



भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

Office of The Executive Engineer (Electrical),
Electrical Division, 1st Floor,
New Siemens Telephone Exchange
Autonagar, Vijayawada - 520 007
Ph: 0866-2543211 Email: eevijbsnl@gmail.com

TENDER DOCUMENT
(Single Stage Bid – Single stage opening)

NIT NO: 66/BSNL/EDV/2019-20, Dt.:16-03-2020

Name of the work: Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)(Balance Portion of Work)

Estimated Cost: Rs.10,85,154/-

Name of the Agency

Address

Telephone No:

This tender document contains 58 (Fifty Eight pages i/c page of Specimen Price Bid only.)

Signature of the Tender issuing Officer

Executive Engineer (E)
BSNL Electrical Division,
Vijayawada
(For and behalf of BSNL)

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Instructions to Bidders

OFFLINE SUBMISSIONS

A sealed Cover with the *Name of Work and tender due on* clearly written on the top of the cover and containing the following documents shall be dropped in the tender box available at the O/o Executive Engineer (E) Electrical Division, Ist Floor, Siemens Telephone Exchange, Autonagar, Vijayawada-520007 on or before the stipulated time and date as per NIT

- 1 Tender Cost in the prescribed form as per NIT
- 2 EMD in the prescribed form as per NIT
- 3 Self-Attested copies of eligibility credentials fulfilling the eligibility criteria stipulated in the NIT.
- 4 Self attested copy of Chartered accountant certificate for Annual Turnover for the last three years as per NIT.
- 5 Self attested copy of PAN Card
- 6 Self attested copy of GST registration certificate
- 7 Self attested copy of EPF Registration certificate (if applicable).
- 8 Self-attested copy of ESI Registration certificate (if applicable)
- 9 ANNEXURE-IV : Declaration by Contractor
- 10 ANNEXURE-V : Undertaking to abide by EW-6 & EW-8
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Note: The bidder shall seal and properly secure the cover containing the offline submissions. In case of open covers or covers that are closed by stapling or closed with cellophane tape or other adhesive materials, BSNL shall not be responsible for any loss/missing of credentials from such covers.

ONLINE SUBMISSION in E-Tender Portal

www.eprocure.gov.in

The following documents shall be digitally signed and uploaded in the E-tender portal **www.eprocure.gov.in** on or before the stipulated time and date as per NIT.

- 1) Scanned copy of Tender Cost in the prescribed form as per NIT
- 2) Scanned copy of EMD in the prescribed form as per NIT
- 3) Self-Attested copies of eligibility credentials fulfilling the eligibility criteria stipulated in the NIT.**
- 4) Self attested copy of Chartered accountant certificate for Annual Turnover for the last three years as per NIT.
- 5) Self attested copy of PAN Card
- 6) Self attested copy of GST registration certificate
- 7) Self attested copy of EPF Registration certificate (if applicable).
- 8) Self-attested copy of ESI Registration certificate (if applicable)
- 9) ANNEXURE-IV : Declaration by Contractor
- 10) ANNEXURE-V : Undertaking to abide by EW-6 & EW-8
- 11) ANNEXURE-VI : Non relative Certificate
- 12) ANNEXURE-VII : Undertaking regarding EPF Provisions
- 13) ANNEXURE-VIII: Undertaking regarding ESI Provisions
- 14) ANNEXURE IX: Technical Compliance statement
- 15) Digitally signed and rates quoted Price Bid/Financial Bid**

Bharat Sanchar Nigam Limited

(A Govt. of India Enterprise)

NOTICE INVITING e-TENDER(EW-6)

The Executive Engineer (E), BSNL Electrical Division, Vijayawada-520007, Phone: 08662543211, FAX: 08662543214 on behalf of BHARAT SANCHAR NIGAM LIMITED invites **ON LINE BIDS (item rate e-tenders)** from the eligible Firms / Contractors for the following work.

1	NIT No.	66/BSNL/EDV/2019-20, Dt.: 16-03-2020
2	Name of Work	Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I)(Balance Portion of Work)
3	Estimated Cost put to tender	Rs.10,85,154/-
4	Earnest Money	Rs.21,703/-
5	Cost of Bid Document	Rs.590/-(Non refundable)
6	e-Tender Processing Fee	As stipulated in the e-tender portal www.eprocure.gov.in
7	Time allowed for completion of work	6 Months
8	Last date & Time of on line submission of Eligibility documents, Technical Bid & Price Bid	Up to 15.00 Hrs. on.26-03-2020.
9	Last date & Time for submission of Cost of bid document, EMD, and Eligibility documents as per NIT(OFF LINE)	Up to 15.00 Hrs. on.27-03-2020.
10	Time & date of opening of sealed envelope containing EMD, cost of Bid document and Eligibility documents as per NIT of intending bidders in Division office.(OFF LINE)	At 15.30HrsOn .27-03-2020.
11	Time & Date of Opening of the Bid- ON LINE ONLY	At 16.00HrsOn.27-03-2020*
• In case of holiday being declared on the date of opening of tender, the tender will be opened on the next working day.		
ELIGIBILITY CRITERIA		
A	The Firms who fulfill the following requirements shall be eligible to bid	
	Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.	
	AND	
	BSNL enlisted contractors in Electrical category of respective class as per their tendering limits.	

B. Important Notes:

1. Self-Attested Documentary proof, satisfying the eligibility conditions detailed above shall be submitted.
2. The Tenderer should submit self-attested copies of valid GST registration Certificate,

A certificate for turnover, PAN card, EPF Registration certificate (if applicable) and ESI Registration certificate (if applicable).

3. The intending tenderer shall furnish the cost of Tender document in the form of Demand draft of a Scheduled Bank or Nationalized Bank/ State Bank guaranteed by Reserve Bank of India. The DD for **Rs.590/-**(Inclusive of all Taxes) which is non-refundable, shall be drawn in favour of **"Accounts officer (cash), O/o GMTD,BSNL,GUNTUR."**
4. **Earnest Money amounting to Rs.21,703/-** in the form of **demand draft/FDR/ BG / CDR** of a nationalized/scheduled bank guaranteed by the Reserve Bank of India, drawn in favour of **"Accounts officer (cash),O/oGMTD,BSNL,GUNTUR,"** must accompany each tender. The Validity period of EMD is 90 days, from the date of opening of tender.
5. The EMD of all the unsuccessful tenderers shall be released on issue of award letter to the successful tenderer. This shall be done within one week of award letter.
6. Exemption from payment of earnest money and security deposit by any other unit/ department shall not hold good for BSNL.
7. The Bid documents consisting of the detailed plans, complete specifications, the schedule of quantities of the various classes of works to be done and the set of conditions of contract to be complied with and other necessary documents, can be seen and downloaded from website www.ap.bsnl.co.in and www.eprocure.gov.in **However for quoting the e-Tender visit www.eprocure.gov.in** The bidding process will be accepted only through e-Tendering platform. As tenders are invited through e-Tendering process, physical copy of the tender document would not be available for sale.
8. General conditions of contract for works in BHARAT SANCHAR NIGAM LIMITED (BSNL EW-8) are available on BSNL website http://electrical.bsnl.co.in/BSNL_EW-8.pdf as well as in the Division Office.
9. For e-Tendering, BSNL has engaged e-portal maintained by NIC, New Delhi. The agency intending to participate in tendering process shall have to register with www.eprocure.gov.in For details kindly visit website www.eprocure.gov.in The intending bidders must have Class-III digital signature to submit the bid.
10. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheet.
11. Contractor can upload documents in the form of JPG format, PDF format and any other format as permissible by the e-tendering portal.
12. Contractor must ensure to quote rate of each item. The column meant for quoting rate in figures appears in yellow colour and moment rate is entered, it turns green. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" {Zero}.
13. The Technical Bid & Price Bid can only be submitted after uploading the following scanned documents (all documents shall be self-attested)–
 - a) Documentary proof of satisfying eligibility conditions.
 - b) Copy of PAN card, GST registration, CA certificate for turnover, EPF Registration certificate (if applicable), ESI registration Certificate (if applicable)
 - c) Demand draft of cost of tender documents.
 - d) Scanned copy of EMD in prescribed form.
14. The contractor shall submit the DD for cost of Bid documents, EMD in the prescribed form, and Eligibility documents as per NIT in a sealed envelope with mention of Name of

work, date & time of opening of bids in a sealed bid box provided in the **Office of Executive Engineer (Electrical), BSNL Electrical Division, Vijayawada up to 15.00Hrs on 27-03-2020** and shall be opened on the same day at 15.30 Hrs in presence of AO, SDE [E-P] and contractors present.

15. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose Cost of Bid Document, Earnest Money Deposit, and Eligibility documents as per NIT Placed in the envelope are found in order. Also the scanned uploaded eligibility conditions of bidders meet the criteria.
16. After submission of the bid online the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.

17. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified. The bid submitted shall become invalid and cost of bid & e-tender processing fees shall not be refunded if the bidder is found ineligible or if the bidder does not upload all the documents as per para-16 above or In case the agency fails to start any awarded work Performance Guarantee for the awarded amount shall be forfeited

Before e-tendering, the contractor shall inspect the site and fully acquaint himself about the condition with regard to accessibility of site and site nature and the extend of grounds, working condition, including stocking of materials, installation of T&P etc., and conditions affecting accommodation and movement of labour etc., required for the satisfactory execution of the contract. No claim whatsoever on such account shall be entertained by the BSNL in any circumstances.

18. Agreement shall be drawn with the successful Tenderer on prescribed Form No. **BSNL EW-6/8**, which is available on BSNL website http://electrical.bsnl.co.in/BSNL_EW-8.pdf for www.eprocure.gov.in Tenderer shall quote his rates as per various terms and conditions of the said form.
19. The time allowed for carrying out the work will be as mentioned above.
20. In case the eligibility credentials are found to be fake or falsified at any stage i.e. before award of work or during execution of the work or after completion of the work, the contractor will be debarred from tendering in BSNL for three years including any other action under the contract or existing law.
21. **Performance Guarantee (PG):** -The Firm shall have to furnish Performance guarantee @ 5% of the contract value of the individual contract within two weeks of the date of issue of award letter in the form of Bank guarantee on a Nationalized/Scheduled bank in standard format (Annexure-III)/ CDR/ FDR/ DD. This period can be further extended by the Engineer-in-Charge upto a maximum period of two weeks on written request of contractor. **This performance guarantee shall be submitted to the Electrical Division in the name of concerned Accounts officer of the SSA where work is to be executed and shall be valid for 12 months from the date of actual completion of individual work.**
22. Security deposit:
A sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum will amount to security deposit of 10% (i/c 5% PBG) of the Tendered value of the individual agreement of Supply Portion. This Security Deposit shall be released after an observation period of 12 months after the date of completion of work.
23. The acceptance of a tender will rest with the **Superintending Engineer (E), O/o CE(E), BSNL, A.P. Electrical Zone, Vijayawada** who does not bind himself to accept the lowest tender or any other tender and reserves to himself the Authority to reject lowest or all the tenders received without assigning any reason. All tenders in which any of the prescribed conditions are not fulfilled or incomplete in any respect are liable to be rejected.
24. Canvassing in connection with tender is strictly prohibited and the tenders submitted by

- the contractors who resort to canvassing will be liable for rejection.
25. The BSNL reserves itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted.
 26. The tenderer should give a certificate that none of his/her relative is employed in BSNL units. In case of proprietorship firm, certificate will be given by the proprietor and for partnership firm certificate will be given by all the partners and in respect of a limited company by all the Directors of the company.
 27. Near relatives of all BSNL employees either directly recruited or on deputation are prohibited from participation in tenders and execution of works in the different units of BSNL. The near relatives for this purpose are defined as:
 - a) Members of a Hindu Undivided family.
 - b) They are husband and wife.
 - c) The one is related to the other in the manner as father, mother, son(s) & son's wife(daughter-in-law), Daughter(s) & daughter's husband(son-in-law), brother(s) & brother's wife, sister(s) & sister's husband(brother -in-law).
 28. The Company or firm or any other person is not permitted to tender for works in BSNL Unit in which his near relative(s) is (are) posted. The unit is defined as SSA/Circle/Chief Engineer/Chief Archt./Corporate office for non-executive employees and all SSA in a circle including circle office/Chief Eng./Chief Archt./Corporate office for executive employees (including those called as Gazetted officers at present). The tenderer should give a certificate that none of his/her such near relative is working in the units as defined above where he is going to apply for tender/work, for proprietorship, partnership firms and limited company certificate shall be given by the authorized signatory of the firm. Any breach of these conditions by the company or firm or any other person, the tender/work will be cancelled and earnest money/performance guarantee will be forfeited at any stage whenever it is so noticed. BSNL will not pay any damages to the company or firm or the concerned person. The company or firm or the person will also be debarred for further participation in the concerned unit. The format of the certificate to be given is enclosed (Annexure-IX).
 29. No employee in BSNL/ Govt. of India is allowed to work as a contractor for a period of two years of his retirement from service without the prior permission. The contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission as aforesaid before submission of tender and engagement in the contractors' service.
 30. The tender for the works shall not be witnessed by the contractor or contractors who himself/themselves has/ have tendered or who may and has/have tender for the same work. Failure to observe this condition would render tenders of the contractors tendering as witnessing the tender is/are liable for summarily rejection.
 31. It will be obligatory on the part of the tenderer to sign each page of the Schedule of work and the tender documents for all the component parts and after the work is awarded he will have to enter into a separate agreement with the officer concerned.
 32. Any tender not submitted in proper manner or not as per the directions of ONLINE submission, BSNL will be at liberty to take such action as it may deem fit without any reference to the tenderer.
 33. The tenders for the work shall remain open for acceptance for a period of **90 days** from the date of opening of the tenders. If any tenderer withdraws his tender before the said period or makes any modification in the terms and conditions of the tender which is not acceptable to the BSNL shall, without prejudice to any other right of remedy be at liberty to forfeit 50% (fifty percent only) of the said earnest money absolutely.
 34. **Extension of tender validity:** In case, where the letter of award of work cannot be placed within the validity period of the tender, the BSNL can request all tenderers to extend the validity of their respective tenders and the Earnest Money deposit by a reasonable period. In such cases, extension of validity of Earnest Money deposit by 30 days beyond the

extended validity date of tender should also be asked for. While BSNL can make the request for extension, the tenderer is free to either extend the validity or refuse the request to extend the validity.

35. The contractor should read the tender documents carefully before submitting the tender. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
36. This Notice Inviting Tender shall form part of the Contract document. The successful tenderer/contractor on acceptance of his tender by the Accepting authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of :-
 - a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any forms the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
 - b) Standard BSNL EW-8 form.
37. EPF PROVISIONS: The agency has to comply with the provision of EPF and miscellaneous provisions Act - 1952 and employees Provident Fund scheme-1952 as amended up to date in respect of labours/employees engaged by them for this work. Any consequences arising due to non-complying of provisions as specified above shall be of the sole responsibility of the firm only. The agency shall give an undertaking to this effect as per the prescribed proforma (Annexure X).
38. The site for the work shall be made available in parts.
39. If any terms and conditions mentioned in this NIT document are in contravention to BSNL EW6/EW 8 General Conditions of Contract, the terms and conditions mentioned in this document shall prevail.

Lr .No: 24(1)/EE(E)/BSNL/EDV/2020/68,

Dated:16 - 03 -2020.

- 1) The Chief Engineer (E), BSNL AP Zone, Vijayawada for kind information.
- 2) The Superintending Engineer (E), BSNL Electrical Zonee, Vijayawada for kind information.
- 3) The Executive Engineer (E), BSNL, Electrical Div. VSP/TPT/Kurnool for information
- 4) All SDE (E)'s under this circle
- 5) All Eligible Contractors.
- 6) Sr.TOA/AO/Auditor/Notice Board.

Executive Engineer (E)

CHECK LIST FOR THE TENDERER

IMPORTANT NOTE: Before on line submitting the tender document, contractor must verify the check list properly.

	NAME OF THE VENDOR	
Sl.No	Description	Submitted/Uploaded Yes/No
1	The Firms who fulfill the following requirements shall be eligible to bid	
	BSNL enlisted contractors in Electrical category of respective class as per their tendering limits	
	Note:- Copy of Credentials as applicable for proof of eligibility prescribed shall be produced by the firm	
2.	The intending bidder has to fill all the details such as Banker's name, Demand Draft/Fixed Deposit Receipt /Pay Order/ Banker's Cheque/Bank Guarantee number, amount and date for the following documents	
3	c) EMD - amounting Rs.21,703/- in the prescribed form as above. Earnest Money should be in the form of demand draft/FDR/ BG (As per format at Annexure)/ CDR of a nationalized/scheduled bank guaranteed by the Reserve Bank of India, drawn in favour of "Accounts Officer (cash),O/O GMTD, BSNL , GUNTUR " must accompany each tender. The Validity period of EMD is 120 days, from the date of opening of tender.	
4	Self-attested Copy of PAN card.	
5	Self-attested Copy of valid GST registration	
6	Self-attested Copy of CA certificate for turnover.	
7	Self-attested copy of EPF Registration certificate (if applicable).	
8	Self-attested copy of ESI Registration certificate (if applicable).	
9	Declaration by Contractor(As per annexure-IV)	
10	Duly filled and signed Undertaking and to abide by EW6 and EW 8 (As per annexure-V).	
11	The tenderer should give a certificate that none of his/her relative is employed in BSNL units. In case of proprietorship firm, certificate will be given by the proprietor and for partnership firm certificate will be given by all the partners and in respect of a limited company by all the Directors of the company(As per annexure-VI)	
12	Duly filled and signed undertaking regarding EPF Provisions (As per annexure-VII)	
13	Duly filled and signed undertaking regarding ESI Provisions(As per annexure-VIII)	

Notes for Submission of Documents:

- The bidder shall submit the Original documents of DD towards cost of Bid documents and EMD in the prescribed form, in a sealed envelope mentioning Name of work , date & time of opening of bids along with the name and address of the bidder in the Tender box in the **office of Executive Engineer (Electrical), BSNL Electrical Division ,Vijayawada** before the prescribed date and time (Ref. Notice Inviting Tenders)
- Online bid documents submitted by intending bidders shall be opened only in respect of those bidders, whose Earnest Money Deposit and Cost of Bid Document placed in

the envelope are found in order.

INFORMATION FOR BIDDERS (e-TENDER)

1. For e-Tender hosting purpose, BSNL has engaged e-portal maintained by eprocure.gov.in. The agency intending to participate in tendering process shall have to register with www.eprocure.gov.in
2. Those Contractors not registered on the website mentioned above, are required to get registered beforehand. The intending bidder can get registered with eprocure.gov.in by making online payment of required amount with registration particulars. For details kindly visit website <https://www.eprocure.gov.in> or contact Executive Engineer.
3. The intending bidder must have valid **class-III digital signature** to submit the bid.
4. The intending bidder should read carefully and understand the tender document, procedure for e- tendering etc. completely before participating in the e-tender procedure. Participation in the e-tendering, presumes that the bidder (s) has/have read all the conditions, Special Conditions of the contract, Schedule of quantity etc. and agree/abide by them. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
5. The bid document consisting of BSNL EW 6, Specifications, Schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be compiled with and other necessary documents can be seen and downloaded from www.eprocure.gov.in or www.ap.bsnl.co.in free of cost.
6. The bid can only be submitted after uploading the mandatory scanned documents as per NIT
7. Information and instructions for bidders posted on website shall form part of bid document.
8. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
9. Contractor can upload documents in the form of JPG format or PDF format.
10. Certificate of Financial Turnover: At the time of submission of bid, contractor may upload Affidavit/ Certificate from Chartered Accountant mentioning Financial Turnover of last 3 years or for the period as specified in the bid document`. There is no need to upload entire voluminous balance sheet.
11. Contractor must ensure to quote rate of each item. If any cell is left blank the same shall be treated as "0" (ZERO).
12. The intending bidder should see all the conditions of contract uploaded in the website including Corrigendum if any, till the last date of submission of bid.
13. BSNL reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.

E-Tendering Instructions to Tenderers (General)

Submission of Tender through online process is mandatory for this e-Tender.

E-Tendering is a new methodology for conducting Public Procurement in a transparent and secured manner. For conducting electronic tendering, BSNL Electrical Zone-II has decided to use the portal www.eprocure.gov.in through e_procurementportal, a Government of India portal. It supports all activities of tendering based on proactive work flow concept. Fine details of tendering like vendors registration, tender announcement and corrigendum, tender form processing, opening, negotiation and tender awarding are supported in a real time interactive environment.

1. Tender Bidding Methodology:

Electronically Sealed Bid System –“Single Stage - Two Envelopes Electronic bidsystem”. In this case of two electronically sealed envelopes bid system, the Eligibility documents as per NIT [Envelope-I] & Tender Document [Envelope-II] shall be submitted by the bidder at the same time.

2. Broad outline of activities from Bidders prospective:

- a) Procure a Digital Signing Certificate (DSC).
- b) Register on eprocure.gov.in (e-Tender)
- c) Create Users and assign roles on e-Tender
- d) View Notice Inviting Tender (NIT) on e-Tender
- e) Download Official Copy of Tender Documents from e-Tender
- f) Clarification to Tender Documents on e-Tender
- g) Query to BSNL (Optional)
- h) View response to queries posted by BSNL, as addenda.
- i) Bid-Submission on e-Tender
- j) Attend Public Online Tender Opening Event (TOE) on e-Tender Opening.
- k) View/Post-TOE Clarification posted by BSNL on e-Tender (Optional)- Respond to BSNL's Post-TOE queries

For participating in this tender online, the following instructions need to be read carefully. These instructions are supplemented with more detailed guidelines on the relevant screens of the e-Tender.

3. Digital Certificates:

For integrity of data and its authenticity/ non-repudiation of electronic records, and be compliant with IT Act 2000, it is necessary for each user to have a Digital Certificate (DC), also referred to as Digital Signature Certificate (DSC), **of Class 3**, issued by a Certifying Authority (CA) licensed by Controller of Certifying Authorities (CCA) [refer <http://www.cca.gov.in>].

4. Registration:

To use the Electronic portal (www.eprocure.gov.in), vendor needs to register on the portal (if not registered earlier). Registration of each organization is to be done by one of its senior persons who will be the main person coordinating for the e-tendering activities. In e-TENDER terminology, this person will be referred to as the Super User (SU) of that organization. For further details, please visit the website/portal(<https://www.eprocure.gov.in>), by clicking on the link “ Click here to Enroll”. Enrolment on the CPP Portal is free of charge.

5. Bid related Information for this Tender (Sealed Bid)

The entire bid-submission would be online on e-TENDER. Broad outline of submissions are as follows:

- Submission of Cost of bid document, Earnest Money Deposit (EMD), and Eligibility documents as per NIT (Envelope-I)
- Submission of digitally signed copy of Tender Documents/Addendum/addenda.(Envelope-II)

6. Offline Submissions:

The contractor shall submit the DD for cost of Bid documents, EMD in the prescribed form, GST registration certificate and Eligibility documents as per NIT in a sealed envelope mentioning Name of work, date & time of opening of bids in the tender box available in the office of Executive Engineer (Electrical), BSNL Electrical Division, Vijayawada before the prescribed date & time as notified and same shall be opened in presence of AO, SDE [EP] (or any other authorized BSNL Executive) and contractors present (Ref EW6).

7. Public Online Tender Opening Event (TOE):

E-Tender offers a unique facility for “Public Online Tender Opening Event (TOE)”. Tender Opening Officers as well as authorized representatives of bidders can attend the Public Online Tender Opening Event (TOE) from the comfort of their offices. For this purpose, representatives of bidders (i.e. Supplier organization) duly authorized are requested to carry a Laptop and Wireless Connectivity to Internet.

The following **KEY INSTRUCTIONS** for BIDDERS must be assiduously adhered to:

1. Obtain individual Digital Signing Certificate (DSC or DC) well in advance of your first tender submission deadline on eprocure.gov.in E-tender Site or any Certifying Authority (CA) licensed by Controller of Certifying Authorities (CCA).
2. Register your organization on **eprocure.gov.in**-tender site well in advance of your first tender submission deadline on eprocure.gov.in e-tender Site (<http://eprocure.gov.in>)
3. Get your organization’s concerned executives trained on eprocure.gov.in e-tender Site well in advance of your first tender submission deadline on eprocure.gov.in e-tender Site
4. Submit your tender well in advance of tender submission deadline on eprocure.gov.in e-tender site as there could be last minute problems due to internet timeout, breakdown, etc. While the first three instructions mentioned above are especially relevant to first-time users of eprocure.gov.in e-tender Site, the fourth instruction is relevant at all times.
5. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24 x 7 CPP Portal Helpdesk. The contact number for the helpdesk is 0120-4200462, 0120-4001002, 0120-4001005.

Important Note: Before submitting on line tender document, contractor must verify the check list properly for offline submission of required documents & uploading of their scanned copies as per instructions.

TENDER SUBMISSION FORMAT (For e-Tender)

To,
The Executive Engineer (E),
BSNL Electrical Division,
Vijayawada

Subject: Submission of e-Tender for the work of **“Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)”(Balance portion of work)**

As per tender publication advertised by your office and display of Notice Inviting Tender on web site www.ap.bsnl.co.in and www.eprocure.gov.in/eprocure/app. We are hereby submitting the following documents duly self-attested.

ENVELOPE – I

S.N.	DOCUMENTS	DETAILS
1	Tender due on	
2	Tender Cost.	
a.	Demand Draft No.	
b.	Demand draft Date	
c.	Amount (Rs.590/-)	
d.	Name of Bank and Branch	
e.	In favor of	AO (cash), O/o GMTD, BSNL, Guntur
3.	Earnest Money Deposit	
a.	DD / FDR / CDR /BG No.	
b.	Date	
c.	Amount (Rs.21,703/-)	
d.	Name of Bank and Branch	
e.	In favor of	AO (cash), O/o GMTD, BSNL, Guntur
4.	Details of firm / Company	
a.	Name of firm / Company, e-mail address (mandatory)	
b.	Name of Proprietor / Partner / Managing Director	
c.	Address	
d.	Pin Code	
e.	Telephone	
f.	E– mail address (MANDATORY)	
g.	Address of Branch / Head Office Name	
5.	Income Tax returns / Chartered Accountant Certificate Date	
6.	Works Contract Registration No. & Date Valid up to	
7.	GST No.	
8.	EPF Registration No.	
9.	ESI Registration No.	
10.	Bank details of agency for RTGS/online payment	

a	Bank Account No:-	
b	Bank Name & Branch:-	
c	IFSC code:-	

I, _____ proprietor/ duly authorized representative of M/s. _____ hereby certify that the information given above is true to the best of my knowledge and belief. I have been duly authorized to sign and certify the documents. I understand that any wrong information/suppression of facts will disqualify us from being considered for the tender participation.

Place
Date
Seal
(Signature)

Yours sincerely

(Name in block letter)

Bharat Sanchar Nigam Limited

Tender for the work of “Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)”(Balance Portion of work)

Name of Contractor/firm:.....

UNDERTAKING

- 1) I/we have read and examined the Notice inviting tender, Important note for the contractors, Schedule of quantity, Data sheet, Specifications applicable drawings & designs, conditions of contract and all other contents in the tender document for the work.
- 2) I/we have read and examined the General Rules and Directions & Clauses of EW-8.
 - i) The name of work, time allowed for work, estimated cost, tender cost, mode & amount of EMD etc wherever appearing in EW-6/8 shall be as per the notice inviting tender available on the web-site.
 - ii) In condition no. 17 of the EW – 6, the amount of EMD which can be forfeited is 50 %.
- 3) I/We hereby tender for the execution of the work specified for BSNL within the time specified, as per schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions and other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.
- 4) I/We agree to keep the tender open for ninety (90) days from the due date of submission thereof and not to make any modifications in its terms and conditions.
- 5) A sum of **Rs.21,703/-** is hereby forwarded in the form of CDR/FDR/DD or bank guarantee in department’s attached format and manner (Annexure-I) as earnest money.

If I/We, fail to commence the work specified I/We agree that the said BSNL or his successors in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely and the same may at the option of the competent authority on behalf of BSNL be recovered without prejudice to any other right or remedy available in law out of the deposit in so far as the same may extend in terms of the said bond and in the event of deficiency out of any other money due to me/us under this contract or otherwise.

- 6) Should this tender be accepted, I/We agree to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, as per condition no. 4 of "Important note for the contractors."
- 7) I/We agree that the said EW-6/8 shall be made a part of the contract while entering into the agreement. (CAN BE DOWN LOADED at http://electrical.bsnl.co.in/BSNL_EW-8.pdf)
- 8) I / we agree to furnish to BSNL Deposit at call receipt / FDR / Bank guarantee of a Nationalised / Scheduled Bank for an amount equal to 5% of the contract value in a standard format within two weeks from the date of issue of letter of Acceptance. I / We agree to keep the Performance Bank Guarantee validity as per relevant clause of Notice Inviting Tenders.
- 9) I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than to whom I / We am / are authorized to communicate the same or use the information in any manner prejudicial to the safety or interest of BSNL.

(Seal of the contractor)
(Postal address)

(Signature of contractor)
Dated

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of BSNL for a sum of Rs.

(Rupees.....
.....
.....
.....)

The letters referred to below shall form part of this contract Agreement.

- a)
- b)
- c)

For & on behalf of **BSNL**
Signature

GENERAL RULES AND DIRECTIONS

1. All works proposed for execution by contractor will be notified in a form of invitation to tender displayed on Notice Board in select BSNL offices and signed by the officer inviting tender or by publication in Newspapers/internet (designated web page) as the case may be.
2. This form will state the work to be carried out, as well as the date of submitting and opening tenders and the time allowed for carrying out the work; also the amount of earnest money to be deposited with the tender, and the amount of performance guarantee to be deposited by the successful tenderer(s). Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the Officer inviting tender shall also be open for inspection by the contractor at the office of Officer inviting tender during office hours.
3. In the event of the tender being submitted by a firm it must be signed by the authorized signatory.
4. Receipts for payments made on account of work when executed by a firm, must also be signed by authorized signatory.
5. Any person who submits a tender shall fill up online tender at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any conditional rebates will be summarily rejected. However, tenders with unconditional rebate will be acceptable. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tenders shall have the name and number of the works to which they refer written on the envelopes. The rates(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and considering more than fifty paise as rupee one.
6. The Officer inviting tender or his duly authorized assistant will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amounts of the several tenders in a Comparative Statement in a suitable form. In the event of a tender being accepted a receipt for the earnest money forwarded therewith shall thereupon be given to the contractor who shall thereupon for the purpose of identification sign copies of the specifications and other documents mentioned in Rule 1. In the event of a tender being rejected, the earnest money forwarded with such unaccepted tender shall thereupon be returned to the contractor remitting the same without any interest.
7. The officer inviting tenders shall have the right of rejecting all or any of the tenders, and will not be bound to accept the lowest or any other tender.
8. The memorandum of work tendered for and the schedule of materials to be supplied by BSNL shall be filled and completed in the office of the Officer inviting tender before the tender form is issued.
9. The tenderer shall sign a declaration under the officials Secret Act, 1923 for maintaining secrecy of the tender documents drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.
10. All rates shall be quoted on the tender form only.
11. Procedure for dealing with ambiguities in rates: if on check there are differences between the rates given by the contractor in words and in figures or in amount worked out by him, the following procedure shall be followed:-

In e-tendering the intending bidder can quote his rates in figures only. The rates in words, amount of each item and total is generated automatically. Therefore the rate quoted by the bidder in figures is to be taken as correct.
12. The tender for the work shall not be witnessed by a contractor or contractors who himself/ themselves has/have tendered or who may and has/have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
13. Other agencies will also simultaneously execute the works like horticulture, external services, installation of telephone exchange equipment and other building works for the same project alongwith this work in particular. The contractor shall afford necessary

facilities for the same. No claim in the matter shall be entertained.

14. Some restrictions may be imposed by the security staff etc on the working and/or movement of labour, material etc. The contractor shall be bound to follow all such restrictions /instructions and nothing extra shall be payable on this account.
15. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-charge may in his discretion without prejudice to any other right or remedy available in law cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
16. Agency has to observe all labour rules and regulations in force. Agency shall be fully responsible for any violation observed at any time.
17. Bye laws Indemnity against liabilities
 - The contractor shall comply with all by laws and regulations of the local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fees and other charges and giving and receiving all necessary notices and keep the Engineer –in-charge informed about the notices issued and received.
 - The contractor shall indemnify the department against all claims in respect of patent rights design, trademark or name of other protected rights in respect of any plant, machine, work or materials used for or in connection with the works or temporary works and from and against all claims demands, proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto. The contractor shall defend all actions arising from such claims and shall himself pay all royalties, License fees, damages , costs and charges of all and every sort that may be legally incurred in respect hereof shall be borne by the contractor.
 - All liabilities / penal recoveries on matters arising out of tax/excise /levies such as incorrect deductions discrepancies in the filing of returns, revised assessments by the concerned authorities etc, shall be borne by the contractor.
18. Rates quoted by the contractor shall be firm and shall be valid for the currency of contract. No cost escalation shall be permitted during the currency of contract.

PROFORMA OF SCHEDULES

(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities: Enclosed

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

Sr. No.	Description of item	Quantity	Rates in figures and words at which the material will be charged to the contractor	Place of Issue
1	2	3	4	5
NIL				

SCHEDULE 'C'

Tools and plants to be hired to the contractor

Sr. No.	Description of item	Hire charges per day	Place of Issue
1	2	3	4
NIL			

SCHEDULE 'D'

Extra schedule for specific requirements/ document for the work, if any.

I. Important Note for Contractors: Appended from page 25 to page 31

II. Copy of Memo no. 5-1-12-EW/94 dt. 26/9/1996, Annexure – I (model form of Bank Guarantee): Appended from page 53 to 54.

SCHEDULE 'E'

Schedule of component of Cement, Steel, other materials, Labour etc. for price escalation.

NIL

CLAUSE 10 CC

Component of Cement expressed as per cent of total value of work	Xc	_____ %	} NA
Component of Steel expressed as per cent of total value of work	Xs	_____ %	
Component of civil(except cement and steel) / Electrical construction Materials expressed as per cent of total value of work	Xm	_____ %	
Component of Labour expressed as per cent of total value of work	Y	_____ %	

SCHEDULE 'F'

Reference to General Conditions of contract.	
Name of work:	Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)
Estimated cost of work:	Rs. 10,85,154/-
i) Earnest money :	Rs. 21,703/-
ii) Performance Guarantee :	5% of tendered value of work.
iii) Security Deposit :	5 % of the tendered value of the work.
GENERAL RULES and DIRECTIONS:	Officer inviting tender: EE (E), BSNL Electrical Division, Vijayawada

Definitions:	See below
2(v) Engineer-in-Charge	Concerned Executive Engineer (E), BSNL Electrical Division, for which authorization is given for issue of LOI
2(viii) Accepting Authority	Superintending Engineer (E) BSNL Electrical Circle, Vijayawada.
2(x) Percentage on cost of materials and labour to cover all overheads and profits.	10%
2(xi) Standard Schedule of Rates	NA
2(xii) Department	BSNL
9(ii) Standard CPWD contract Form	BSNL EW Form 8 as modified and corrected up to date.
Clause 1 i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance, in days ii) Maximum allowable extension beyond the period provided in i) above in days	14Days
Clause 2 Authority for fixing compensation under Clause 2.	SE (E)
Clause 5 Number of days from the date of issue of letter of acceptance for reckoning date of start Milestone(s) as per table given below :-	days

Table of Mile Stone(s)

Sl. No.	Description of Milestone (Physical)	Time allowed in days (from date of start)	Amount to be with-held in case of non achievement of milestone
1	Procurement of material	2(two) weeks	NIL
2	Completion of 1/3 rd of work	8(Eight) weeks	As per agreement clause
3	Completion of 2/3 rd of work	16(Sixteen) weeks	As per agreement clause
4	Total completion of work	24(Twenty Four) weeks	As per agreement clause

OR

Sl. No.	Financial Progress	Time allowed (from date of start)	Amount to be with-held in case of non achievement of milestone
1	1/8 th (of whole work)	1/8 th (of whole work)	NA
2	3/8 th (of whole work)	1/2 (of whole work)	
3	3/4 th (of whole work)	3/4 th (of whole work)	

4	Full	Full	
Time allowed for execution of work.			6 Months
Authority to give fair and reasonable extension of time for completion of work.			EE (E)/SE(E)
Clause 7 Gross work to be done together with net payment/ adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment.			As Applicable.
Clause 10CC Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column.			NA
Clause 11 Specifications to be followed for execution of work			Specifications as appended with Schedule of work.
Clause 12 12. 2& 12.3 Deviation Limit beyond which clauses 12.2 and 12.3 shall apply			50%
12.5 Deviation Limit beyond which clauses 12.2 and 12.3 shall apply for foundation work			NA
Clause 16 Competent Authority for deciding reduced rates.			Superintending Engineer (E)
Clause 30 Minimum Qualifications and experience required for Principal Technical Representative.			
i) Work with estimated cost put to tender more than Rs.2 lakhs but less than Rs.5 lakhs			Recognized diploma holder
ii) Work with estimated cost put to tender more than Rs. 5 lakh			Graduate or recognized diploma holder with three years
c) Discipline to which the Principal Technical Representative should belong.			Elect./ Mech
d) Minimum experience of works			Three (3) years.
e) Recovery to be effected from the contractor in the event of not fulfilling provision of clause 30.2 & 30.5			Rs.4,000/- p.m. for works costing above 5 lakhs. Rs.2,000/- p.m. for works costing between 2 lakhs and 5 lakhs.

IMPORTANT NOTE FOR CONTRACTORS

The firm shall read carefully the following conditions and shall quote accordingly confirming all the points in their offer.

1. EARNEST MONEY

Firm has option to deposit Earnest Money in the form of CDR / FDR / DD or bank guarantee of a scheduled Bank or Nationalized Bank / State Bank guaranteed by Reserve Bank of India in department's attached format and manner (Annexure-I). If the firm fails to start or withdraws from agreement, then as per relevant clause of the agreement, EMD @ 2% of the amount of agreement shall be forfeited from EMD available with the agreement or from any money due to the firm by the department under this contract or on any other account. Validity period of earnest money deposit shall be 30 days beyond the tender validity.

- (i) The EMD of all the unsuccessful tenders shall be released on issue of award letter to the successful tender.
- (ii) The EMD of the successful tenderer will be returned to the contractor without interest only after submission of performance guaranty of last LOI. The successful tenderer has to extend the validity of EMD as per BSNL requirements.

2. BID PRICES, TAXES AND DUTIES

The bidder shall give the total composite price inclusive of all Central and State's Levies & Taxes on material, labour etc. except octroi / Entry Taxes. Octroi / Entry Taxes will be paid extra, as per actuals, wherever applicable on production of proof of payment / relevant invoices / documents.

The price approved by BSNL for procurement will be inclusive of levies and taxes, Packing, Forwarding, Freight and Insurance etc. except octroi / Entry Taxes.

(a) The total composite price shall comprise of unit price and all other components of price need to be individually indicated / quoted against the goods / material / service, it proposes to supply under the contract in the following manner :

- i) The Basic Unit price (Ex-Factory Price) of the goods / services / materials, GST Tax, Freight, Forwarding, Packing, Insurance and any other Levies / Charges already paid or payable by the supplier shall be quoted separately.
- ii) The liability to pay all taxes, levies etc. shall be of contractor and BSNL will not entertain any claim whatsoever in this respect.

(b) Duties and Taxes applicable if any:

i) The firm shall furnish challans / invoices for availing input tax credit by BSNL

ii) Vendors should furnish the correct HSN/SAC Code in the price Schedule. If the input tax credit under GST is found to be not admissible at any stage subsequently owing to wrong furnishing of tariff Head, then the vendors will be liable to refund such non-admissible amount, if already paid along with penalty if charged by the concerned authority.

iii) In case the input tax credit which could not be availed by BSNL as per the quotes indicated in the price schedules by the vendors and subsequently at any stage it is found that input tax credit is admissible as per GST Rules, then the vendors will be liable to refund the amount equivalent to such Duties & Taxes if already paid to them. However the purchaser may allow the supplier to submit necessary documents in this regard which may enable the purchaser to avail the input tax credit provided such credit is still available for the amount so paid as per GST Rules

iv) The purchaser reserves the right to ask the bidders to submit documentary proof confirming the correct HSN/SAC Codewhere the code furnished against the particular tendered item by different bidders differs from each other or the same is found apparently not furnished in accordance with GST Rules.

v) If the supplier fails to furnish necessary supporting documents for input tax credit by BSNL, the amount pertaining to such Input credit will be deducted from the payment due to the firm.

vi) Invoice should clearly indicate breakup details of composite price i.e. basic unit price (Ex-Factory price) of the goods / services / materials, any other duties and taxes, Freight / Packing, Forwarding charges, GST etc.

vii) In case of any statutory variation in regard to GST or any other taxes, within the currency of individual agreement including extension of time period, the same shall be admissible as per actual prevailing rates of GST or any other taxes as applicable, subject to the condition that the reason for such extension of time period is not attributable to the agency.

3. EVALUATION OF BIDS

The evaluation and comparison of responsive bids shall be done on the basis of net cost to BSNL on the prices of all items included in schedule of work offered inclusive of Duties and taxes. Packing, Forwarding, Freight and Insurance charges etc. but excluding input tax credit under GST. The Octroi / Entry Taxes are not to be included in the composite price and hence the same will not be considered for the purpose of evaluation and comparison of responsive bids. However, Octroi / Entry Taxes will be paid extra, as per actual, wherever applicable, on production of proof of payment / relevant invoices / documents.

4. INCREASE/DECREASE OF TENDER QUANTITY

BSNL will have the right to increase / decrease up to 50% of the quantity of goods and services specified in the schedule of items without any change in the unit price or other terms and conditions at the time of award of contract. In exceptional and unavoidable cases BSNL can increase the quantity of goods and services beyond 50% of the tendered quantity without any change in tendered and accepted unit price and also other terms and conditions as applicable at the time of award of contract.

5. Signing of Contract:

The successful tenderer /contractor, on acceptance of his tender by the Accepting Authority, shall sign the contract within 15days consisting of the notice inviting tender, all documents including drawings, if any, forming the tender as issued at the time of invitation of tender & acceptance thereof together with any correspondence leading thereto.

The agreement to be signed on non-judicial stamp paper and the cost to be decided as per the prevailing local bye-laws or zonal head of the circle.

6.a) Tendered rates are inclusive of taxes and levies payable under the respective states.

However, pursuant to the Constitution (Forty Sixth amendment) Act 1982,if any further tax or levy is imposed by statute after the date of receipt of tenders and the contractor(s) thereupon necessarily and properly pays taxes or levies the contractor(s) shall be reimbursed the amount so paid provided such payment if any is not in the opinion of S.E (whose decision shall be final and binding) attributable to delay in execution of work within the control of the contractor(s).

(b) The contractor(s) shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of Government and shall furnish such other information's /documents as the Engineer-in-Charge may require.

(c) The contractor(s) shall within a period of 30 days of imposition of any further tax or levy pursuant to the Constitution (Forty Sixth amendment) Act 1982 give a written notice thereof to the Engineer-in-Charge that the same is given pursuant to this condition together with all necessary information relating thereto.

7. PERFORMANCE BANK GUARANTEE :-

The contractor is required to furnish performance guarantee for an amount equal to 5% of the contract value in the form of bank guarantee (of a Nationalized / Scheduled Bank in a standard format)/ CDR/FDR/BG/DD within two weeks from the date of issue of award letter. The validity period of the performance security in the form of performance bank guarantee shall be one year from the date of actual completion of work.

Security Deposit: In addition to performance guarantee stated above, a sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tendered value of the work.

8. PAYMENT TERMS: -As per BSNL EW6 & EW8

No payment will be made for goods rejected at the site on testing. Payment, if made for such items shall be recovered from subsequent bills or other bills.

9.. PROGRAMME FOR EXECUTION: -The firm shall execute the work as per detailed programme as mentioned in table of mile stones in schedule of proforma.

10.. STORES AND SAFETY:

The contractor from his own sources shall arrange all the stores and materials required for the satisfactory completion of the work at work site. Lockable space for storing the materials may be provided on request from the contractor. However, safe custody of material stored at site will be the responsibility of the contractor.

11. PACKING, FORWARDING AND STORING AT SITE:

Before dispatch to site, the equipment / components / materials shall be properly packed with polythene sheet and wooden planks for protection and avoiding transit damages and damage against storage in open area at transporters premises or at work site.

12. COORDINATION AT SITE:

At the site of work as more than one agency may be working, full cooperation shall be extended to other agencies during progress of work. Further, work shall be carried out in such a way so that it may not cause abnormal noise and hindrance to the officers of the BSNL engaged in erection as well as doing normal routine work.

13.GUARANTEE AND DEFECT LIABILITY:

(i) The guarantee shall be valid for twelve months after successful final A/T. The contractor shall guarantee that all equipments shall be free from any defect due to the defective material and / or bad workmanship and also the equipments shall work satisfactorily with performance and efficiencies not less than the guaranteed values. The security deposit will be released only after the guarantee period.

(ii) Any part of equipment found defective during this period shall be replaced free of cost by the contractor. The service of the contractor's personnel, if required during this period shall be made available free of cost to the BSNL.

(iii) The contractor shall depute his representative within 24 hours of notification of the defect by the BSNL

(iv) A joint report shall be prepared by the representative of BSNL and the firm regarding nature of defects and remedial action required. Time schedule for such action shall also be finalized.

(v) In case the contractor fails to depute his representative within 24 hours of notification of the defect or fails to cause remedial action within reasonable time as decided during joint inspection, the BSNL may proceed to do so at the contractor's risk and expenses and without prejudice to any other right.

14. NOT COVERED UNDER GUARANTEE:-

- 1 Consequential losses and damages.
- 2 Parts subject to normal wear and tear such as electrical contacts.
- 3 Failure of parts due to corrosive atmosphere.

15. The list of approved make of various items is as per Annexure 'VI'

16. THE FIRM SHOULD NOTE THAT THE OFFERS WITH CONDITIONS INCLUDING THAT WITH CONDITIONAL REBATES WILL BE SUMMARILY REJECTED.

17. The contractor shall ensure fulfillment/compliance of the provisions of EPF & Misc. Provisions Act 1952 & Employees Provident Fund Scheme 1952 in respect of labourers / employees engaged by them for performing the works of BSNL.

18. The Contractor shall not be permitted to tender for works in telecom circle of BSNL in which his

near relative (s) (directly recruited or on deputation in BSNL) is/are posted in any capacity either non-executive or executive employee in that Circle. Any breach of this condition by any contractor would be sufficient to debar from enlistment.

Note:- The near relatives for this purpose are defined as (a) Members of a Hindu Undivided Family, (b) they are husband and wife, (c) the one is related to the other in the manner as father, mother, son(s) wife (daughter-in-law), daughter(s) and, daughter's husband (son-in-law), brother(s) and brother's wife, sister(s) and sister's husband (brother-in-law).

The certificate (As per Annexure-IX) shall be given by the proprietor in respect of proprietorship firm, by all the partners in respect of partnership firm and in respect of a limited company by all directors of the company. Govt. of India/ Financial Institutions nominees and independent non-official part time Directors appointed by Govt. of India or the Governor of the State and full time Directors of PSUs both State and Central are excluded from the purview of the above provisions.

19. The competent authority on behalf of the BSNL does not bind himself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all of the tenders received without the assignment of a reason. All tenders in which any of the prescribed conditions are not fulfilled or are incomplete in any respect are liable to be rejected.

20. The competent authority on behalf of BSNL reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

21. No exemption certificate for payment of EMD is acceptable.

22. TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR:

Without prejudice of any of the rights or remedies under this contract, if the contractor dies, the Engineer in charge on behalf of the BSNL shall have the option of terminating the contract without compensation to the contractor.

23. INDULGING OF CONTRACTOR IN CRIMINAL/ANTISOCIAL ACTIVITIES AND CASES UNDER INVESTIGATION/CHARGE SHEETED BY CBI OR ANY OTHER GOVERNMENT AGENCIES ETC.: If the CBI/Independent External Monitor (IEM)/Income tax/Sales Tax/Central Excise/Custom Departments recommends such a course-Action will be taken as per the directions of CBI or concerned department.

DETAILS TO BE SUPPLIED BEFORE STARTING THE WORK

1	Name of the Agency (With Office address)	:	
2	Name of Proprietor/ partners	:	
3	Telephone No.(s) of the firm	:	
4	Name & address of the Supervisor	:	
5	24 Hours contact Numbers	:	
6	Particulars of the License/ Registration	:	

ANNEXURE-I

MODEL FORM OF BANK GUARANTEE

BANK GUARANTEE BOND FOR EMD FOR AIR CONDITIONING, DIESEL ENGINE ALTERNATOR, LIFTS AND SUB STATION WORKS WHEREVER THE AMOUNT OF EMD IS MORE THAN RS. 20, 000/-.

Whereas _____ (hereinafter called "The Contractor(s)") has submitted its Tender dated _____ for _____ (Name of work) _____ KNOW ALL MEN by these Presents that WE _____ OF _____ having our registered office at _____ (hereinafter called "The Bank") are bound unto **ACCOUNTS OFFICER (CASH), O/O GMTD, BSNL, Guntur**..... (hereinafter called " The Purchaser ") in the sum of _____ for which payment will and truly to be made of the said Purchaser, the Bank binds itself, its successors and assigns by these presents.

THE CONDITIONS of the obligation are:

1. If the Contractor(s) withdraws its Tender during the period of Tender validity specified on the Tender Form : or
2. If the Contractor(s) having been notified of the acceptance of its Tender by the Purchaser during the period of Tender validity.
 - (a) Fails or refuses to execute the Contract.
 - (b) Fails or refuses to furnish Security Deposit in accordance with the conditions of Tender document.

WE undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand, the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force as specified in the Tender Document up to and including Thirty (30) days after the period of the Tender validity, and any demand in respect thereof should reach the Bank not later than the specified date/dates.

Signature of the Witness
Authority

Signature of the Bank

Name & Address of Witness

ANNEXURE – II

PERFORMANCE SECURITY GURANTEE BOND

1. In consideration of the CMD, BSNL (hereinafter called 'BSNL') having agreed to exempt _____ (hereinafter called 'the said contractor(s)') from the demand under the terms and conditions of an agreement/Advance Purchase Order No. _____ dated: _____ made between _____ and _____ for the supply of _____ (hereinafter called "the said agreement"), of security deposit for the due fulfillment by the said contractor (s) of the terms and conditions contained in the said Agreement, on production of the bank guarantee for _____ we, (name of the bank) _____ (hereinafter refer to as "the bank") at the request of _____ (contractor(s)) do hereby undertake to pay to the BSNL an amount not exceeding against any loss or damage caused to or suffered or would be caused to or suffered by BSNL by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

2. We (name of the bank) _____ do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the BSNL by reason of breach by the said contractor(s)' of any of the terms or conditions contained in the said Agreement or by reason of the contractors(s)' failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of BSNL in these counts shall be final and binding on the bank. However, our liability under this guarantee shall be restricted to an amount not exceeding _____.

3. We undertake to pay to the BSNL any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/supplier(s) in any suit or proceeding pending before any court or tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the contractor(s)/supplier(s) shall have no claim against us for making such payment.

4. We (name of the bank) _____ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the BSNL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ (office/Department) BSNL certifies that the terms and conditions of the said Agreement have been fully or properly carried out by the said contractor(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the expiry of ONE YEAR after actual completion of work.

5. We (name of the bank) _____ further agree with the BSNL that the BSNL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the BSNL against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act or omission on the part of the BSNL or any indulgence by the BSNL to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s)/supplier(s).

7. We (name of the bank) _____ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the BSNL in writing.

Dated the _____ day of _____ for _____ (Indicate the name of the Bank)

ANNEXURE-III
LIST OF APPROVED MAKES OF BSNL ELECTRICAL WING

S. No.	Item	Makes
1	Engine	Ashok Leyland /Cummins/ Cater pillar / KOEL/ Volvo Penta / Mahindra & Mahindra (up to 200 KVA) /Escorts (up to 30 KVA)/ Eicher (up to 35 KVA)
2	Alternator(Brushless)	Crompton Greaves (AL. series) / KEC / Leroy Somer / Stamford/Jyoti Ltd
3	Battery (Lead Acid / Mntc. Free)	Amara Raja / AMCO / Farukawa / Hitachi / Exide/ Prestolite / Standard / manufacture approved make incase battery is of same make as that of Engine and supplied by the Manufacturer only(Kirloskar,Cummins pulse etc)
4	HV Switchgear (Vacuum Circuit Breaker/SF6)	BieccoLawrie / Crompton / Kirloskar / MEI / Jyoti Ltd
5	Transformer (Oil filled / Dry type)	ABB / Schneider Electric /Andrew Yule / Bharat Bijlee / Crompton / EMCO / Kirloskar / Siemens
	a) Above 400 KVA	
	b) Up to 400 KVA	In addition to above makes, Uttam/Automatic Electric Gear(AEG)/Patson/Rajasthan Transformer and Switchgear
6	Air Circuit Breaker	L&T/ Schneider Electric / Siemens
7	MCCB(Ics=Icu)	L&T/ Schneider Electric / Siemens
8	SDF units	L&T/ Schneider Electric / Siemens/ HPL/Havells
9	Power Contactors	L&T/ Schneider Electric / Siemens/ Lakshmi(LECS)
10	Change Over Switch	HPL / Havells / H-H Elcon
11	Intelligent APFC Relay	L&T/EPCOS(Siemens)/ Schneider Electric / Neptune Ducati/Syntron/ABB
12	Bus Bar Trunking/ Sandwiched Bus Duct	Moeller/L&T/Schneider Electric/ABB/Legrand/Zeta
13	Power Capacitors (MPP/APP)	L&T/EPCOS(Siemens)/ABB/Crompton/ Schneider Electric/Neptune Ducati
14	Digital/ KWHrmeter	Schneider Electric/ AE/ Digitron / IMP/ Meco / Rishabh / Universal/HPL/L&T/ABB
15	Cold shrink HT/LT Cable Joint	Denson / 3M(M-Seal)/ Raychem
16	Rubber Matting	ISI mark
17	MCB/ Isolator /ELCB/RCCB/ Distribution Board	Crompton / Havells / Indokopp / MDS Legrand/ L&T / Schneider Electric/ Siemens / Standard/ C&S/ABB/HPL
18	MS/ PVC Conduit	ISI mark
19	Cable Tray	MEM/Bharti/Ratan/Slotco/Profab
20	HT/LT Cables	ISI mark
21	PVC insulated copper conductor wire	ISI mark
22	Centrifugal Pump	Amrut / BE / Beacon / Batliboi / Crompton / Jyoti / Kirloskar / KSB / Mather &platt / WASP/Grundfos

23	Submersible Pump	Crompton/Amrut / BE / Calama / Kirloskar / KSB
24	Motors	ABB/ Bharat Bijlee / Crompton Greaves / Schneider Electric / HBB / KEC / Siemens/Jyoti Ltd
25	Fresh Air Fans	GE / Khaitan/Almonard/Crompton
26	Starter	ABB / BCH / Schneider Electric / L&T / Siemens /
27	Single Phase Preventer	L&T / Minilec / Siemens / Zerotrip
28	GI/MS Pipe	ATC / ATL / BST / GSI / ITC / ITS / IIA / JST / Jindal / TTA / Tata/Zenith
29	Foot Valve	ISI mark
30	Gate Valve	Advance/Audco/Johnson Controls/Zoloto/Annapurna / Fountain / Kirloskar / Leader / Sant / Trishul
31	Compressors	Carrier/Emerson copeland/York/Danfoss (for chillers only)
32	Resin Bonded Glass wool	Fibre Glass / Pilkington / UP Twiga
33	Expanded Polystyrene	BASF(India) Ltd.
34	Gauge	Feibig / H.Guru / Pricol
35	Controls	FLICA / Honeywell / Indfoss / Penn-Danfoss / Ranco / Ranutrol / Sporland
36	Fine Filters	Anfiltra Effluent / ARW / Athlete/ Airtake/ Dyna / Kirloskar/ Puromatic/ Purafill/ Purolator / Tenacity
37	GI Sheet	HSU Jindal / National / Nippon Denro / Sail / Tata
38	Heat Detector	Appollo / Chemtron/ Edward / Fenwal/ Hochiki / Nitton /System Sensor/ Wormald/Honeywell Essar/Notifier
39	Ionization Detector	Appollo / Cerebrus / Edward/ /Fenwal / Hochiki / Nitton / System Sensor / Wormald
40	Photo Electric Smoke Detector	Appollo / Cerebrus / Edward / Fenwal/ Hochiki / Nitton / Wormald/ System Sensors
41	Fire Panel (Microprocessor based)	Agni Instruments / Agni Devices/ Aruna Agencies/ Carmel Sensor / Ravel Elect./Honeywell Essar/Notifier/Navin Systems
42	Sprinkler/ Hose Reel & Hose Pipe	ISI mark
43	Fire Extinguisher	ISI mark
44	Lift	OTIS, Kone, Mitsubishi ,Schindler, Johnson, Thyssenkrupp Elevator(India)

NOTE: 1. Any other make approved by BSNL EW, corporate office till the last date of sale of tender is also acceptable.

2. The accessories such as CT/PT/measuring instrument/relays provided by approved make in respect of Transformer/HT Panel/DG /AC Package Units as supplied by approved manufacturer along with the equipments are also acceptable in addition.

ANNEXURE-IV

Declaration by Contractor

I / We do hereby undertake to have gone through the terms & conditions / clauses of all the tender documents including Form EW-6, EW-8 being adopted by the BHARAT SANCHAR NIGAM LIMITED (Electrical Wing) & agree to abide by the same.

I/we hereby declare that no addition /deletion/correction have been made in the tender document submitted and is identical to the tender document appearing on website.

In case of failure to comply as above, our offer will stand withdrawn and the decision of tender opening officer in this regard shall be final & binding on me.

Signature of contractor/authorized representative

With seal of the firm

ANNEXURE-V
UNDERTAKING TO ABIDE BY EW6 & EW8

"I.....Son of.....
.....Resident of
..... hereby give an
undertaking that I have read and I am aware of all the clauses and sub clauses of BSNL EW
6 & 8 forms and I confirm that I will abide by all the terms and conditions available in
original standard BSNL EW 6 & 8 forms.

(Seal of the firm)
Contractor)

(Dated Signature of

ANNEXURE-VI
Non relative Certificate
(The format of the certificate as per clause 12.3 of EW-6)

I.....,son of Shri
.....
resident
of.....
..... hereby certify that none of my relative(s) as defined in the tender
document is/are employed in BSNL unit as per details given in tender document. In case at
any stage, it is found that the information given by me is false /incorrect, BSNL shall have the
absolute right to take any action as deemed fit/without any prior intimation to me.

(Seal of the firm)

(Signature of Contractor)

ANNEXURE-VII
UNDERTAKING REGARDING EPF PROVISIONS

"I.....Son of.....
.....Resident of
..... hereby give an
undertaking that

* I/We have employed only ----- persons in our establishment and hence the EPF and Miscellaneous provision Act, 1952 is not applicable to my /our establishment.

* I/ We have registered as per the EPF and Miscellaneous provisions Act, 1952 ** and our registration no is ----- . We undertake to keep it valid during the currency of contract.

In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".

* Strikeout whichever is not applicable.

** Attach a self-attested photo copy of the above said EPF registration certificate.

**(Seal of the firm)
Contractor)**

(Dated Signature of

ANNEXURE-VIII
UNDERTAKING REGARDING ESI PROVISIONS

I.....Son of.....
.....Resident of
hereby declare that:-

* I/We have employed only ----- persons in our establishment and hence the ESI and Miscellaneous provisions Act, 1948 is not applicable to my / our establishment.

*I / We have registered under ESI Act 1948 and ** allotted Registration Number is..... We undertake to keep it valid during the currency of contract..

In case it is found that the information given by me / us is (are) incorrect / false, BSNL shall have the absolute right to take any action as deemed fit without any prior intimation to us / me.

* Strike out whichever is not applicable.

** Attach a self-attested photocopy of the above said ESI Registration Certificate OR self-attested photocopy of the latest ESI contribution slip along with above undertaking on a printed letter head.

(Seal of the firm)

(Dated Signature of Contractor)

ANNEXURE – IX

COMPLIANCE STATEMENT

We _____ (name of the firm) state to comply in full manner with all the General, commercial, Technical, operating financial conditions of the Tender Document for the work **“Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)”(Balance Portion of Work)**.without any reservation and deviation.

For and on behalf of (Name the company)

Signature of the authorized signatory of the bidder company.

ANNEXURE– X

Computerized Measurement Books (CMB's) and Bills to be submitted by the contractor.

➤ **Application and format of the Computerized M.B.**

(1) The conventional Measurement Books shall be replaced by a bound volume of computerized measurements to be furnished by the contractor, duly machine numbered for the pages, and with an MB number given by the Division Office. The pages of these Measurement Books shall be of A-4 size. All these Measurement Books belonging to a Division shall be serially numbered, and a record of these Computerized Measurement Books shall be maintained in a separate Register in Form CPWA 92.

(2) The same format as in existing Measurement Books shall be used for the Computerized Measurement Books. The measurements shall be carried forward from the previous recorded measurements as per the existing procedure.

➤ **Mode of measurements:**

(1) The measurements shall be recorded and entered in computerized format in the first instance by the contractor, and a hard copy shall be submitted to the BSNL. All entries shall be made exactly as per the existing procedure.

(2) These measurements shall then be 100% checked by the Junior Telecom Officer. If Junior Telecom Officer is not available, the Sub Divisional Engineer shall perform 100% check of the measurements. The contractor shall incorporate all such changes or corrections, as may be done during these checks, to his draft computerized measurements, and submit to the BSNL the corrected computerized measurements in the form of a book, duly hard bound in red colour on the lines of the conventional Measurement Books now in use, and with its pages machine numbered.

(3) The Sub Divisional Engineer and the Executive Engineer shall test check these computerized measurements as per the existing instructions. This book shall be treated as a Computerized Measurement Book.

(4) The Junior Telecom Officer, Sub Divisional Engineer and the Executive Engineer shall record the necessary certificates for their checks and test checks as per the existing procedure in this Computerized Measurement Book.

(5) The Computerized Measurement Book shall be allotted a serial number as per the Register of Computerized Measurement Books.

➤ **Cutting or over-writing in the computerized M.B. not allowed**

(1) The Computerized Measurement Book given by the contractor, duly bound, with its pages machine numbered, shall have no cutting or over-writing.

(2) It is the responsibility of the Junior Telecom Officer or the Sub Divisional Engineer as the case may be to ensure that the checks and test checks done by them in the initial draft measurements are correctly incorporated in the Computerized Measurement Book before they record their certificates.

(3) In case of any error, the Computerized Measurement Book shall be cancelled, and the contractor shall re-submit a fresh Computerized Measurement Book. This should be done before the corresponding computerized bill is submitted to the Division for payment.

➤ Computerized Bill to be submitted by the contractor

(1) The contractor shall submit his running and final bills in a computerized form in the same format as the existing conventional bills, with all the pages machine numbered, and hard bound, and with all the entries made as per the existing procedure.

(2) The bill shall be carried forward from the previous running account bill as per the existing procedure.

(3) These computerized bills shall be processed by the various offices for payment, as per the existing procedure.

ANNEXURE – XI
SPECIFICATIONS
(SUMMARY)

SECTION I: ELECTRICAL WORK

SECTION II: INTERNAL AND EXTERNAL ELECTRICAL WORKS ADDITIONAL
SPECIFICATIONS

SECTION III: GENERAL SPECIFICATION FOR EARTHING

SECTION IV: COMPOUND LIGHTING WORK SEPCIFICATIONS

SECTION V: QUALITATIVE REQUIREMENTS FOR LIGHTENING PROTECTION LPS

SECTION VI: TELECOMMUNICATION EQUIPMENT EARTH SYSTEM

SECTION-VII: ADDITIONAL SPECIFICATIONS

SECTION-I

1. Scope ELECTRICAL WORK This section sets out the basic requirement for switchboards, electrical power wiring to individual motors and other equipments, control circuit wiring and earthing etc.

2. General

1. Unless otherwise specified particularly the entire equipment shall be suitable for operation

on 415 volts/240 volts, 50Hz earthed neutral, 3/single-phase alternating current system as may be required.

2. All components, accessories, raw materials and finished parts used in manufacture and assembly of switch boards, power and control circuit wiring and earthing system shall comply with the relevant Indian Standards amended up to date. Where Indian Standards do not exist British Standards shall apply.

3. The entire work shall comply with Indian Electricity rules and C.P.W.D general specifications for electrical work. Particular care shall be taken to ensure compliance to I. E. rules 41, 45, 51 and 61.

4. When cables pass through pipes, wooden bushes shall be provided at both the ends. When cables are required to pass through floors or walls, pipe inserts shall be provided and openings sealed in approved manner.

3. Control Wiring

1. Control circuit wiring shall be carried out with 250 volts grade PVC insulated armored multi core copper conductor cables.

2. Control cables shall be of adequate cross sections to restrict the voltage drop but each conductor shall be not less than 2.5 sq. mm.

3. Runs of control wires within the switchboard shall be neatly bunched and suitably supported / clamped. Means shall be provided for easy identification of the control wires by means of labeled ferrules.

4. The control wiring shall correspond to the circuit / sequence of operations and inter locks as required for satisfactory performance of the plant.

4. MS Tray

1. Power cables shall be laid in racks or trays made out of minimum 40 x 40 x 2mm thick MS solid/ slotted angle having weight of minimum 970 grams/meter & MS flat of size not less than 12mm x 2mm thick. The cable shall be fixed on the tray using suitable size clamps, nut bolts & washers. The linear distance between two clamps shall not exceed 150mm. The trays shall be suspended with hangers at every 1.5 meter from ceiling or fixed on the wall using suitable brackets as required. No trenches shall be made in floors for this purpose. Where two or more cables are laid together, the cables shall be properly de-rated.

5. Earthing

1. In accordance with Rule 61 of IE Rules, metallic frame of all medium voltage equipments / supporting frames, shall in all cases be connected to 2 separate and distinct earths. The size of such earth wires shall be not less than 4-mm dia. GI wire.

SECTION-II
INTERNAL AND EXTERNAL ELECTRICAL WORKS ADDITIONAL SPECIFICATIONS

1. All repairs & patch work shall be neatly carried out to match with the original finish & all damages caused to the building installation during the execution of work shall have to be made good by the contractor immediately at his own cost to the entire satisfaction of Engineer-in-charge. In case contractor fails to comply with the instructions of the Engineer-in-charge, Engineer-in-charge shall be at liberty to get the work done by any other agency and recover such amount as paid to the other agency from the bill(s) of the contractor. Contractor shall have no claim, whatsoever, on the extent of such amount.
2. Wherever ceiling roses are not required to be provided in the light/fan/exhaust fan points, due to site conditions, the contractor shall use suitable three pin connectors for which nothing extra shall be paid. Wiring shall be carried out with FRLS wires. Copper wire up to 4 sq.mm may be single stranded whereas wires above 4 sq.mm shall be multi-stranded conductor. Termination of multi-stranded conductors shall be done using crimping type thimbles at both the ends. Nothing extra shall be paid for the same.
3. Contractor shall provide polythene/PVC plastic cover for all MDB 's/SDB 's/DB 's to protect them from rust/damages, during execution of work till the work is actually completed and handed over to the department.
4. The loose wire boxes/cable end boxes (adaptor boxes) shall be provided on the various electrical boards to facilitate the termination of the wiring in the various mountings. The boxes shall be of the same make as the DB's as far as possible. Wherever the company made cable end boxes are not available they shall be neatly fabricated with 16 SWG CRCA sheet steel, duly powder coated, dust & vermin proof and the front cover of MS sheet shall be with rubber gasket suitably screwed or with 3mm thick phenolic laminated sheet of Hylam/Formica instead of MS sheet, as desired by the Engineer-in-charge. The length of such boxes shall be same/or more as the width of the electrical switchboard. Such loose wire boxes are deemed included in the scope of the work and no extra payment shall be made for them.
5. All debris/malba resulting due to electrical work shall be removed on daily basis and completion of the work shall only be accepted after the site has been cleaned of all Melba. In case, contractor fails to comply, the same shall be got removed by the other agency and the payment so made shall be recovered from the bill(s) of the contractor.
6. The contractor shall have to make arrangements, at his own risk and cost, for transportation of materials from the point of issue of stores to site of work, if any.
7. Makes of all items that are not covered in the schedule of work/additional specifications shall be got approved from the Engineer-in-charge and shall conform to relevant Indian Standard as applicable.
8. The contractor shall ensure that the staff employed by him for execution of the

electrical work, possess the valid electrical license issued by competent authority. Consequences arising due to the default of the contractor in not complying with the above condition shall be the responsibility of the contractor.

9. Copper lugs shall be provided for terminating copper/aluminum/GI earth wire to all switchboards for which nothing extra shall be paid. All multi-stranded/ stranded wires shall be terminated through copper lugs. All hardware items such as screws, thimbles, G.I. Wires, etc. which are essentially required for completing an item as per specifications will be deemed to be included in the item even when the same have not been specifically mentioned.

10. All concealed work and earthing shall be done in the presence of the Engineer-in-charge or his authorized representative.

11. The schematic diagram/dimensional drawings of the various electrical cubical panels shall be got approved from the Engineer-in-charge before fabrication and shall comply with CPWD specifications and Indian Electricity Rules. The panels shall conform to IS: 8623/1993. All panels shall be powder coated inside out, in shade approved by the Engineer-in-charge.

12. All floor-mounted panels shall be mounted on thick M.S. channel on all the sides. It shall have a continuous earth bus running continuously along the length of the panel extending on either side for earth connection.

13. The doors of all cubicle panels shall be hinged type including those of bus bar chambers and cable alleys. The locking shall be with chrome plated metal key locks. All doors shall be earthed with copper conductor wire as approved by the Engineer-in-charge.

14. The work shall be carried out according to drawing approved by the Engineer-in-charge. The layout once approved can only be changed by the Engineer-in-charge as per requirement at site. It shall be the responsibility of the contractor to plan the layout and get the approval from the Engineer-in-charge before laying the conduits etc.

15. The MCB should be of the same make as that of MCB DB's and having a minimum breaking capacity of 10 KA. Contractor shall obtain approval of the Engineer-in-charge before procurement of MCB DB's.

16. All model of modular accessories required for the work shall be got approved from the Engineer-in charge from among the approved makes. The base plate shall be preferably in sheet steel or otherwise in unbreakable polycarbonate. The cover plates shall be screw less type in shade approved by the Engineer-in-charge.

17. Contractor shall have to check the Site Order Book for any instructions of the Engineer-in-charge or his authorized representative and sign the site order book. He shall be bound to ensure compliance with the instructions recorded therein.

18. The MCCB's shall be compatible for reliable protection and accurate measurement. The

rated Service breaking capacity (kAmps) shall be 100% of Ultimate breaking capacity (kAmps). All MCCB's shall be current limiting type with features as per relevant IS codes and CPWD specification.

19. MCCB's shall be used with terminal spreaders and all terminals shall be shrouded to avoid direct contact.

20. Mechanical Castle key interlock shall be provided among the incomer MCCB's, wherever, as applicable, two different incomer sources are provided in the panel as per the directions of the Engineer in charge. The same is deemed included in the scope of work.

21. All measuring and indicating instruments shall be protected through fuses/ MCB's and isolating switches.

22. General arrangement drawing of the switchboard shall be got approved from the Engineer-in-Charge before commencement of manufacturing. While deciding the size of switch boxes for light point/fan points/exhaust fan point items, wherever fan regulators are to be provided, extra two modules will be provided for fan regulators (fan regulator is to be provided in separate item).

23. For the items like LT panels, feeder pillars and accessories, etc, the firm shall arrange for inspection in the factory and provide for all facilities for testing. The cost of the visit of Engineer-in-Charge or his representative shall be borne by department. However, firm will be responsible for arranging the inspections as required.

24. Conduit layout as per switching arrangement shall be prepared by contractor and got approved from the Engineer-in-Charge before slab casting. However the Engineer-in-Charge has the right to change the layout as per the site requirements and the contractor shall not have any claim due to change in layout.

25. To facilitate drawing of wires (including telephone/ fire alarm wires) 16/18 SWG G.I fish wire shall be provided along with lying of recessed conduit for which no extra payment shall be made to contractor. Color coding shall be done for conduit laid for different services as per direction of Engineer-in –charge.

26. Conduit and termination to SDB and main board adapter box i/c connection wires to MCB,s inter connection between SDB and main board etc shall be included in the tendered rates and nothing extra shall be paid for the same.

27. The contractor shall provide junction boxes / looping boxes of required sizes and such boxes shall be measured as part of conduit / batten wiring without any extra payment.

28. Only brass screws along with brass washers will be used for fixing Phenolic laminated sheet covers and at other places aluminum alloy/ brass / cadmium plated screws, nuts, washers will be used.

29. M.S.dash fastener shall be used for installation of fittings and fixtures in ceiling and for providing suspenders for the angle support, conducting, cable tray etc. for which nothing extra shall be paid

30. All CI/metal boxes & junction boxes should be cleaned properly and painted from inside before wiring & fixing the accessories.

31. In wiring items like point wiring / wiring for light and power plug /circuit wiring / sub main wiring, the item includes the cost of conduit also.

32. For items of power plugs, 15 Amp socket shall be of universal 6 pin type.
33. (a) The telephone conduits shall be laid with GI fish wires kept, pulled in for pulling of wires, at least 1000mm extra at outlets.
(b) Main junction box of telephone conduit system shall be mounted at a height so that the top of box does not exceed 1.65 meters from the floor level and in a suitable location for working by the staff, with approval of Engineer-in-charge.
34. The work is to be carried out in good-workman like manner & generally in accordance with the plans. However, the contractor will be bound to carry out the work with minor deviations over the plans supplied if desired by the Engineer-in-Charge of the works.
35. Deep Junction boxes of PVC/ metal shall be provided for conduits laid in RCC Slabs.
36. The MCB's, RCCB with MCB and MCB DB's shall be of the same make. The front cover of the MCB DB's shall be powder coated.
37. All metal boxes housing control switches, regulators and plug sockets shall be suitably earthed and no extra amount is payable on this account for loop earthing switch boxes of same distribution circuits.
38. General arrangement drawing of the switch board shall be got approved from the Engineer-in-Charge before commencement of manufacturing.
39. The contractor is advised to visit the site of work to have an idea of the execution of the work, failure to do so will not absolve their responsibility to do the work as specified in agreement.
40. The rates should be inclusive of all taxes & duties. Nothing extra will be paid on this account.
41. Termination of wiring inside the DB's Main Board shall be with crimped copper lugs connection.
42. Point wiring and Power wiring shall be taken in separate conduit.
43. The contractor shall also supply insulation and earth test reports before the installations are handed over to the Engineer-in-Charge in good condition, as required under CPWD specifications.
44. Where conduit has already been laid in slabs / wall (through other agencies before award to this agency) the same shall be used by the contractor for drawing wires for items like point wiring or circuit / sub main wiring in which the above conduits forms a component of the item. Payment will be made to the contractor for such items based on the agreement rates for the complete item. However recovery will be made for quantities already laid in slabs / wall from the contractor's bill at the rate derived from similar items in the agreement of schedule rate for the item enhanced by overall agreement percentage, whichever is higher.

SECTION-III GENERAL SPECIFICATION FOR EARTHING

1.0 SCOPE:-

This chapter covers the essential requirement of earthing system components and their installation. This shall be read with which lays down criteria for their design. For details not covered in these specifications, IS Code of Earthing (IS : 3043-1987) shall be referred.

1.1. APPLICATION:-

(i) The electrical distribution system in the department is with earthed neutral (i.e., neutral earthed at the transformer/generator end). In addition to the neutral earthing, provision is made for earthing the metallic body of equipment's and non-current carrying metallic components in the sub-station, as well as in the internal/external electrical installations.

(ii) Earthing system is also required for lightning protection, computer installations and for functional reasons.

(iii) Earthing requirements are laid down in Indian Electricity Rules, 1956, as amended from time to time, and in the Regulations of the Electricity Supply Authority concerned. These shall be complied with.

(iv) Though this chapter form part of the Specifications for Internal EI works, these requirements shall be complied with in works of earthing for other applications also.

1.2. MATERIALS.

1.2.1. EARTH ELECTRODES.

1.2.1.1. TYPES:-

The type of earth electrode shall be any of the following, as Specified (For selectioncriteria in designs)

(a) Pipe earth electrode.

(b) Plate earth electrode.

(c) Strip or conductor earth electrode.

1.2.1.2. Electrode materials and dimensions:-

(i) The materials and minimum sizes of earth electrodes shall be as per table VIII.

(ii) GI pipe electrodes shall be cut tapered at the bottom, and provided with holes of 12mm dia, drilled not less than 7.5cm from each other up to 2m of length from the bottom.

(iii)The length of the buried strip or conductor earth electrode shall be not less than 15m. This length shall suitably be increased if necessary, on the basis of the information available about soil resistance, so that the required earth resistance is obtained. Prior approval of the Engineer-in-charge shall be taken for any such in- crease in length.

1.2.2. EARTHING CONDUCTOR:-

(i) The earthing conductor (protective conductor from earth electrode up to the mainearthing terminal/earth bus, as the case may be) shall be of the same material as the electrode, viz, GI or copper, and in the form of wire or strip as specified.

(ii) The size of earthing conductor shall be specified, but this shall not be less than thefollowing (For calculating the size of the earthing conductor in design). a. 5mm dia (6SWG) for GI, or 4mm dia (8SWG) for copper wire.

b. 25mmx4mm in the case of GI strip, or

c. 20mmx3mm in the case of copper strip.

(iii) Earthing conductor larger than the following sectional areas need not be used, unless otherwise specified.

- a. 150 Sq.mm. in case of GI
- or
- b. 100 Sq.mm. in the case of copper strip.

1.2.3. EARTH BUS:-

(i) Two copper strips, each of size 50mmx5mm shall be provided as earth bus in a 11KV sub-station and/or diesel generating station irrespective of the capacity of the transformer or the D.G. set. Each of these strips shall be connected to an independent earth electrode. The two earth leads from the body of each transformer/panel/generating set etc. shall be connected to these two strips of earth bus. The two strips of the earth bus shall be bonded together.

The neutral earth leads of the transformer and/or generator alternator shall not be connected to this earth bus. They shall be connected directly to individual earth electrodes.

1.2.4. HARDWARE ITEMS:-

All hardware items used for connecting the earthing conductor with the electrode shall be of GI in the case of GI pipe and GI Plate earth electrodes, and forged tinned brass in case of copper plate electrodes.

1.2.5. PROTECTIVE (Earth continuity Loop Earthing) CONDUCTOR:-

(i) The material and size of protective conductors shall be as specified. (For criteria in design of these)

(ii) The minimum cross sectional area of a protective conductor (not contained within a cable or flexible cord) shall be:-

- a) 2 mm dia (14 SWG) in case of copper.
- b) 2.5 mm dia (12 SWG) in case of GI, or.
- c) 2.24 mm dia (13 SWG) in case of Aluminum.

(iii). Unless otherwise specified, GI conductor should not be ordinarily used as protective conductor within any circuit, beyond a DB down stream.

1.3. LOCATION FOR EARTH ELECTRODES:-

(i) Normally an earth electrode shall not be located closer than 1.5 m from any building.

Care shall be taken to see that the excavation for earth electrode does not affect the foundation of the building, in such cases, electrodes may be located further away from the building, with the prior approval of the Engineer-in-charge.

(ii) The location of the earth electrode will be such that the soil has a reasonable chance of remaining moist as far as possible. Entrances, pavements and road ways, should be avoided for locating earth electrodes.

1.4. INSTALLATION.

1.4.1. ELECTRODES.

1.4.1.2. Various types of electrodes:-

a) Pipe electrode shall be buried in the ground vertically with its top at not less than 20cm below the ground level.

b) In locations where the full length of pipe electrode is not possible to be installed due to meeting a water table, hard soil or rock, the electrode may be to reduced length, provided the required earth resistance result is achieved with or without additional electrodes, or any alternative method of earthing may be adopted, with the prior approval of the Engineer-in-charge. Pipe electrodes may also be installed in horizontal formation in such exceptional cases.

(i) Plate electrode shall be buried in ground with its faces vertical, and its top not less than 3 m below the ground level.

- (ii) When more than one electrode (plate/pipe) is to be installed a separation of not less than 2m shall be maintained between two adjacent electrodes
- c) The strip or conductor electrode shall be buried in trench not less than 0.5m deep.
- d) If conditions necessitate the use of more than one strip or conductor electrode, they shall be laid as widely distributed as possible, in a single straight trench where feasible, or preferably in a number of trenches radiating from one point.
- e) If the electrode cannot be laid in a straight length, it may be laid in a zig-zag manner with a deviation up to 45 degrees from the axis of the strip. It can also be laid in the form of an arc with curvature more than 1m or a polygon.

1.4.1.3. Artificial treatment of soil:-

When artificial treatment of soil is to be resorted to, the same shall be specified in the schedule of work. The electrode shall be surrounded by charcoal/coke and salt as indicated. In such cases, excavation for earth electrode shall be increased as per dimensions indicated in these figures.

1.4.1.4. Watering arrangement:-

- (i) In the case of plate earth electrodes, a watering pipe 20mm dia, medium class pipe shall be provided and attached to the electrodes as shown in gif. 4 and 5. A funnel with mesh shall be provided on the top of this pipe for watering the earth.
- (ii) In the case of pipe electrodes, a 40mm x 20mm reducer shall be used for fixing the funnel with mesh.
- (iii) The watering funnel attachment shall be housed in a masonry enclosure of size not less than 30cm x30cmx30cm.
- (iv) A cast iron/MS frame with MS cover, 6mm thick, and having locking arrangement shall be suitably embedded in the masonry enclosure.

1.4.1.5. EARTHING CONDUCTOR (Main earthing lead):-

- (i) In the case of plate earth electrode, the earthing conductor shall be securely terminated on to the plate with two bolts, nuts, check nuts and washers.
- (ii) In the case of pipe earth electrode, wire type earthing conductor shall be secured using a through bolt, nuts and washers and terminating socket.
- (iii) A double C-clamp arrangement shall be provided for terminating tape type earthing conductor with GI watering pipe coupled to the pipe earth electrode. Galvanized "C" shaped strips, bolts, washers, nuts and checkouts of adequate size shall be used for the purpose.
- (iv) The earthing conductor from the electrode up to the building shall be protected from mechanical injury by a medium class, 15mm dia. GI pipe in the case of wire, and by 40mm dia, medium class buried at least 30cm deep (to be increased to 60cm in case of road crossing and pavements). The portion within the building shall be recessed in walls and floors to adequate depth in due co-ordination with the building work.
- (v) The earthing conductor shall be securely connected at the other end to the stub/earth bar provided on the switch board by:
 - a) Soldered or preferably crimped lug, bolt, nut and washer in the case of wire, and,
 - b) Bolt, nut and washer in case of strip conductor.
 In the case of substations or alternators, the termination shall be made on the earthing terminal of the neutral point on the equipment and/or the earth bus, as the case may be.

1.4.3. EARTH BUS AND MAIN EARTHING TERMINAL:-

- (i) In the case of substations and generating stations, two numbers copper/GI (as specified) earth bus shall provided, duly connected to two numbers of independent electrodes, exclusively for equipment (body) earthing of substation or generating station equipments.
- (ii) In all other installations, main earthing terminal shall be provided at the main switch

board. This may be in the form of earth stud or single earth bar depending on the type of the switch board.

(iii) Following conductors shall be terminated on to the main earthing terminal.

(a) Earth connection from electric supply company (where provided).

(b) Earthing conductor from electrode.

(c) Protective conductors.

(d) Equipment potential bonding conductors.

1.4.4. PROTECTIVE(Loop earthing/earth continuity) CONDUCTOR:-

(i) Earth terminal of every switch board in the distribution system shall be bonded to the earth bar/terminal of the upstream switch board by protective conductor (s).

(ii) Two protective conductors shall be provided for a switch board carrying a 3 phase switch gear thereon. All the mountings of industrial type switch boards shall be bonded to the earth stud/earth bar using a protective conductor looping from one to another. Loop earthing of individual units will not be however necessary in the case of cubicle type switchboards.

(iii) The earth connector in every distribution board (DB) shall be securely connected to the earth stud/earth bar of the corresponding switch board by a protective conductor.

(iv) All metallic switch boxes and regulator boxes and regulator boxes in a circuit shall be connected to the earth connector in the DB by protective conductor (also called circuit protective or loop earthing conductor), looping from one box to another up to the DB.

(v) The earth pin of socket outlets as well as metallic body of fan regulators shall be connected to the earth stud in switch boxes by protective conductor. Where the switch boxes are of non-metallic type, these shall be looped at the socket earth terminals, or at an independent screwed connector inside the switch box. Twisted earth connections shall not be accepted in any case.

(vi) Double earthing strips in rising mains, bus trunking etc. shall be securely connected to the earth bar/earth stud at the sending end switch board. In the case of overhead busbar systems, protective conductor shall be provided in addition to feeder cable armouring connection.

1.5. EARTH RESISTANCE:-

(i) The earth resistance at each electrode shall be measured. No earth electrode shall have a greater ohmic resistance than 5 ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be upto 8 ohms.

(ii) Where the above stated earth resistance is not achieved, necessary improvement shall be made by additional provisions, such as additional electrode (s), different type of electrode, or artificial chemical treatments of soil etc., as may be directed by the Engineer-in-charge.

(iii) In addition to the above (I) The earthing is to be got A/T'ed in the presence of representatives of A/T wing or any other nominated authority as per A/T Schedule till the final results are achieved. The testing equipment required that at site shall be arranged by the contractor without any extra charges.

1.6 MARKING:-

(i) Earth bars/terminals at all switch boards shall be marked permanently, either as "E" or as.

(ii) Main earthing terminal shall be marked "SAFETY EARTH- DO NOT DISCONNECT".

SECTION -IV COMPOUND LIGHTING WORK SPECIFICATIONS

1. The work shall be done as per CPWD specifications (Internal/External) and I.E. Rule as amended up to date.
2. The contractor shall employ qualified engineer / supervisor as required and intimate names of such persons to the Engineer-in-charge on commencement of work. Failure to employ will attract penalty as per agreement
3. The layout of the work will be given by the Engineer-in-charge or his duly authorized representative at site of work.
4. Unapproved materials if brought to site of work shall have to be removed immediately by contractor at his cost and risk.
5. The contractor shall submit the completion plan as per Clause 8.3, of the agreement within 30 days of the completion of work. Failing to submit the completion plan, he will be liable to pay a sum equivalent to 2.5% of the value of work subjected to the ceiling of Rs.15000/- as per the clause-8.3 of agreement.
6. The contractor will have to give the following tests at his cost and intimate test results before final bills are paid. Nothing extra will be paid to him on this account.
 - a) Earth test.
 - b) Polarity test.
 - c) Insulation test.
 - d) Earth continuity test.
7. Any damage done to the building by the contractor during the execution of work shall have to be made good at his cost and risk. If he does not do it himself within a reasonable time as determine by the Executive Engineer (E) then the same will be got at his cost departmentally after giving notice to him.
8. While making the end terminations of wires, no strand shall be cut and the termination of wire shall be done with necessary lugs and ferrules without any extra payment.
9. The bus bars of the 3 phase distribution box shall be of solid strip.
10. Lugs should be provided while terminating earth wires for earth continuity without any extra payment.
11. The distribution diagram & GA drawing shall be submitted before starting the work.
12. The firm shall furnish the guarantee for all the equipment against defective materials of manufacturing defects and workmanship etc. for a period of One year from the date of commissioning and handing over of the installation for regular use.
13. Wherever electrical termination, connections are made between dissimilar metals like copper and aluminium suitable size bimetal strips, washer shall be used.
14. Excise gate pass/ Invoice and factory test reports shall be submitted at the time of delivery of equipment at site.
15. Numbering & sign writing of the installation shall be carried out as per instructions of the Engineer-in-charge for which nothing extra shall be paid.
16. Good workmanship is an essential requirement to be complied with. The entire work of manufacture, fabrication, assembly and installation shall conform to sound engineering practice.
17. Rates quoted shall be inclusive of packing, forwarding, insurance, freight and delivery at site watch and ward of all materials.
18. All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connection as required and all other sundry items which are useful & necessary for proper assembly and efficient working of the various components of the works shall be deemed to have been included in the tender.
19. Following works shall be carried out by the contractor and therefore their cost shall be deemed to be included in their tendered cost.

a) The contractor shall be responsible for repairing all damages and restoring the same to their original finish. He shall also remove at his cost all unwanted and waste materials arising out of his work from his site.

b) All chases required in connection with the electrical works shall be provided and filled by the contractor to the original finish.

c) Temporary shed if required over the storage space and locking arrangement, watch and ward of the materials shall be provided by firm till completion of the work and final taking over of the installation by the department.

20. Earthing (if any) shall be carried out in presence of representative of the department.

21. On completion of electrical installation a certificate shall be furnished by the contractor in prescribed proforma, this certificate shall be in addition to the certificate required by local electric Supply Company.

General requirements of Street Light Luminaire

1.0 General: This specification covers requirements of street lighting integral lanterns.

The luminaries shall be suitable for illuminating the various types of B1 & B2 roads as per IS-1944 PI with latest amendments. The luminaries shall be designed to provide proper and efficient light distribution. It shall be of sound mechanical construction facilitating easy installation and maintenance with sufficient radiating surface for the dissipation of the heat generated inside the lantern and shall have an attractive appearance. The luminaries shall generally conform to IS-1032 (Part-I)-1982 with latest amendments.

SECTION-V

(QUALITATIVE REQUIREMENTS FOR LIGHTENING PROTECTION LPS)

1. Lightning Protection System (LPS) must comply with following technical specifications.

(a) General: The Lightning Protection System shall comply with IEC-62305 standards. The LPS must be designed for:

(i) Interception effectiveness of 0.99 (ii) Lightning Protection Level 1.

Download Conductor: Download conductor must be compliant to following specifications: (i) Material: Copper Solid Tape

(aa) Cross Sectional Area $> 60\text{mm}^2$ (ab) Diameter $> 2\text{mm}$

(ii) Minimum distance between two down conductors: 10m.

(iii) Separation between down conductor and mounting wall $> 0.1\text{m}$.

(iii) Down Conductor must be provided along each exposed corner of the structure.

(d) Air Terminal Connector: Air Terminal Connector must be compliant to following specifications:

(i) Material: Copper Solid Tape

(ii) Cross Sectional Area $> 60\text{mm}^2$

(iii) Diameter $> 2\text{mm}$

(e) Earthing: Type B earthing in conformity with IEC-62305-3 standards. (i) At least two earth electrode per down conductor will be used.

(ii) Minimum length of the earth electrode: 5m. (The length of the conductor is immaterial if earth electrode resistance is less than 10ohm).

(iii) Desired resistance levels $< 10\text{ohm}$.

(iv) IS approved component /chemical may be used as Black fill to improve the earthing. (v) All earth electrodes of existing and fresh installed earth pits will be inter-connected to achieve equipotential bonding.

(vi) The dimensions of the bonding bar- (i) Material : Copper

(ii) Cross Sectional Area : > 50 mm²

(vii) The dimensions of the conductor connecting bonding bar to earthing system: (i) Material : Copper

(ii) Cross Sectional Area: > 50 mm² (viii) Material of Earthing Electrode (i) Material: Copper Solid Round

(ii) Cross sectional Area: > 50mm² (iii) Diameter: > 8mm

(ix) AC and DC earth to be interconnected

2. Surge Protection Devices

(a) These shall comprise of Encapsulated (protected against ionized plasma blow outs) Spark gap type coordinated lightning and Surge protection.

(b) The coordinated stage-I and stage-II protective device. (i) Must be KEMA or VDE certified.

(ii) Protection shall be designed in TT configuration.

© Stage-I Protection This protection against LEMP and high surges will be provided at distribution panel provided at mains supply panels. It should be compliant with IEC-62305 and 60364-5-53 for the following current:-

(i) Between neutral and the three phases : > I_{imp} : 25KA , 10/350us. For each phase. (ii) Between Neutral and protective earth : > 100KA , 10/350us.

(iii) I_{imp}: Value of lightning Impulse current 10/350us.

(iv) Short circuit current extinguishing value without back fuse as per IEC guidelines Min 10KA rms.

(v) Rated value of stage-arrestor : not less than 255V.

(vi) Arrestor between line and neutral should with stand voltage upto 320V for duration specified the user.

(vii) Enclosure and mounting arrangement : depending upon type of SPD.

(viii) SPD status Indication : As per IEC norms shall provide indication for both states.

(d) Protective Protection

(i) Stage 1 < 2.5KV

(ii) Coordinated stage-I and II < 1.5KV

(e) Stage-II Protection: This protection against low voltage surges will be provided at the power plant (supply) level. It will be equipped with thermal disconnection and potential free contact for arrestor connected between live and neutral and earth. Protection shall comply with IEC-62305 and 60364-5-53 for the following values of current.

(i) Between neutral and three phase > 10KA 8/20us.

(ii) Between neutral and protective earth: > I_n 20KA, 8/20us. In value of nominal discharge of current 8/20us.

(iii) Voltage rating of MOV > 320V.

(iv) SPD status Indication .As per IEC norms shall provide indication for both states.

(f) Response Time

(i) Stage-I protection device < 100 nanoseconds. (ii) Stage-II protection device < 25 nanoseconds.

(g) Co-ordination Between Two Stages The two stages must be tested to work in tandem and in co-ordination to give protection against lightning and surge and also ensure voltage protection level upto 1.5KV is ensured for entire site. The test certification carried out by testing agency in the same lab for the both stages as per IEC 61643 and 62305-4 must be enclosed.

(h) Cross Section Area of Conductors

(i) Stage-I protection > 6mm² (ii) Stage-II protection > 3mm²

(j) Indication on lightning arresters as per IEC standards must be provided. All the arresters (Line to neutral and neutral to earth shall have individual indication to know the earth of individual module. There shall be common potential free contact for all.

(k) Failure of stage-II protective device must create and extend both visual and audio alarm.

(l) Stage-I and Stage-II SPDs must be from the same manufacturer and housed in enclosure supplied by manufacturer depending on type of SPDS.

(m) The arrestors should be approved by BSNL QA wing. The potential free contact shall be available for the failure or removal of this protection from base unit.

(n) Optional requirement. The combined arrester shall be tested for energy coordination with 320V (or less) rates MOV so that the let through energy do not exceed 151 Joules Certification from original manufacturer with test report must be provided.

3. Quality Requirements

(a) Components supplied must be of industrial grade from reputed manufacturer.

(b) Fuses and circuit breakers shall be provided for protection against failure of control/sensing circuit. This should confirm of BIS or equivalent IEC certificate.

© The components cables and wiring must be fire retardant. (d) The components cables and wiring must be fire retardant. (e) The manufacturer / OEM must be ISO 9001 2008 certified.

4. Product Literature highlighting the specific sub components being used at each stage along with installation instructions is to be provided.

5. Drawing as applicable is to be enclosed.

6. Copy of lab certification report from reputed agencies is to be enclosed.

7. Certificate of conformity with ISO 62305 standards is to be enclosed.

8. OEM authorization in original is to be enclosed.

SECTION-VI TELECOMMUNICATION EQUIPMENT EARTH SYSTEM

1. Scope. This document covers detailed design, construction, installation and integration specifications in respect of telecommunication equipment functional Earth System.

2. Applicable Standards & Codes. Earth system shall be designed and implemented as per IS-3043 (latest revision).

3. Earth System Technical Parameters. The earth system shall comply with following performance parameters .

(a) Resistance of Earthing System : Less than 1 Ohm.

(b) Resistance of Individual Earth System: Less than 5 Ohm. © Earth to Neutral Voltage: 0.5 Volts

4. Earth System Architecture.

A continuous copper earth ring system shall be designed and constructed around the communication complex as per the architectural diagram. Earth system shall be constructed by using utilizing individual chemical earth pits integrated through a flat copper conductor of minimum 80 sqmm. The earth system shall be so designed that the resistance between any point on each earthing system and the earth electrode shall not exceed 1 ohm. The overall resistance between the earth ring and the general mass of earth shall be less than 1 ohm.

5. Individual chemical earth pits shall be constructed in accordance to IS-3043. A separation of minimum 05 meters shall be provided between individual earth pits and shall be arranged around the communication complex as per the architectural diagram.

6. For individual chemical earth pit, a concrete / masonry brick chamber with a suitable metal / concrete cover shall be provided for inspection access. Each chemical earth pit shall be provided with 50mm dia. GI pipe terminated with a funnel for watering purpose. Copper conductor of the chemical earth pit shall be connected to the ring copper conductor through brazing for a weather proof contact.

1. Equipment Room Arrangement. Inside the Equipment and IDF room of communication complex, a continuous earth ring of flat copper conductor of minimum 80 sqmm shall be implemented. All communication and electrical equipment, -48V DC power plant and surge suppressors shall be connected to the earth ring through linking conductors. Connectivity of the communication equipment with the continuous earth ring shall be the responsibility of User.

8. Power Room Arrangement. Inside the power room of communication complex, a continuous earth ring of flat copper conductor of minimum 80 sqmm shall be implemented. DC and UPS power distribution panels of 60Amps or higher rating shall be connected to the earth ring through redundant copper linking conductors. Connectivity of the DC and UPS distribution panels with the continuous earth ring shall be the responsibility of the Vendor.

SECTION-VII ADDITIONAL SPECIFICATIONS

The equipment offered and the work shall be carried out as per current CPWD specification for electrical works as amended from time to time and Indian electricity rules as amended up to date. The specification /conditions indicated here in under will be applicable to the extent of the details of item including schedule of work.

The firm shall prepare the general layouts of M.V. panels i/c capacitor panel, single line diagram & control wiring diagrams, Electrical Interlock diagram, general arrangement layout of substation equipment etc and submit to the Engineer-in-charge for his approval within 15 days after the award of work.

The layout of the work will be given by the Engineer-in-charge or his duly authorized representative at site of work.

4 It will be responsibility of the contractor to issue of Test Report of the installation without any extra cost.

5 Excise gate pass/ Invoice and factory test reports shall be submitted at the time of delivery of equipment at site.

6 M.V. panels shall be manufactured from CPRI/TAC approved firm.

7 The work shall be supervised by a qualified Supervisor.

8 Rejected materials if any, shall have to be removed from site immediately by the contractor at his cost and risk.

9 The contractor shall submit the completion plan as per Clause 8.2, of the agreement within 30 days of the completion of work. Failing to submit the completion plan, he will be liable to pay a sum equivalent to 2.5% of the value of work subjected to the ceiling of Rs.15000/- as per the clause-8.3 of agreement.

10 The contractor will have to give the following tests at his cost and intimate test results before final bills are paid. Nothing extra will be paid to him on this account.

a. Insulation test between Phases, Neutral and Earth for all systems.

b. Earth Resistance test for all earth stations.

c. Functional test of all switchgears and circuit breakers.

d. Relay test & their settings.

e. Polarity test.

11 Any damage done to the building by the contractor during the execution of work shall have to be made good at his cost and risk. If he does not do it himself within a reasonable time as determined by the Executive Engineer (E) then the same will be got done at his cost departmentally after giving notice to him.

12 While making the end connections of wires, no strand shall be cut and the termination of wire shall be done with necessary lugs and ferrules without any extra payment.

13 Lugs should be provided while terminating of G I earth wires for earth continuity without any extra payment.

14 The contractor shall furnish the test certificate of manufacturer in triplicate for all equipment and panels. Necessary instruction manuals, operation and maintenance manual in triplicate for ACBs of M.V. panel and major items shall be furnished before completion of work.

15 The overhead bus trunking system shall be fabricated as per the specification attached.

16 The fixing of the bus trunking, cable trays etc. to ceiling / wall etc. shall be done using suitable hangers. Fixing of panel boards on slabs, hangers on ceiling/walls shall be done using suitable expansion fasteners instead of grouting bolts

17 Wherever electrical termination, connections are made between dissimilar metals like copper and aluminum suitable size bimetal strips, washer shall be used.

18 Earthing shall be done in presence of the Engineer In Charge or his duly authorized representative.

19 All necessary Tools & Plants shall be arranged by the contractor at his cost and risk.

20 Wherever two plates are joined like transformer body and cable end box etc., those have to be provided with laminated copper clip/tinned flexible copper strip connection at intervals without extra cost.

Special Requirements

5. Special Requirements. Since the proposed facility shall be created in a restricted area, following specific requirements shall be applicable.

(a) Electricity Requirement. Electricity for the construction shall not be provided by the User. Vendor to provision appropriate rating DG set to support construction activity.

(b) Water Requirement. Water required for the construction work shall be arranged by the Vendor.

(c) Security Pass. Security pass/tokens for the construction workers shall be provided by the user as per prevalent rules and policies. Vendor must furnish required credentials for issuance of security pass.

(d) Working Hours. All construction work shall be conducted between 0700Hrs-1700Hrs. In case construction work has to be carried out beyond specified schedule, specific clearance for the same shall be obtained by the Vendor in advance.

(e) Clearing of Debris. Debris generated during the construction shall be cleared by the Vendor at his expense. Also, Contractor shall remove from site such materials as rejected by the User within reasonable time as specified by him.

(z) IEC:540 & 540A Test methods for insulation and sheaths of electric cables and cords.

(aa) IS: 732 Code of practice for electrical wiring installation system voltage not exceeding 650 volts

(ab) IS:1646 Code of practice for fire safety of buildings general)electrical installation

(ac) IS:1653 Rigid steel conduits for electrical wiring

(ad) IS:2667 Fittings for rigid steel conduits for electrical Wiring

(ae) IS:3480 Flexible steel conduit for electrical wiring

(af) IS:3837 Accessories for rigid steel conduits for electrical wiring

(ag) IS:1293 Three pin plugs and sockets

(ah) IS:8180 Conductors for insulated electrical cables and flexible codes

(ai) IS:3854 Switches

(aj) IS:6538 Plugs

(ak) NFC17-102 : Active lightning protection system

(al) IS 2309:1989 : Protection of Buildings and Allied Structures Against Lightning--Code of Practice (Second Revision)

2. In case of any discrepancy or disagreement between different standards, following order of preference shall be followed.

(a) Technical specifications/Qualitative requirements listed in the RFP.

(b) CPWD/MES Technical Instructions (TIs).

(c) IS Standards.

(d) British Standards.

(e) American Standards.

UNPRICED BID NOT FOR QUOTING

Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)

S.No	DESCRIPTION OF ITEM	QTY		RATE	UNIT	AMT
	SH: I (WIRING IN STEEL CONDUIT)					
1.0	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 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.					
1.1	Group C	54	Points		Point	
2.0	Wiring for light/ power plug with 2x4 sq. mm FRLS PVC insulated copper conductor single core cable in recessed steel conduit alongwith 1No 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	90	Metres		Metre	
3.0	Wiring for light/ power plug with 4x4 sq. mm FRLS PVC insulated copper conductor single core cable in recessed steel conduit alongwith 2Nos 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	50	Metres		Metre	
4.0	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FR PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required					
4.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	100	Mts		Mtr	
4.2	4 X 1.5 sq. mm + 2 X 1.5 sq. mm earth wire	15	Mts		Mtr	
4.3	6 X 1.5 sq. mm + 3 X 1.5 sq. mm earth wire	10	Mts		Mtr	
4.4	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	50	Mts		Mtr	
4.5	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	30	Mts		Mtr	
4.6	6 X 2.5 sq. mm + 3 X 2.5 sq. mm earth wire	20	Mts		Mtr	

5.0	Supplying and fixing of following sizes of steel conduit along with accessories in recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
5.1	20 mm	160	Metres		Metre
5.2	25 mm	200	Metres		Metre
5.3	32 mm	100	Metres		Metre
5.4	40 mm	100	Metres		Metre
5.5	50 mm	25	Metres		Metre
6.0	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	17	Nos		Each
7.0	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc., as required. (For light plugs to be used in non residential buildings).	17	Nos		Each
8.0	Supplying and fixing suitable size GI box with modular plate and cover in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	16	Nos		Each
9.0	Supplying and fixing 3 pin, 5 amp ceiling rose on the existing junction box/ wooden block including connection etc as required.	6	Nos		Each
10.0	Numbering of ceiling fan/ exhaust fan/ fluorescent fittings as required.	40	Nos		Each
11.0	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc., as required.				
11.1	Upto 450 mm sweep	2	Nos		Each
12.0	Extra for fixing the louvers/ shutters complete with frame for a exhaust fan of all sizes.	2	Nos		Each
	SH: II (MCB & DB'S)				

1.0	Supplying and fixing TP sheet steel enclosure on recess along with 16/ 25/ 32amps 415 volts "C" curve TP MCB complete with connections, testing and commissioning etc., as required. (For UPS incoming)	3	Nos		Each
2.0	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on 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)				
	8 way , Double door	1	No		Each
3.0	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 volts, on 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)				
	6 way (4 + 18), Double door (For Lighting - 1 No and Power & AC -1 No)	2	Nos		Each
4.0	Supplying and fixing 5A to 32A rating, 240/415V, 10kA, "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.				
	Single pole	23	Nos		Each
5.0	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc., as required.	6	Nos		Each
6.0	Supplying and fixing following rating, Three pole and neutral, 415 volts, MCB in the existing MCB DB complete with connections, testing and commissioning etc., as required.				
	63 amps	1	Nos		Each
7.0	Supplying and fixing following rating, four pole, 415 volts, MCB in the existing MCB DB complete with connections, testing and commissioning etc., as required.				

7.1	32 amps	2	Nos		Each	
7.2	63 amps DP 2Way Centre Off MCB Change over switch	1	Nos		Each	
8.0	Supplying and fixing following rating, four pole, 415 volts, RCCB, having a sensitivity current upto 100 mA in the existing MCB DB complete with connections, testing and commissioning etc., as required.					
	40 amps	2	Nos		Each	
9.0	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.					
		7	Nos		Each	
	SH: III (EARTHING)					
1.0	Earthing with copper earth plate 600mm x 600mm x 3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. (but without charcoal/ coke and salt) as required.					
		2	Sets		Set	
2.0	Supplying and laying 25mm x 5mm copper strip at 0.50 metre 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 50mm)					
		15	Metres		Metre	
3.0	Providing and fixing 25mm x 5mm 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.					
		20	Metres		Metre	
4.0	Providing and fixing 25mm x 5mm copper strip on surface or in recess for connections etc., as required. (For Body / Neutral & around the periphery of the building)					
		200	Metres		Metre	

5.0	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.	60	Metres		Metre
SH: III (CABLE LAYING)					
1.0	Supplying and fixing MS perforated Hot Dipped Galvanized cable tray of following size including grouting, making good etc., as required.				
1.1	300 X 50 X 1.6 mm	10	Metres		Metre
1.2	450 X 50 X 2 mm	10	Metres		Metre
2.0	Supplying and fixing MS perforated Hot Dipped Galvanized cable tray connector of following size as required.				
2.1	300 X 50 X 1.6 mm	12	Nos		Each
2.2	450 X 50 X 2 mm	12	Nos		Each
3.0	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.				
3.1	Upto 35 sq. mm	5	Metres		Metre
3.2	Above 35 sq. mm and upto 95 sq. mm	180	Metres		Metre
4.0	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.				
4.1	Upto 35 sq. mm	5	Metres		Metre
4.2	Above 35 sq. mm and upto 95 sq. mm	5	Metres		Metre
5.0	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1KV grade of following size in the existing masonry open duct as required.				
5.1	Upto 35 sq. mm	10	Metres		Metre
5.2	Above 35 sq. mm and upto 95 sq. mm	12	Metres		Metre
6.0	Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1KV grade of following size on cable tray as required.				

6.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	30	Metres		Metre	
6.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	8	Metres		Metre	
7.0	Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1KV grade of following size on wall surface as required.					
7.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	10	Metres		Metre	
7.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	5	Metres		Metre	
8.0	Supplying and fixing cable route marker with 10cm x 10cm x 5mm thick G.I. plate with inscription there on, bolted /welded to 35mm x 35mm x 6mm angle iron, 60cm long and fixing the same in ground as required.	8	Nos		Each	
SH- IV (MV CABLE JOINTING & END TERMINATION)						
1.0	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.					
1.1	4 X 16 sq. mm (28mm)	6	Nos		Each	
1.2	3½ X 35 sq. mm (32mm)	4	Nos		Each	
1.3	3½ X 95 sq. mm (45mm)	4	Nos		Each	
SH: VI (GENERAL ITEMS)						
1.0	Supplying of exhaust fan of 450mm dia (i/c louver of suitable size), suitable for operation on 1 Ph, 230V, 50 Hz AC supply etc., as required. (Make & Model Heavy duty Crompton Reva 450-4-1) or SS Make	2	Nos		Each	
2.0	Supplying of 400 mm Sweep wall mount fan suitable for operation on 230V single phase AC supply etc complete as reqd (Crompton Greaves Crompton WMSDX-Chrome Black) or SS Make	7	Nos		Each	

3.0	S/F of 2X18 W RMO type CFL fitting with clip arrangement including supplying and fixing of 2 Nos 18W CFL lamps etc complete as reqd. (Make and model:Bajaj BJDR 218 FR FGLN W2EB) or SS Make	37	Nos		Each
4.0	S/F of 2X18 W SMO type CFL fitting on wall including supplying and fixing of 2 Nos 18W CFL lamps etc complete as reqd. (Make and model: Bajaj BJDS 218 C W2EB) or SS make	4	Nos		Each
5.0	S/F of 2X18 W street light CFL fitting on existing wall bracket including supplying and fixing of 2 Nos 18W CFL lamps etc complete as reqd. (Make and model: Crompton Greaves SCE13218) or SS Make	7	Nos		Each
6.0	Supplying and fixing of 25mm dia GI pipe of 1000mm long on the top of the wall for accomodating the above street light fitting with suitable bend including 2 Nos MS clamps etc complete as reqd.	7	Nos		Each
7.0	Supplying & fixing of adaptor box suitable size made of 14 SWG MS Sheet in i/c cutting, bedning, welding, 2 coats of red-oxide & powder coating for dwawing power cable/ CCTV Cable at ceiling and at the DBs/ control units with matching colour of DB etc., as required	5	Sqmt		Sqmt
8.0	Suppyling& fixing of contactor with 1NO + 1NC, suitable for operation on 230V, 50 Hz AC supply i/c suitable size adaptor box made of 14 SWG MS sheet etc., as required. (MNX9 of M/s L&T)	1	Nos		Each
9.0	Supplying & fixing of "B -class" 40mm dia GI pipe for cable mechanical/lightning strip protection etc., as required.	15	Mtr		Mtrs
10.0	Supplying & filling of charcoal (95 Kg) & salt (10 Kg) in the existing earth pit etc., as required.	3	Jobs		Job
	SH:V LIGHNING CONDUCTOR				
1.0	Providing and laying of copper solid tape 32 mm x 6 mm thick from earth electrode directly in ground as required.	5	Mtrs		Mt

2.0	Supplying and fixing of 50 mm diarigid PVC pipe on surface or in recess of wall with suitable clamps etc., as required.	5	Mtrs						
3.0	Supplying and laying of 32 mm x 6 mm copper solid tape in the existing GI/PVC pipe etc., as required.	10	Mtrs						

Sub Total

Add SGST&CGST/IGST of above total

Total including GST

Depatmental supply

1	3½ x 35 sq. mm, aluminum AUG cable.	40	Mtrs
2	3½ x 95 sq. mm, aluminum AUG cable.	210	Mtrs
3	4 x 16 sq. mm, aluminum AUG cable.	20	Mtrs

Electrical Inventory

Name of Work : Providing Electro Mechanical installations/ services for infrastructure works of IFS sites under NFS project at Suryalanka, Guntur SSA(Site-I) (Balance Portion of Work)

S No	Location	Room dimensions	2x18 W Recess CFL fittings TLD11218EB / P5		2x18 W Surface CFL fittings TLE218EB / P5	LED Down light points for display boards	5/15A RAW Power socket	5 A UPS Power socket	Light points	Exhaust fan point	UPS Light Points	5 RAW power light plug socket (For wall mounting fan)	Wall Mounting Fan	Exhaust Fan	AC Metal socket
			Actual fittings to be provided RAW power	For UPS points			Chap 3 Elec Spec 2(g)	Chap 3 Elec Spec 2(h)	Genl						
1	Equip Room	7500x8200	9	3	0		4	4	9	0	3	0	0	0	0
2	Battery Room	5000x3170	2	2	0		2	0	2	0	2	2	2	0	0
3	Power room	6000x3000	4	2	0		2	2	4	0	2	0	0	0	0
4	IDF Room	7500x3000	4	2	0		1	1	4	0	2	1	1	0	0
5	Supervisor Room	3000x3000	1	1	0		1	1	1	0	1	1	1	0	1
6	Store	2000x3470	1	1	0		1	0	1	0	1	2	2	0	0
7	Security	2000x1500	0	1	0		1	0	0	0	1	1	1	0	0
8	DG room	9200x5000	0	0	4		4	0	2	2	2	0	0	2	0
9	Passage (Entrance)	1800x4970	1	1	0	1	0	2	1	0	2	0	0	0	0
10	Passage between Bty room & supervisor room	5000x1800	1	1	0	1	0	0	1	0	2			0	0
			23	14	4	2	16	10	25	2	18	7	7	2	1
			37						27						