

Office of the Executive Engineer (E), B.S.N.L. E.D. Head Post Office Complex, BSNL CSC Building Dharamshala-176215. Tel.No. 01892-223301		भारत संचार निगम लिमिटेड (भारत सरकार का उपक्रम) BHARAT SANCHAR NIGAM LIMITED (A Govt. of India Enterprise)
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NAME OF WORK :- SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)

NIT No. :- **14/EE/E/BSNL/ED/DMA/2023-24**

Name of Agency :-

Cost of Tender :- **Rs 590/-**

Key Details:

Last date of receipt of application for tender forms	30.11.2023
Last date of issue of tender	02.12.2023
Last date of Submission of tender	(Time 12.00P.M.)
Date of opening of tender	04.12.2023(Time 12.30P.M.)
Estimated Cost	Rs 141416.00 (Excluding GST)
EMD	Rs 2828.00.00

Signature of contractor/authorized representative
With seal of the firm

Executive Engineer (E)
BSNL Electrical Division
Dharamshala.

CONTRACTOR 1

EE (E)



BHARAT SANCHAR NIGAM LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
(ELECTRICAL WING)
NOTICE INVITING TENDER

Name of Work: - SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)

NIT No.

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Certified that this NIT contains 43 (Forty Three) pages. Including front page

Executive Engineer (E)
BSNL, Electrical Division
Dharamshala (HP)

UNDERTAKING BY CONTRACTOR ONLY IF THE TENDER DOCUMENT IS DOWNLOADED FROM WEBSITE

I / we wish to state that the tender document has been downloaded by me / us from the website and the same tender document is sealed and submitted. In case if there is any change between the documents submitted by me / us and the Draft NIT, then the Draft NIT which is seen by me/ us shall prevail.

Signature of Contractor with SEAL

CONTRACTOR 2

EE (E)

NOTICE INVITING TENDER

NIT No :- 14/EE/E/BSNL/ED/DMA/2023-24

Dated 20.11.2023

The Executive Engineer (E) B.S.N.L., Electrical, Division, Head post office, BSNL CSC Building Dharamshala (HP)-176215 invites on behalf of Bharat Sanchar Nigam Limited sealed item rate tenders for the work from the eligible contractors satisfying the following conditions as given below :-

Name of work	Estimated cost	Earnest Money Deposit	In favor of	Time limit for work completion	Tender cost
SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)	Rs 141416.00/-	Rs 2828.00.00	AO(Cash), o/o GMTD BSNL Dharamshala	7 Days	Rs 590/-

Eligibility Conditions

- BSNL enlisted contractors in Electrical category of respective class as per their tendering limits.∞
- OR
- 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
- The manufacturer/authorized dealer /OEM of any of the makes of major equipment included in the NIT. The letter of authorization from manufacturer in original/ photocopy attested by BSNL Executive will be submitted.
- OR
- Experience of having successfully completed similar works in BSNL during last 7 years∞ ending last day of month previous to the one in which applications are invited, should be either of the following :-
- Three similar successfully completed works costing not less than amount equal to 40% of the estimated cost put to tender→
- OR
- Two similar successfully completed works costing not less than amount equal to 60% of the estimated cost put to tender.→
- OR
- One similar successfully completed work costing not less than amount equal to 80% of the estimated cost put to tender.→

The Contractor shall have to possess ELECTRICAL LICENCE of appropriate Voltage Issued by HP State Govt. Under Clause 45 of compilation of Indian Electricity Rules 1956 or as amended from time to time provided notification in official Gazette, exempt, on such condition

The contractor shall also submit and confirm:

- Documentary proof of satisfying the eligibility conditions as per 1 above
- CA certificate towards turn over /deposition of income tax & PAN Card
- Valid GST registration certificate.
- EPF and ESI registration certificate.
- Declaration of EW-6 / EW-8, Relative Certificate & Undertaking -I & II by contractors
- Tender Cost & EMD in prescribed form.
- Valid electrical License issued by the HP state govt.

All the documents shall be self attested / certified by any BSNL/MTNL Executive /Notary /Gazetted Officer of Central Govt.)

Last date of receipt of application for tender forms	30.11.2023
Last date of issue of tender	02.12.2023
Last date of Submission of tender	04.12.2023(Time 12.00P.M.)
Date of opening of tender	04.12.2023(Time 12.30(P.M.)

Validity of tender shall be for 90 days from the date of opening of tender.

The tenders of contractors who do not deposit earnest money in the prescribed manner (in separate cover) are liable to be rejected and will not be opened.

NOTE: - Tender document can also be downloaded from the website <http://www.hp.bsnl.co.in>.

The firm who quotes on the tender downloaded from web-site shall strictly follow the following

Procedure:-

The tender shall be submitted in two envelope system.

- A. First envelope shall contain tender application (If tender downloaded from Web), tender fee, attested documents (self attested and counter attested by any executive of BSNL/MTNL or Gazetted officer of GOI; otherwise all originals of eligibility criteria shall be produced for verification at the time of tender opening) proving fulfillment of eligibility criteria as per the tender notice & EMD in proper form. Separate D.D. should be attached for tender fee & EMD.

- B. Second envelope shall contain duly filled tender document.

The same shall be clearly written on the envelopes.

The 1st envelope containing Tender fee, attested documents proving fulfillment of eligibility Criteria & EMD in proper form shall be opened first.

In case: -

1. Tender fee is not submitted in proper form. (ii) EMD is not in proper form.
2. Firm fails to fulfill eligibility criteria on the basis of document submitted in first envelop.
3. The performance of tenderer is not found satisfactory.

The second envelope shall not be opened.

If the day of opening of the tender declared as a Holiday then the tender will be opened on the next working day.

The tenders shall neither be issued nor received through POST / COURIER. CONDITIONAL TENDERS OR TENDERS WITH CONDITIONAL REBATES SHALL BE SUMMARILY REJECTED. If any difference/ discrepancies found between down loaded Tender form, any hard copy issued from Division Office, the contents in Draft NIT issued from this or higher offices will be final & binding.

Executive Engineer (E)
BSNL, Electrical Division Dharamshala(HP)
Email eebsnldma@gmail.com

No: EE/E/E/BSNL/ED/DMA/2023-24/118

Dated 20.11.2023

Copy for information and wide publicity to: -

- 1 Web site www.hp.bsnl.co.in.
2. CE (E) BSNL EZ Shimla.
- 3) . The DGM BA DMA
4. **The Executive Engineer(E), Mandi /Shimla**
- 5) A. O. concerned Dharamshala
- 6) EE (E) Mandi /Shimla
- 7) The Sub Divisional Engineer(E), Hamirpur /Shimla /Solan /Mandi /Dharamshala /Nahan
8. Notice Board & then NIT File.
- 9) **All Registered Contractors working in This Zone.**

FOLLOWING OFFICERS MAY BE CONTACTED FOR REDRESSAL OF COMPLAINTS

Sr. No.	Name of office	Postal address	Telephone Number	FAX No.
1	CGMT, HP Circle	O/O the Chief General Manager BSNL, HPTC, Block No. 11, SDA Complex, Kasumpati, Shimla 171 009 (HP)	0590-2620220	0590-2625325
2	The Chief Engineer (Elect)	First Floor, Block No. 35, SDA Complex Kasumpati Shimla-171009 Email: cebsnlhp@gmail.com	0590-2628122	
3	The Vigilance officer HP Telecom Circle	O/O the Chief General Manager BSNL, HPTC, Ground Floor, Block No. 9, SDA Complex, Kasumpati, Shimla 171 009 (HP)	0590-2621213	0590-2622213

Executive Engineer (E)

Declaration by Contractor for EW-6, EW-8 & Relative Certificate

(To be furnished by the firm in Physical form offline)

I / We do hereby undertake to have gone through the terms & conditions / clauses of all the tender documents including Form EW-06, EW-08 being adopted by the BHARAT SANCHAR NIGAM LIMITED (Electrical Wing) & agree to abide by the same.

In case of failure to comply as above, our offer will stand withdrawn and our tender documents would not be opened by the tender opening officer. 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

"NO RELATIVE WORKING IN BSNL" CERTIFICATE
(To be furnished by the firm in Physical form offline)

I _____ S/o _____

R/o _____

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

(i) 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)

(i) 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.

(Dated Signature of contractor)

(Seal of the firm)

UNDERTAKING –I

"I _____ Son of _____

Resident of _____ hereby undertake that

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

Any consequence arising due to non-complying of EPF & ESI Act provision shall be sole liability of the undersigned contractor. 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".

* Strike out whichever is not applicable

(Seal of the firm)

(Dated Signature of Contractor)

UNDERTAKING- II

VENDOR GST DETAILS

Sr. No.	Description	Details to be filled in by contractor
A	Vendor Name	
B	Type of vendor i.e. whether registered or unregistered	
C	State wise registration address of the vendor (In case vendor has presence in multiple states)	
D	State of registration along with PIN code	
E	PAN No. of vendor	
F	GSTIN No. of registered vendor (If registered in multiple states, then listing all GSTINs) under which invoices are raised by vendor	
G	Status of vendor i.e. SEZ, EOU, DTA, Government, Local authority	
H	List of goods and services provided by vendor	
I	HSN code for goods/SAC for services supplied by vendor	
J	GST compliance rating (Optional)	
K	Whether supply is exempt/non taxable	
L	Whether reverse charge scheme is applicable. (Yes/No)	
M	Whether compounding scheme applicable (Yes/No). In case purchase is from dealers under composition scheme GST cost will be inbuilt in supply and vendor will not charge GST separately	
N	Whether TDS applicable (Yes/No)	
O	Email address of vendor	
P	Phone Nos. of vendor	

(Seal of the firm)

(Dated Signature of Contractor)

(A GOVERNMENT OF INDIA UNDERTAKING)**(ELECTRICAL WING)**

State : Himachal Pradesh

Circle : Shimla

Division: Dharamshala

Division:- Dharamshala

NOTICE INVITING TENDER**(As per Tendering Procedure in BSNL EW-6 revised up to date)****NIT No. 14/EE/E/BSNL/ED/DMA/2023-24**

The Executive Engineer (E) B.S.N.L., Electrical, Division, Head post office, BSNL CSC Building Dharamshala (HP)-176215 invites on behalf of Bharat Sanchar Nigam Limited sealed item rate tenders for the work from the eligible contractors satisfying the following conditions for the work **SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)**

1. The work is estimated to cost **Rs. 141416.00/- (Excluding GST)**

(This estimated cost however is given merely as a rough guide)

02. (a) Printed forms of tenders 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 by the persons whose tender may be accepted, can be purchased, at the Divisional office between the hours of 11:00 hrs and 16:00 hrs. Every day except on Sundays and public holidays on payment of **Rs. 590/-** in the form of demand draft drawn in favour of **AO(Cash), o/o GMTD BSNL Dharamshala**
(b) The site for the work is available.

(c) The tender forms can also be downloaded from the web site.

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

03. Tenders which should always be placed in sealed covers with the name of work written on the envelope will be received by the **Executive Engineer (E), BSNL Electrical Division1, Head post office, BSNL CSC Building Dharamshala (HP)-176215** up to **12:00 hours on 04.12.2023** and will be opened by him in his office on the **same day at 12:30 hours**.

Tenders received by post/couriers will not be accepted.

04. The time allowed for carrying out the work will be One Month reckoned from 10 day after issue of award letter.

05. Issue of tender form will be stopped on dated **02.12.2023** i.e. two days before the date fixed for opening of tenders. Tenders will be sold on working days; no tender will be sold after 16:00 hours.

06. a) Earnest Money amounting to **Rs. 2828.00.00/-** in the form of demand draft/ FDR / BG/ CDR of nationalized scheduled bank guaranteed by the Reserved Bank of India, drawn in favour of **AO(Cash), o/o GMTD BSNL Dharamshala** must accompany tender and tender should be in two sealed covers, one cover containing the EMD in proper form and other cover containing tender, super scribed as "**Tender for the work**"

The Validity period of **EMD is 120 days**, from the date of opening of tender.

In case of tender downloaded from the website (www.hp.bsnl.co.in → Tenders → → Electrical Wing), each tender should be in two sealed covers, first containing credentials for meeting the eligibility condition along with the cost of tenders and EMD in proper form, second cover containing tender documents. The credentials shall be self attested. Original documents shall be produced if required. After verification of contents of first envelope then second envelope containing the bid document shall be opened.

If any difference / discrepancies found between downloaded tender form and hard copy issued from division office, the contents in Draft NIT issued from E.E. (E)'s office will be final & binding.

b) The EMD of all the unsuccessful tenders shall be released on issue of award letter to the successful tenderer. This shall be done within one week of award letter.

c) Exemption from payment of earnest money and security deposit by any other unit/ department shall not accepted by BSNL.

07.a) The contractor should submit and confirm Chartered Accountant Certificate in the revised form as modified under Ministry of Finance CBDT circular No. 153/191/2002-TPL dated 13-02- 2003 as amended from time to time before papers can be sold to him and other registration certificate (enlistment in BSNL (if applicable), Sales tax) with attested copies (self attested and counter attested by any Executive of BSNL/MTNL or Gazetted Officer of GOI; otherwise all originals of eligibility criteria shall be produced for verification at the time of tender opening) as applicable along with the application on printed letter head for purchase of tender.

b) The contractor shall submit and confirm his permanent account No. (PAN) issued by the Income-tax department.

c) The tenderer should submit the **valid GST registration certificate**.

08 i) Performance Guarantee: - The contractor is required to furnish performance guarantee in manner as per the proforma of schedules in the form of Bank Guarantee / CDR / FDR / DD (of Nationalized / Scheduled Bank in a standard format) within two weeks from the date of issue of award letter. This period can be further extended by the authority who has issued Draft NIT on written request of contractor. **[Applicable in respect of works with estimated cost put to tender exceeding Rs 6 Lakh]**

ii) Security Deposit: In addition to performance guarantee 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 Contract value of the work.

The amount shall be refunded after Six Months from the actual date of completion of work. **[Applicable in respect of works with estimated cost put to tender up to Rs 6 Lakh]**

09. The acceptance of tender will rest with the Executive Engineer (E), who does not bind himself to accept the lowest tender or any other tender and reserve 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. Tenders with any condition including that of conditional rebate shall be rejected forthwith summarily.

10. Canvassing in connection with tender is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.

11. BSNL reserves to 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.

12. i) 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 Directors of the company.

ii) 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 & wife

c. The one is related to the other in the manner as father, mother, son (s), and 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).

iii) 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 Architect /Corporate office for non-executive employees and all SSA in a circle including Circle office/ Chief Engineer/Chief Architect/Corporate office for executive employees (including those called as Gazetted officers as present). The tenderer should give a certificate that none of his /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 the 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-

"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 the contractor)

13. No employee in BSNL/Government 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.

14. The tender for works shall not be witnessed by the contractor 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.

15. 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 for each component with the officer concerned.

16. Any tender not submitted in proper manner or if it contains too many corrections, overwriting of absurd rates, and absurd amount will be liable to be rejected and the BSNL will be at liberty to take such action as it may deem fit without any reference to the tenderer.

17. The tenders for the work shall remain open for acceptance for a period of 90 days from the date of opening of tenders. If any tenderer withdraws his tender before the said period or 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.

18. Extension of 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 of extension, the tenderer is free to either extend the validity or refuse the request to extend the validity.

19. Unsealed tenders will be summarily rejected.

20. The contractor should read the tender documents carefully before submitting the tender.
21. Agreement shall be drawn with the successful tenderer on prescribed form. Tenderer shall quote his rates as per various terms and conditions of the said form, which will form part of agreement.
22. The tenderer shall furnish a declaration to this effect (In case downloaded tender) that no addition /deletion/correction have been made in the tender document submitted and is identical to the tender document appearing on website. Every page of downloaded tender shall be signed by the tenderer with stamp (Seal) of his firm /organization.
23. 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 forming the tender as issued at the time invitation of tender and acceptance thereof together with any correspondence leading thereto.
 - b) Standard form, BSNL EW-8.
24. Eligibility Criteria: -
- BSNL enlisted contractor in Electrical category IV (E) and above.
Documentary proof of satisfying above conditions and valid Chartered Accountant certificate towards deposit of income tax, valid GST Registration and, EPF Registration to be furnished along with application, Agency should submit the attested copy of PAN card.

Executive Engineer (Elect)

BHARAT SANCHAR NIGAM LIMITED

BSNL EW -8

STATE : Himachal Pradesh

CIRCLE :

Shimla

ZONE : Himachal Pradesh

BRANCH

:

Electrical

Percentage Rate Tender/Item Rate Tender for Works:

Tender for the work of "SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)

Issued to (contractor) M/s _____

Tender Cost _____

Receipt no. _____

Date of Application _____

Date of Issue _____

Signature of officer issuing the Documents _____

Designation _____

(i) To be submitted by (time) 12.00 hours on (date) 04.12.2023 The Executive Engineer (E) B.S.N.L., Electrical, Division, Head post office, BSNL CSC Building Dharamshala (HP)-176215

(ii) To be opened in presence of tenderers who may be present at 12.30 hours on 04.12.2023 in the office of The Executive Engineer (E) B.S.N.L., Electrical, Division, Head post office, BSNL CSC Building Dharamshala (HP)-176215

TENDER

1. I / We have read and examined the notice inviting tender, schedule, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.
2. I/We hereby tender for the execution of the work specified for the BSNL within the time specified, 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.
3. 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.
4. A sum of Rs. 2828.00.00/- is hereby forwarded in the form of deposit at call receipt/FDR/Bank guarantee of a Nationalized/Scheduled bank as earnest money if I/we fail to commence the work specified, I/we agree that the said BSNL 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.
5. 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 up to maximum of percentage mentioned in clause 12.3 of the tender form and those in excess of that limit at rates to be determined in accordance with provisions contained in clause 12.2.
6. I/We agree to furnish to BSNL Deposit at call receipt/FDR/Bank guarantee of a nationalized/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 award letter. I/We agree to keep the performance bank guarantee valid for one year from date of actual completion of work.
7. 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

CONTRACTOR 11

EE (E)

prejudicial to the safety or interest of BSNL.

Signature of Witness

(Required in the case of Contractor's thumb impression is given by the contractor in place of signature)

(Name & Postal address)

Occupation of witness & Date

(Signature of Contractor)

Seal of Contractor

Date

ACCEPTANCE

The above tender as modified by you (contractor) and as provided in the letters mentioned hereunder is accepted by me for and on behalf of the Bharat Sanchar Nigam Limited for sum of

Rs. _____

(Rupees _____

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

a)

b)

c)

For & on behalf of the B.S.N.L.

Signature _____

Dated _____

Designation _____

PROFORMA OF SCHEDULES**(Operative Schedules to be supplied separately to each intending tenderer)****SCHEDULE 'A'**

Schedule of quantities (as per BSNL -8)

As Per Page No. 18 to 19

SCHEDULE 'B'

Schedule of material to be issued to the contractor.

S. 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
As stated in schedule of quantities				

SCHEDULE 'D':- appended from page No. 23 to 26

SCHEDULE 'D' reference to General conditions of contract	
Name of work:	"SITC of aviation light and Associated work at BSNL BTS Towers in Dharamshala BA (HP)
Estimated Cost of work:	Rs. 141416.00/- (Excluding GST)
Earnest Money Deposit:	Rs. 2828.00.00/-
Security Deposit :	10 % of tendered amount
GENERAL RULES and DIRECTIONS:	
Officer inviting tender -	Executive Engineer (E) BSNL, Electrical Division Dharamshala(HP)
Definitions:	See below
Engineer-in-Charge	Executive Engineer (E) BSNL, Electrical Division Dharamshala(HP)
Accepting Authority	Executive Engineer (E) BSNL, Electrical Division Dharamshala(HP)
Percentage on cost of materials and labour to cover all overheads and profits.	10 %
Standard contract Form	BSNL EW 8 modified & corrected up to date
Clause 1 Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance, in days	Not applicable

Clause 2 Authority for fixing compensation under Clause 2.	SE (E)
Clause 5 i) Time allowed for execution of work.	7 Days
ii) Authority to give fair and reasonable extension of time for completion of work.	SE (E)
Clause 10CC Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column.	Not applicable
Clause 12 12.2 (iii) Schedule of rates for determining the rates for additional, altered or substituted items that cannot be determined under 12.2.(i) & (ii)	DSR 2018
Clause 12 12.2 (iii), plus/minus \pm the % over the rate entered in the schedule of rates	DSR 2018
Clause 12 Deviation Limit beyond which clauses 12.3 shall apply	50%
Clause 25 Competent Authority for Conciliation	SE (E)
Clause 30.2 Minimum Qualifications and experience required for Principal Technical Representative.	
For works with estimated cost put to tender more than Rs. 2 Lakh but less than Rs.5 Lakh for Elect / Mech. Works	Recognized diploma holder
For works with estimated cost put to tender more than Rs. 5 Lakh for Elect / Mech. Works	Graduate or recognized diploma holder with 3years experience
Recovery to be effected from the contractor in the event of not fulfilling provision of clause 30.2	Rs.4,000/- p.m. for Graduate Rs.2,000/- p.m. for Diploma holder

Schedule of work

Name of work :- SITC of aviation light and associated work at BSNL BTS Towers in Dharamshala BA (HP)						
S.No.	Description	Qty		Rate	Unit	Amount
1	SITC of one no IED Based (Light emitting diode) single AOL (Aviation abstracting Light) IP 65 Protection on the existing tower confirming o the standard for Low intensity aviation light has set by the international civil organisation (ICAO) with two built in SMPS redundant circuits by making suitable arrangement mounting interconnection testing etc.as required	8	No		Each	
2	Supplying and fixing of 2x1.5 Sq.mm PVC insulated PVCsheathed copper conductor unarmored cable of 1.1 KV grade confirming to IS standard making connection etc as required including laying and fixing the same along theTower from aviation light to container/ room complete with making connection etc.as required at site.	400	Mtr		Mtr	
3	Supply and fixing of following rating MCB 10KA in th existing MCB DB Complete with testing ETC as reqd					
a	Single Pole (5Ato 32A) MCB	8	No		Each	
b	DPMCB(5A to 32A)	8	No		Each	
4	Supply and fixing of 4 way single pole and neutral sheet steel MCDB 240V , on the existing wall/Board complete with tinned copper earth bus bar, neutral bus bar , earth bar , din bar interconnection powder coated complete with testing etc as reqd	8	No		Each	
					Total	

(Signature with Seal of Firm)

Executive Engineer (E)
BSNL Electrical Division
Dharamshala

MODEL FORM OF BANK GUARANTEE (ON STAMP PAPER OF Rs. 100/-)**BANK GUARANTEE BOND FOR EMD FOR AIR CONDITIONING, DIESEL ENGINE ALTERNATOR, AMC E/A Sets, Operation and Comprehensive Maintenance of EMS, 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 _____ (hereinafter called "The BSNL") in the sum of _____ for which payment will and truly to be made of the said BSNL, 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 BSNL 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 BSNL up to the above amount upon receipt of its first written demand, without the BSNL having to substantiate its demand, provided that in its demand, the BSNL 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 Bank

Signature of the Witness

Name of Witness

Address of Witness

ANNEXURE- II
PERFORMANCE SECURITY GUARANTEE BOND

In consideration of the CMD, BSNL (hereinafter called 'BSNL') having offered to accept the terms and conditions of the proposed agreement between _____ and _____ (hereinafter called the said contractor(s)') for the work _____ (hereinafter called "the said agreement"), having agreed to production of a irrevocable Bank Guarantee for Rs. _____ (Rupees _____ only) as a security / Guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement .

1. We, (name of the bank) _____ (hereinafter referred to as "the bank") hereby undertake to pay to the BSNL an amount not exceeding Rs. _____ (Rupees _____ only) on demand by the BSNL.
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 stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees _____ only)
3. We, the said bank further undertake to pay to the BSNL any money so demanded notwithstanding any dispute or disputes raised by the contractor(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 a valid discharge of our liability for payment there under and the contractor(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 BSNL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-Charge on behalf of the BSNL certified that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.
5. We, (name of the bank) _____ further agree with the BSNL that the BSNL shall have 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 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 of 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).
7. We, (name of the bank) _____ lastly undertake not to revoke this guarantee except with the previous consent of the BSNL in writing.
8. This guarantee shall be valid up to _____ unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. _____ (Rupees _____ only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

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

PROFORMA FOR AGREEMENT

(ON NON- JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

CONTRACT AGREEMENT FOR THE WORK OF ----- DATED ----
----- Between M/S ----- (refer note) in
the town of (Address)-----

herein after called the contractor (which term shall unless excluded by or repugnant to be subject or context include its successors and permitted assigns) of the one part and the Bharat Sanchar Nigam Limited herein after called the BSNL (which term shall unless excluded by or repugnant to the subject or context include its successes and assigns) of the other part.

WHEREAS

- a. The BSNL is desirous that the execution of (Name of work) -----
----- at ----- to be performed as mentioned ,
enumerated or referred to in the tender including press Notice Inviting Tender , General conditions of the contract , Special conditions of the contract , Specifications , Drawing , Plans , Time schedule of completion of jobs , schedule of quantities and rates , agreed variations , other documents , has called for tenders.
- b. The contractor has inspected the site and surroundings of the work specified in the tender documents and has specified himself by carefully examinations before submitting his tender as to the nature of the surface , strata , soil , sub soil and grounds , the form and nature of the site and local conditions the quantities , nature and magnitude of the work , the availability of the labour and materials necessary for the execution of work , the means of access of site , the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and things referred to or implied in the tender , documents or having any connection therewith and has considered the nature and extent of all the probable and possible situations , delays , hindrances or interferences to or with the execution and completion of the work to be carried out under the contract , and has examined and considered all other matters , conditions and things and probable and possible contingencies , and generally all matters incidental thereto and ancillary thereof affecting the execution and completion of the work and which might have influenced him in making his tender.
- c. The tender documents including the BSNL ,s press notice Inviting Tender , General conditions of Contract , special conditions of contract, Schedule of quantities and Rates , General obligations , Specifications , Drawings , Plans , Time schedule for completion of work. Letter of acceptance of tender and any statement of agreed variations with its enclosures copies which are hereto annexed form part of this contract through separately set out herein and are included in the expression contract wherever herein used.

AND WHEREAS

The BSNL accepted the tender of M/S ----- (refer note at page -----)
(contractor) for the Operation & Comprehensive maintenance of EMS ----- at -
----- and conveyed vide letter no ----- Dated ----
----- at the rates stated in the schedule of quantities for the work and accepted by the BSNL
(herein after called the schedule of rates) upon the terms and subject to the conditions of the contract.

NOW THIS AGREEMENT WITNESSTH & IT IS HEREBY AGREED AND DECLARED AS FOLLOW

1. In consideration of the payment to be made to the contract for the work to be executed by him , the contractor hereby convenient with the BSNL that the contractor shall and will duly provide , execute, complete and maintain the said work and shall do and perform all other acts and things in the contract mentioned or described or which are to implied and there from or may be reasonably necessary for the completion of the said works and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned. In the contract and

2. In consideration of the due provisions execution, completion and maintenance of the said work, the BSNL does hereby agree with the contractor that the BSNL will pay to contractor the respective amounts for the work actually done by him and approved by the BSNL at the schedule or rates and such other sum payable to the contractor under provision of the contract, such payment to be made at such time in such manner as prescribed for in the contract.

It is specifically and distinctly understood and agreed between the BSNL and the contractor that the contractor shall have no right , title or interest in the site made available by the BSNL for execution of the works or in the building , structures or works executed on the said site by the contractor or in the goods , articles , materials etc. brought on the said site (unless the same specifically belongs to the contractor) and the contractor shall not have or deemed to have any lien whatsoever charge for unpaid bills will not be entitled to assume or retain possession or control of the site or structures and the BSNL shall have an absolute and unfettered right to take full possession of site and to remove the contractor , their servants , agents and materials belonging to the contractor and lying on the site.

In witness where of the parties hereto have here-into set their respective hands and seals in the day and the year first above written.

Signed and delivered for and on behalf of BSNL

Signature and delivered for and on behalf
the Contractor

(BHARAT SANCHAR NIGAM LIMITED)
OFFICIAL ADDRESS

(CONTRACTOR)

Date
Place

Date
Place

IN PRESENCE OF TWO WITNESSES

SIGNATURE
NAME

SIGNATURE
NAME

SIGNATURE

SIGNATURE

NAME

NAME

PROFORMA FOR LABOUR REPORT

Each bill of contractors for this work must accompany the information in following table

LABOUR REPORT FOR THE PERIOD :-									
Name of Work:-									
Agreement No :-									
Name of Agency :-									
Agency's EPF Registration Number :-									
Bill Serial Number :-									
Details Of Labor/Workers/Employees engaged at site :-									
Sr n	Name of Labor/Worker/Employee engaged at site with his EPF number	Category of Labor/Worker/Employee [Skilled/Semiskilled/unskilled]	Duration of their engagement	Amount of Wages paid per day inclusive all.	Amount of EPF Contribution		Details of Female Worker who have been allowed maternity benefit according to Clause-19-F	The Accident that occurs during the fortnight showing the circumstances & extend of damage & Injury	Remark
					Employer	Employee			
<p>I, Mr.----- Proprietor of M/s-----</p> <p>----- Declare that I am complying EPF ACT- 1952 & the contract Labor (Regulation & Abolition) Central Rules-1971. The Wages of their duration of engagement & EPF contribution etc are being fulfilled from time to time. I am liable to pay EPF contribution, however incase of any demand by EPF authorities, their claims will be settled by me.</p>									
Date					Signature of Contractor				

GSTN DETAILS OF BSNL
Form GST REG-25

Sr. No.	Description	Details
A	Legal & trade Name	Bharat Sanchar Nigam Limited
B	Type of vendor i.e. whether registered or unregistered	Registered
C	State wise registration address of the vendor (In case vendor has presence in multiple states)	O/O the Chief General Manager BSNL, HPTC, Block No. 11, SDA Complex, Kasumpti, Shimla 171 009 (HP)
D	State of registration along with PIN code	Himachal Pradesh 171009
E	PAN No. of vendor	AACB5576G
F	GSTIN No. of registered vendor (If registered in multiple states, then listing all GSTINs) under which invoices are raised by vendor	02AACB5576G3ZV
G	TIN under VAT	02011200359
H	Service Tax Registration No.	AACB5576GSD816
I	Corporate Identity Number (CIM)	U74899DL2000GOI107739
J	Status of vendor i.e. SEZ, EOU, DTA, Government, Local authority	Public Sector Undertaking
K	List of goods and services provided by vendor	Telecommunication services
L	HSN code for goods/SAC for services supplied by vendor	HSN CODE 85176230, 85235210 SAC CODES 00440398, 00440229, 00440406
M	GST compliance rating (Optional)	
N	Whether supply is exempt/non taxable	No
O	Whether reverse charge scheme is applicable. (Yes/No)	No
P	Whether compounding scheme applicable (Yes/No). In case purchase is from dealers under composition scheme GST cost will be inbuilt in supply and vendor will not charge GST separately	No
Q	Whether TDS applicable (Yes/No)	No
R	Email address of vendor	bsnlgst.hp@gmail.com

SCHEDULE "D"
"IMPORTANT NOTE FOR CONTRACTORS"

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

1. SUBMISSION AND OPENING OF TENDERS:-

- a. The tender shall be submitted as prescribed in clause 7 of BSNL EW 6.
 - b. The tenderer are advised not to deviate from the technical specifications / items, commercial terms and conditions of NIT.
2. BSNL does not bind himself to accept the lowest or any tender and 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 quoted.

3) TAX AND DUTIES: -

The rates shall be quoted **inclusive of all taxes Excluding GST to and all other taxes of Central / HP State Government with loading, unloading and transportation etc. The rates shall be firm and final. Nothing extra shall be paid on any account & BSNL shall not entertain any claim in this respect.** The invoices raised by the contractor shall indicate GST as a separate component of the gross bill raised. The payment of GST by BSNL to the contractor shall be governed by the rule of the government made in this regard and applicable to BSNL and further as per the rules framed by BSNL in this regard. BSNL shall claim ITC credit for the GST as per rules of BSNL in vogue. *The contractor shall be solely responsible for timely payment of GST to the concerned department. Any penalty / interest for late submission etc. arising thereupon and as demanded by the concerned department shall be sole responsibility of the contractor and BSNL shall have absolutely no liability whatsoever on this account.*

The deduction at source of such taxes as per rule shall be made while releasing payment of the running/final bills at the rate as applicable. The department shall issue a certificate of the rate and amount of deductions but such taxes shall not be paid/ reimbursed to the contractor by the BSNL separately. No concessional form shall be issued by the BSNL. The road permit etc. shall be arranged by the tenderer on his own without any extra cost.

4) SECURITY DEPOSIT:-

Recovery of security deposit at the rate of 10% in accordance with clause 1A of BSNL EW-8 shall be deducted by BSNL from progressive payments made to the firm from all the running bills till the sum along with the sum already deposited as earnest money will amount to security deposit of 10% of the tendered value of the work. This shall be refunded to the contractor as per Clause 17 of BSNL EW-8. This will be released after an observation of 12 months after the date of completion of work along with performance guarantee.

5) TERMS OF PAYMENT:

No advance payment will be made. Payment to the contractor during the contractor during the progress of work is regulated for all the items as below. Stipulations like levy of interest if payment is not made in specified time are not acceptable to the BSNL.

- i) 90% of approved contract value on supply and installation of scheduled items
- ii) 10 % of approved contract value after successful testing & commissioning

NOTE:-

- Stipulations like levy of interest if payment is not made in specified time are not acceptable to the BSNL
- In cases where shortage / damages are intimated to the supplier in writing, the balance payment shall be released only after the cases are settled in accordance with the provisions of the P.O.
- 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.

6) DATE OF COMPLETION: -

Date of successful testing & commissioning of system will be considered as the date of completion.

7) COMPLIANCE OF EPF ACT:

The firm has to fulfill / compliance of the provisions of EPF & Misc. Provisions Act 1952 & Employees' Provident Fund Scheme 1952. The each claim bill of contractors must accompany the 1) List showing the details of laborers / employees engaged. 2) Duration of their engagement. 3) The amount of wages paid to such laborers / employees for the duration in question. 4) Amount of EPF contributions (both employer's and employee's contribution) for the duration of engagement in question, paid to the EPF authorities. 5) Copies of authenticated documents of payments of such contribution to EPF authorities and 6) A declaration from the contractors regarding compliance of the conditions of EPF Act, 1952.

8) DECLARATION BY TENDERER

1. To be signed by Proprietor in case of proprietorship firm.
2. To be signed by all partners in case of partnership firm.
3. To be signed by all the directors in case of the company.

1. M/s.....
- S/o
- R/o

Hereby certify that none of my relatives (*) as defined below is/are employed in BSNL units(**) as defined below.

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

(*) Definition of Relatives.

1. Member of Undivided family.
2. They are husband and wife.
3. They are related to the other in the manner as Father, Son(s) and Son's wife (Daughter-in-law, Daughter(s) & Daughter's husband (Son-in-law), Brother & Brother's wife, Sister(s) & Sister's husband (Brother-in-law).

(**) The company or firm or any person is not permitted to tender for the work in BSNL unit in which his near relative(s) is (are) posted. The unit is defined as

- A. For Non Executive Employees: SSA/Circle/Chief Engineer/Chief Architect/ Corporate Office.
- B. For Executive Employees (including those called as gazetted officer at present): All SSA in Circle office/Chief Engineer / Chief Architect / Corporate Office.

Place: _____

Date: _____

Signature of tenderer

9) TAX DEDUCTED AT SOURCE: -

The rates offered by the firm shall be inclusive of VAT as applicable in the state. The BSNL shall deduct TDS from payments due to the firm as per rules of the state Government. Certificate for such deductions shall be issued to the firm by the Accounts officers of the concern division.

10) GST:-

The rates offered by the firm shall be inclusive of the GST as applicable. The firm shall claim GST with the bill clearly furnishing the complete details of GST so included. BSNL, under no circumstances, will consider any claim of GST not included in the bill. It will be the firm's responsibility to settle GST with GST authorities.

11) GUARANTEE AND DEFECT LIABILITY: -

The guarantee shall be valid for twelve months after Commissioning of the system. The contractor shall guarantee that system 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 firm shall visit quarterly during guarantee period and ensure the healthiness of system.

a) Any part 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 department.

b) The contractor shall depute his representative within 36 hours of notification of the defect by the department.

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

d) In case the contractor fails to depute his representative within 36 hours of notification of the defect or fails to cause remedial measure within reasonable time as decided during joint inspection, the department may proceed to do so at the contractor's risk and expenses and without prejudice to any other right.

12) TESTING AT SITE: -

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

- Megger test between Phases, Neutral and Earth.
- Earth test.
- Polarity test.

13) Operation of agreement shall be governed as follows:

1. BSNL will have the right to increase or decrease up to **25 %** of the contract value depending upon the requirement of goods & services specified in the schedule of items without any change in the unit price or other terms & conditions at the time of award of contract.
2. The ordering quantity can be increased up to the extent of **25 %** (deviation limit) without the consent of the firm. The firm shall execute such quantities at the rate quoted in the tender without any change in terms and conditions of the contract.
3. The agreement shall be signed between the firm and Executive Engineer (E) BSNL Electrical Division, Shimla, within a fortnight from the date of approval.
4. Formal work contract agreement will be made between the Executive Engineer (E) & the firm on the basis of specimen agreement & the schedule of work. The date of commencement shall be reckoned from the 10th day after the date of award letter.
5. The period of completion shall be **One Month after completion of Civil Work.**

14) MISCELLANEOUS

1. The workers engaged by firm should maintain proper discipline and good behavior with occupants. The firm shall not depute such workers at the site, whose behavior is found improper. Executive Engineer's decision shall be final.
2. All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the tender, whether such items are specifically mentioned in the tender documents or not
3. The agency will provide the workers with necessary Tools & Plant, Testing and safety equipments.
4. Agency has to observe all the labour rules and regulations in force and indemnify BSNL against any claims whatsoever, either from this clause or any other clause in the contract.
5. Firm shall issue ID card to their workforce whenever they enter premises for bonafide work. Nobody shall be allowed entry without work and nobody will be allowed overnight stay without work. The workers should wear proper uniform with detachable badge indicating the name of person & firm.
6. Dismantled materials shall be returned to the BSNL except those items for which the replacement is supplied by the agency.
7. The contractor has to keep all the units, neat and clean to avoid any accident and / or fire hazards.
8. Firm should have round the clock contact telephone number. In case of Emergency, contractor and authorized engineer supervisor shall be available at site on short notice from engineer-in-charge and make all efforts to make the situation normal at the earliest.

.15) PACKING, FORWARDING AND STORAGE AT SITE

Before dispatch to site, the equipment / component / materials shall be properly packed so as to afford protection against transit damages and damages against storage in open areas either at transporter's premises or at work site. When storage in open area is inevitable

proper waterproof covering shall be provided to protect damages on account of rainwater etc. However, damaged items shall be replaced as per the direction of Engineer-in-Charge.

All the stores and materials required for satisfactory completion of the work shall be arranged at work site by the contractor from his own sources. However, safe custody of the material stored at site will be the responsibility of the contractor.

16) CO-ORDINATION AT SITE:-

At the site of work 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 department engaged in erection as well to the normal routine work.

17) BYE-LAWS INDEMNITY AGAINST LIABILITIES

1. The contractor shall comply with all bye-laws and regulations of local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fee and other charges and giving/receiving all necessary notices and keep the Engineer-in-Charge informed about the notices issued and received.
2. The contractor shall indemnify BSNL against all claims in respect of patent rights, design, trade mark 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 thereon. The contractor shall defend all actions arising from such claims and shall himself pay all royalties.
3. License fees, damages, cost and charges of all and every sort that may be legally incurred in respect thereof shall be borne by the contractor.
4. All liabilities / penal recoveries on matters arising out of tax/excise/levies such as incorrect deductions, discrepancies in the filling up returns, revised assessments by the concerned authorities etc. shall be borne by the contractor.
5. It is contractor's liability to follow all safety procedures in accordance with relevant I.S. amended up to date during execution of work at site.

18) Works to be arranged by the BSNL:

Unless and otherwise specified in the tender documents, the following works shall be arranged by the BSNL:

- (i) Supply of materials to the contractor as stipulated in the tender documents.

19) Works to be done by the contractor:

Unless and otherwise mentioned in the tender documents, the following works shall be done by the contractor, and therefore their cost shall be deemed to be included in their tendered cost:-

- a) Foundations for equipment's and components where required, including foundations bolts.
- b) Cutting and making good all damages caused during installation and restoring the same to their original finish.
- c) Sealing of all floor openings provided by him for pipes and cables, from fire safety point of view, after laying of the same.

- d) Painting at site of all exposed metal surfaces of the installation other than pre-painted items like fittings, fans, switchgear/distribution gear items, cubicle switchboard etc. Damages to finished surfaces of these items while handling and erection, shall however be rectified to the satisfaction of the Engineer-in-Charge.
- e) Testing and commissioning of completed installation.
- f) Storage space for all equipment's, components, and materials for the work

20) Conformity to IE act, IE Rules, and standards:

All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise). List of rules of particular importance to electrical installations under these General Specifications is given in Appendix C of CPWD general specifications for electrical works part-1 internal 2007, for reference.

21) Conformity to standards:

All components shall conform to relevant Indian Standard Specifications wherever existing. Materials with ISI certification mark shall be preferred.

Relevant Indian Standards including amendments or revisions thereof up to the date of tender acceptance shall be applicable in the respective contracts for respective items, firm to ensure its compliance.

22) Workmanship:

- a. 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.
- b. Proper supervision/skilled workmen: The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instruction of Engineer-in-charge and other senior officers of the Department during the progress of work.
- c. Use of quality materials: Only quality materials of reputed make as specified in the tender will be used in work.
- d. Fabrication in reputed workshop: Switch boards and LT panels shall be fabricated in a factory/workshop having modern facilities like quality fabrication, seven tank process, and powder/epoxy paint plant, proper testing facilities, manned by qualified technical personnel. These shall be as per make / item approved.

23) Care of buildings:

Care shall be taken by the contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove, at his costs, all unwanted and waste materials arising out of his work, from the site. Any expenditure incurred by the BSNL in this condition shall be recovered from the contractor and decision of the Engineer-in-Charge about recovery shall be final

SPECIFICATIONS FOR ELECTRICAL WORKS

1.0 Scope

This section sets out the basic requirement for switchboards, electrical power wiring to individual motors and other equipment, control circuit wiring and earthing etc.

1.1 General

Unless otherwise specified particularly the entire equipment should be suitable for operation on 415 volts/240 volts, 50Hz earthed neutral, 3/single-phase alternating current system as may be required.

- a. All components, accessories, raw material and finished parts used in manufacture and assembly of switch boards, power and control circuit wiring and earthing system should comply with the relevant Indian Standards amended upto date. Where Indian Standards do not exist British Standards should apply.
- b. The entire work should comply with Indian Electricity rules and C.P.W.D. general specifications for electrical work. Particular care should be taken to ensure compliance to I, E rules 41, 45, 51 and 61.

2.2 Switch Board:

- a) The switchboard should be floor mounted, front operated, free standing, totally enclosed. Compartmentalized cubicle type, rigid construction with not less than 14-gauge M.S. sheet or as specified in tenders with angle iron framework. All bolts, washers, nuts and screws should be adequately galvanized. The design should include all provisions for safety of operating and maintenance personnel.
- b) Bus Bars should be of high conductivity Aluminum with adequate cross sectional areas (refer table below). The cross section of neutral busbar should be not less than the half the cross section of the phase busbar. Bus bar should be sleeved suitably. Bus bars should be adequately supported on insulators to withstand the maximum short circuit stresses likely be encountered. The insulating material should be resin cost non-carbonizing type and should be impervious to moisture.

**TABLE
Aluminum/Copper busbar section
(Ref. Clause 7.1.2.2 of CPWD SPECIFICATIONS)**

Current Rating In amps. Up to	: Recommended rectangular cross section			
	: Aluminium		: Copper	
	No. of strip/ Phase	: Size : In mm	No. of strip/ Phase	: Size in mm
100	1	20 x 5	1	20 X 3
200	1	30 X 5	1	25 X 5
300	1	50 X 5	1	40 x 5
400	1	50 X 6	1	50 x 5
500	1	75 X 6	1	60 x 6

Note: -

- (i) With aluminum bus bars, only aluminum wire/solid bar connections should be made for incoming /outgoing mountings on the switchboard.
- (ii) With copper bus bars, only copper wire/solid bar connection should be made for incoming/outgoing mountings on the switchboards.
 - Clearance for air insulated bus bars and bus bar connections should be not less than 32 mm for phase to phase and 26 mm for phase to earth.

- For tap off connections P.V.C. insulated wires may be used for current ratings up to 100 amps. For higher current ratings solid conductors/strip suitably insulated with P.V.C. sleeve/tape should be used.
- The moulded case air circuit breakers should be conforming to relevant I.S.
- Circuit breaker should be provided with handle and be complete with over load and no volt coil. The panel which houses air circuit breaker should be provided with indicating lamps for indicating ON AND OFF position of circuit breaker and voltmeter and ammeter of approximately 100mm x 100mm size with selector switches and control fuses for potential circuits and current transformers for ammeter. An arrangement should also be provided for termination of cables on to this circuit breaker panel. **Doors should not open during ON position of switches/breakers.**
- In the case of cubicle type switchboards, cable chambers of adequate dimensions should be provided for entry of cables from different circuits. Connections from the individual components should be extended to the cable chamber so as to facilitate connecting up outgoing circuit to terminations from different components. The arrangement should be so provided that it would not be necessary to shut down any healthy circuit in the event of a maintenance work becoming necessary on a defective component/circuit. Such cubicle chambers should be of adequate dimensions to permit cables to be suitably clamped with adequate clearances. The physical layout of cable chambers should be decided mutually.
- Flush mounting type voltmeter and ammeter with current transformers and selector switches should be provided in the main incoming feeders.
- The voltmeter and ammeter should conform to I.S.1248 direct acting Electrical Indicating Instruments with higher than 1.5 class index.
- Provision should be made for earthing of the switch board frame by 2 independent earthing plugs.
- Adequate lifting facilities should be provided for each shipping section to facilitate handling and transport.

2.3 **Power Wiring**

- Power cables should be laid in racks or trays suspended with hangers as required. No trenches should be made in floors for this purpose. Where two or more cables are laid together, the cables should be properly de-rated.
- When cables pass through pipes, wooden bushes should be provided at both the ends. When cables are required to pass through floors or walls, pipe inserts should be provided and openings sealed in approved manner.
- The power cables should terminate at either end in squeezed gland with cable sockets. The cable conductors should be crimped in to the cable sockets.

2.4 **Control Wiring**

- Control circuit wiring should be carried out with 250 volts grade PVC insulated armored multi core copper conductor cables.
- Control cables should be of adequate cross sections to restrict the voltage drop but each conductor should be not less than 1.5 sq. mm.
- Runs of control wires within the switchboard should be neatly bunched and suitably supported/clamped. Means should be provided for easy identification of the control wires by means of labeled ferrules.
- The control wiring should correspond to the circuit/ sequence of operations and inter locks as required for satisfactory performance of the plant.

2.5 **Earthing**

- In accordance with Rule 61 of IE Rules, metallic frame of all medium voltage equipment/supporting frames should in all cases be connected to 2 separate and distinct earth. The size of such earth wires should be not less than 4-mm G.I. wire.

- The main double earthing will be extended by the department in the main incoming panel along with main incoming feeder and further looping of entire installation from main panel with G.I. strip/G.I. wire is to be done by the firm as per the instructions of the English-in-Charge.

2.6 Testing

- Before commissioning, the installation should be subjected to the following tests.
- An insulation resistance test with 500 volts Megger.
- Earth resistance continuity test, and
- Cables continuity test.
- All results of such tests should be furnished to the English-in-Charge.

2.7 Painting

- Entire steel work should undergone process of degreasing, pickling in acid, cold rinsing, and phosphatising, passivating, spread with a high corrosion resistant primer and then finally finished with two coats of approved color and quality of synthetic enamel paint.

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 FR 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 multistranded/ 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 75mmX75mmX6mm thick M.S. channel on all the sides. It shall have a continuous earth bus of the same size and material as the main phase 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-incharge 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.

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 to.

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 completed 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 selection criteria in designs

- 1. Pipe earth electrode.
- 2. Plate earth electrode.
- 3. Strip or conductor earth electrode.

1.2.1.2. Electrode materials and dimensions: -

- a) The materials and minimum sizes of earth electrodes shall be as per table VIII.
- b) 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.
- c) 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: -

- a) The earthing conductor (protective conductor from earth electrode upto the main earthing 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.
- b) The size of earthing conductor shall be specified, but this shall not be less than the following (For calculating the size of the earthing conductor in design).
- c) 5mm dia (6SWG) for GI, or 4mm dia (8SWG) for copper wire.
- d) 25mmx4mm in the case of GI strip, or
- e) 20mmx3mm in the case of copper strip.
- f) Earthing conductor larger than the following sectional areas need not be used, unless otherwise specified.
 - i. 150 Sq.mm. in case of GI in case of GI,
or,
 - ii. 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.
- (ii) 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: -

- 1. The material and size of protective conductors shall be as specified.(For criteria in design of these
- 2. The minimum cross sectional area of a protective conductor (not contained within a cable or flexible cord) shall be:-
 - a) 2mm 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.
- 3. Unless otherwise specified, GI conductor should not be ordinarily used as protective conductor within any circuit, beyond a DB downstream.

1.3. LOCATION FOR EARTH ELECTRODES: -

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

1.4 INSTALLATION.

1.4.1. ELECTRODES.

1.4.1.1. Various types of electrodes:-

- I. Pipe electrode shall be buried in the ground vertically with its top at not less than 20cm below the ground level.
- II. 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.
- III. Plate electrode shall be buried in ground with its faces vertical, and its top not less than 3 m below the ground level.
- IV. 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
- V. The strip or conductor electrode shall be buried in trench not less than 0.5m deep.
- VI. 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.
- VII. If the electrode cannot be laid in a straight length, it may be laid in a zig-zag manner with a deviation upto 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.

1.4.1.2. 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.

1.4.1.3. 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.

1.4.2. 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 upto 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.
- vi. 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: -

- 1. In the case of substations and generating stations, two numbers copper/GI (as specified) earth bus shall provide, duly connected to two numbers of independent electrodes, exclusively for equip0ment (body) earthing of substation or generating station equipments.
- 2. 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.
- 3. 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. Equipotential bonding conductors.

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

1. 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).
2. Two protective conductors shall be provided for a switch board carrying a 3 phase switch gear thereon.
3. 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.
4. 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.
5. 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.
6. 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.
7. Double earthing strips in rising mains, bus trucking 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 armoring connection.

1.5. EARTH RESISTANCE:-

1. 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 up to 8 ohms.
2. 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.
3. 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:-

1. Earth bars/terminals at all switch boards shall be marked permanently, either as "E" or as.
2. Main earthing terminal shall be marked "SAFETY EARTH- DO NOT DISCONNECT".

1.7. USE OF RESIDUAL CURRENT DEVICES (RCDs):-

An extract on selection and application of RCDs (also known as RCBs) from IS:12640-1988 is given Appendix H. Provision of RCD shall be specified in individual cases keeping in view the type, use, importance, system of earthing and nature of electrical installations to be protected by the RCCBs, requirements of the local electric supply company, etc. The sensitivity shall be 30mA, 100mA, 300mA, or 500mA as specified.

TABLE VIII

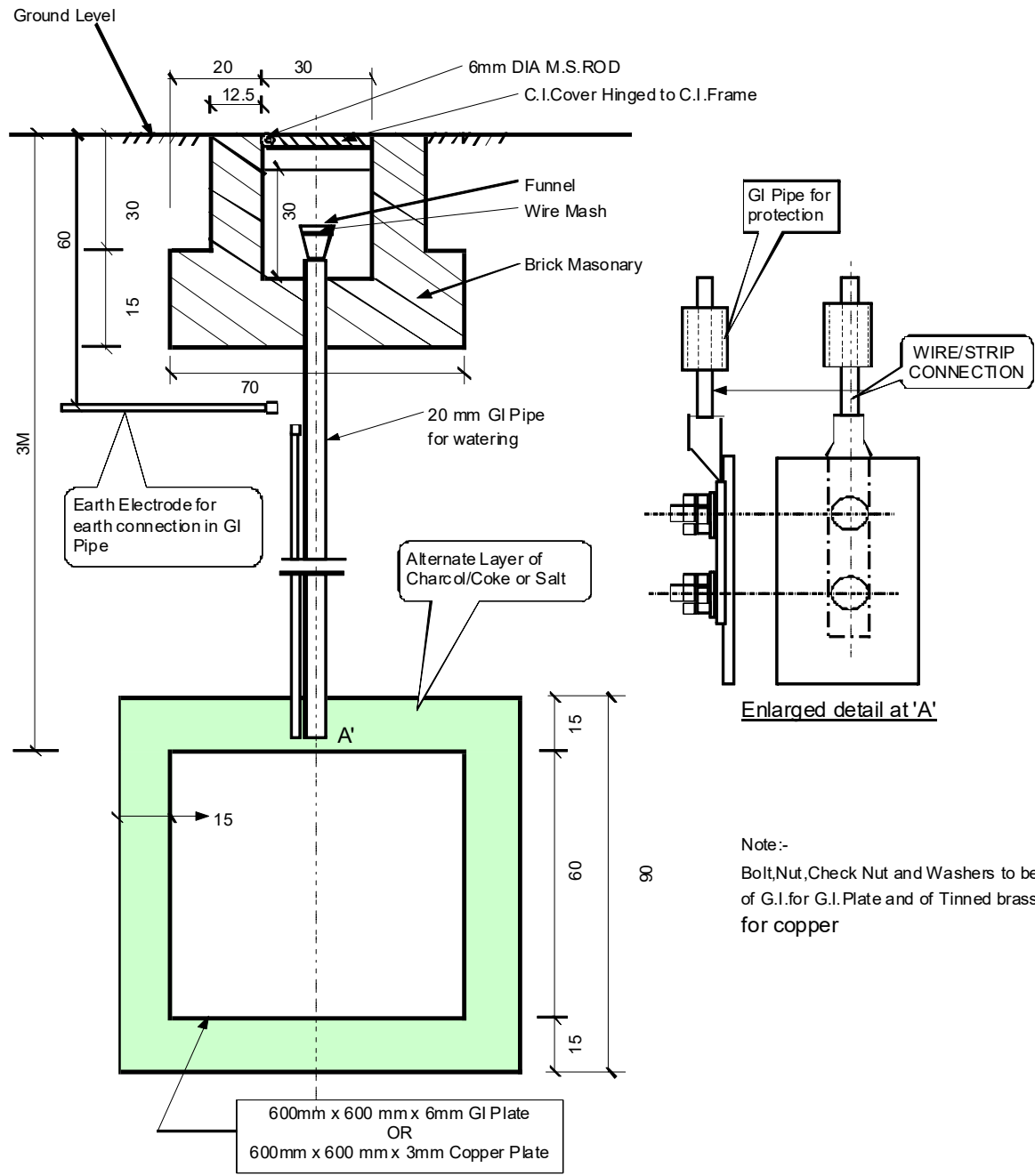
MATERIALS AND SIZES OF EARTH ELECTRODES

[Clause 1.2.1.2(i)]

Type of Electrode	Material	Size
Pipe	GI Medium Class	40 mm dia 4.5 m long(Without any joint)
Plate	(i) GI	600 mm x 600 mm x 6 mm thick
	(ii) Copper	600 mm x 600 mm x 3 mm thick
Strip	(i) GI	100 Sq.mm section.
	(ii) Copper	40 Sq.mm section
Conductor	(i) GI	5 mm dia (6 SWG)
	(ii) Copper	4 mm dia (8 SWG)

Note:- Galvanization of GI items shall conform to class IV of IS: 4736-1986

METHOD OF PLATE EARTHING



Note:-
Bolt, Nut, Check Nut and Washers to be of G.I. for G.I. Plate and of Tinned brass for copper

All Dimensions are in C.M. (Other Dimensions Shown)

LIST OF APPROVED MAKES- BSNL ELECTRICAL WING (As on 29.02.2016)

Sr. No.	Item	Make
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
4	HV Switchgear (Vacuum CircuitBreaker/SF6)	Biecco Lawrie / 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/ Patson/ Rajasthan Transformer and Switchgear
6	Air Circuit Breaker	L&T/ Schneider Electric / Siemens
7	MCCB(lcs=lcu)	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/ KWHr meter	Schneider Electric/ AE/ Digitron / IMP/ Meco / Rishabh /Universal/HPL/L&T/ABB/Yokins
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

Sr. No.	Item	Make
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 / Kirsloskar/ 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 Sensor
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 Elevators(India)
45	High Precision Air Conditioners (HPAC units)	Units Manufactured by 1. M/s Emerson Network Power India(P) Ltd, Thane 2. M/s Sidwal Refrigeration Ind.(P) Ltd, New Delhi 3. M/s Stulz CHSPL India(P) Ltd, Mumbai 4. M/s Schneider Electric IT Business(I) Pvt Ltd, Gurgaon(formerly M/s Uniflair India(P) Ltd.
NOTE- In addition to above, the items having valid approval of BSNL Elect Zone HP Shimla shall also be used.		

NOTE:

- In case of External / PMC works, the list of approved makes may be modified as per client's requirement.
- 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 equipment's are also acceptable in addition.
- Any additional makes may be approved by concerned PCEs/Sr. CEs/CEs (Elect) for the works under his jurisdiction as already accorded vide letter No. - 3-2-5/EW/VEP-1/2007 Dated 5-7-2007.

CONTRACTOR 43

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