable material as per detailed out in tender.

We have carefully and fully studied this tender documents including **above Schedule** and our lowest percentage rates are as Follows:

I /We QUOTE OUR LOWSET OFFER FOR GROUPS

A. GROUP _____ BELOW (_____ AT PAR) . _____ ABOVE.
 (Local area offices)
 In words _____

B. GROUP _____ BELOW (_____ AT PAR) . _____ ABOVE.
 (Plane area Offices)
 In words _____

C. GROUP _____ BELOW (_____ AT PAR) . _____ ABOVE.
 (Hill & Muffusil area offices)
 In words _____

Contractor

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 Sr. Divisional Manager