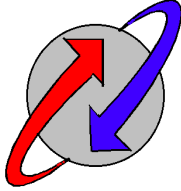


<p>Office of The Sub Divisional Engineer (E), BSNL Electrical Sub-Division Kasumpti Shimla -171009 Tel.No. 0177-2626268, 0177-2626268(Fax).</p>		<p><b>BHARAT SANCHAR NIGAM LIMITED</b> (A Govt. of India Enterprise)</p>
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A.

**Name of Work: - Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.**

Name of Agency :-

Date of Application :-

Date of issue of Tender Documents :-

Cost of Tender :- **Rs. 171.00**

Date of Opening :- 30-12-2016

**UNDERTAKING**

It is undertaken that we have gone through all the clauses /sub-clauses & terms & conditions of the BSNL EW-6 & BSNL EW -8 forms. We abide by that & we understand that the same shall be part & parcel of the agreement.

Signature of Contractor

Sub-Divisional Engineer (E)  
BSNL, Electrical Sub-Division  
Shimla

**B.**

**Name of Work: - Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.**

**INDEX**

<b>S. No</b>	<b>DETAILS</b>	<b>PAGE</b>
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3	NIT (Form BSNL-6)	4-6
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This certified that this tender document contains 32 pages excluding pages A & B.

1.

**CORRECTION SLIP**

Addendum/Modification to BSNL EW -8 & BSNL EW -6 Forms Conditions of contract-  
Definitions:-

All reference to :-

- i) BSNL EW /Public work department/P&T Department./D.O.T. /B.S.N.L
- ii) D.G. works/ Additional Chief Engineer BSNL EW /Chief Engineer of Zone.
- iii) Administrative Head of BSNL EW /P&T Department.
- iv) BSNL EW Circles/Civil Circle.
- v) Ministry of works, Housing & supply.
- vi) Government.

In various clauses shall be taken to mean :-

- i) Bharat Sanchar Nigam Limited.
- ii) Chief Engineer (E), Bharat Sanchar Nigam Limited.
- iii) Administrative Head of Bharat Sanchar Nigam Limited.
- iv) Telecommunications Electrical Circle.
- v) Bharat Sanchar Nigam Limited (Ministry of Communications)
- vi) Bharat Sanchar Nigam Limited

2.

### WEB NOTIFICATION

The Sub-Divisional Engineer (E) B.S.N.L., Electrical, Sub-Division, 1st Floor Block No. 35 SDA complex, Kasumpti, Shimla (HP) pin 171009 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 (Rs)	EMD (Rs)	Last Date Of Receipt of Application (upto 4PM)	Last Date & Time Of Sale (upto 5PM)	Last Date & Time Of Tender		Time for Completion
					Receipt (upto 3PM)	Opening (upto 3.30PM)	
<b>Provision of Equipment earthing &amp; Tower Earthing at ITBP Taradevi, Distt Shimla.</b>	Rs. 29385.00	Rs. 588.00	29-12-2016	29-12-2016	30-12-2016	30-12-2016	15 Days

#### A) Eligibility Conditions

- ❖ 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 (Repairing & Servicing of DG sets) 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 the amount equal to 40% of the estimated cost put to tender.  
OR
  - Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender.  
OR
  - One similar successfully completed works costing not less than the amount equal to 80% of the estimated cost put to tender.  
OR
- ❖ Enlisted contractors of BSNL in class IV(E) or above.

#### **The contractor shall submit and confirm**

Documentary proof of satisfying eligibility conditions and valid Income tax clearance certificate or Chartered Accountant certificate for turn over with attested copies as applicable along with application on their printed letter heads.

### 3.

- ◆ The tenderer shall submit the tenders in 2 sealed covers marked as cover 1st and 2nd. The first cover should contain the earnest money deposited in the shape of DD/ FDR/CDR/ Bank Guarantee in prescribed form, from the scheduled Bank or Nationalised Bank/State Bank guaranteed by Reserve Bank of India drawn in favour of **ACCOUNTS OFFICER,Cash,GMTD, SHIMLA** and the second cover should contain the tender documents. In case 1st cover is not annexed or earnest money is not in proper form, the 2nd cover containing tenders will not be opened at all.
- ◆ The tender documents and all other relevant information/condition can be had on payment of Rs. 171.00 inclusive of sale tax in cash/DD (non refundable).
- ◆ In case Holiday is declared on the opening date tender will be opened at 3.30 P.M. on next working day.

**Note:- Tender documents can also be downloaded from the web site [www.hp.bsnl.co.in](http://www.hp.bsnl.co.in) The firm to quotes on the tender downloaded from web site shall strictly adhere to following procedure :-**

1. 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 proving fulfillment of eligibility criteria as per the tender notice and EMD in proper form. DD should be attached for tender fee & Bank Guarantee/DD for EMD on Nationalized bank.

B. Second envelope shall contain duly filled tender documents.

**The same shall be clearly written on the envelopes**

2. The 1st envelope containing tender fee, attested documents providing fulfillment of eligibility criteria and EMD in proper shall be opened first.

**In case if:-**

- i) Tender fee is not submitted in proper form.
- ii) EMD is not in proper form.
- iii) Firms fails to fulfill eligibility criteria on the basis of documents submitted in envelope.

**The second envelope shall not be opened.**

3. If any difference /discrepancies found between downloaded. Tender form, Viz a Viz, hard copy issued from Division office / the contents in Draft NIT issued form Div./Circle/CE (E)'s the hard copy /Draft NIT shall be final & binding.

Documentary proof of satisfying eligibility conditions and valid Income Tax clearance certificate or Chartered Accountant Certificate is to be furnished along with the application on printed letter /heads.

The tenders of contractors who do not deposit earnest money in the prescribed manner are liable to be rejected.

- ◆ **Tender documents shall not be sent by Post/Courier.**
- ◆ **Tenders received by post/courier shall not be opened /entertained.**
- ◆ **CONDITIONAL Tenders or Tenders with conditional rebates shall be summarily rejected.**
  - ◆ Validity of tender shall be for **90 days** from the date of opening of tender.

**Sub-Divisional Engineer (E)  
BSNL, Electrical Sub-Division  
Shimla**

4.

**BHARAT SANCHAR NIGAM LIMITED**

**B.S.N.L. E.W. - 6**

**NOTICE INVITING TENDER**

Item rate tenders are invited on behalf of the **Bharat Sanchar Nigam Limited** from eligible contractors for the work :- **Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.**

The work is estimated to cost **Rs. 29385.00**

This estimate, however is given merely as a rough guide.

- 1- Tenders will be issued to eligible B.S.N.L. Contractors subject to their financial limits.
- 2- Agreement shall be drawn with the successful tenderer on prescribed Form No. 8 which is available as a Govt. of India Publication, Tenderer shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
- 3- The time allowed for carrying out the work will be **15 Days** reckoned from the **10th day** from the date of award.
- 4- The site for the work is available.

OR

The site for the work shall be made available in parts:-

- 5- Receipt of applications for issue of forms will be stopped by **16:00Hrs. on 29-12-2016** Issue of tender forms will be stopped by 17:00 Hrs. on **29-12-2016**

Tender documents consisting of plans, specifications, the schedule of quantities of the various classes of work to be done and the set of terms and conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary document can be seen in the office of the **S.D.E (E), B.S.N.L. Electrical Sub-Division, 1st Floor Block No. 35 SDA complex, Kasumpti, Shimla (HP) pin 171009** between hours of 11.00 A.M. & 04.00 P.M. every day except on 2<sup>nd</sup> Saturday, Sunday and Public Holidays. Tender documents, excluding standard form no. **EW-8** will be issued from this office, during the hours specified above on payment of **Rs. 171.00 inclusive of sale tax** (non- refundable) in cash/DD.

**Note:- Tender documents can also be downloaded from the web site [http://www. hp.bsnl.co.in](http://www.hp.bsnl.co.in).**

- 6- The tenderers must produce a 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.

## 5.

- 7- Tenders, which should always be placed in sealed envelope with the name of work and due date written on the envelopes, will be received by the **S.D.E (E), B.S.N.L ELECTRICAL SUB-DIVISION, SHIMLA** upto 03.00 P.M. on **30-12-2016** and will be opened by him or his authorised representative in his office on the same day at 03.30 P.M.
- 8- The tender shall be accompanied by earnest money of **Rs. 588.00 (Rs. Five Hundred Eighty Eight Only)** in the shape of DD/ FDR/CDR/ Bank Guarantee in prescribed form, from the scheduled Bank or Nationalized Bank/State Bank guaranteed by Reserve Bank of India drawn in favour of **A.O.Cash, GMTD., Shimla** the amount being credited to Nationalized Bank.
- 9- The description of the work is as follows: - **Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.**

Copies of other drawings and documents pertaining to the work will be open for inspection by the tenderers at the office of the above mentioned officer. Tenderer are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may requisite and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plants, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

- 10- The competent authority on behalf of the **B.S.N.L.** does not bind himself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all the tenders received without the assigning any reason. All tenders in which any of the prescribed conditions are not fulfilled or are incomplete in any respect are liable to be rejected.

**Conditional tenders or tenders with conditional rebate shall be summarily rejected.**

## 6.

- 11-**Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
- 12-**The competent authority on behalf of the **B.S.N.L.** reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
- 13-** The contractor shall not be permitted to tender for works in the B.S.N.L Electrical Zone (Responsible for award and execution of contracts) in which his near relative is posted in any capacity in BSNL in that zone. He will also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any person employed in BSNL, in that zone. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of BSNL.
- 14-** No Engineer of gazetted rank or other gazetted officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as contractor for a period of two years after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractors' service.
- 15-** The tender for the works shall remain open for acceptance for a period of **Ninety (90) days** from the date of opening of tenders. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender which are not acceptable to the B.S.N.L., then the B.S.N.L. shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid.
- 16-** The Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the accepting authority, shall within 7days 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 of invitation of tender and acceptance thereof together with any correspondence leading thereto.
  - (b) Standard B.S.N.L. E.W. Form-8



7.

CONTRACT

B.S.N.L. E.W. - 8

**BHARAT SANCHAR NIGAM LIMITED**

STATE : Himachal Pradesh CIRCLE : Shimla

ZONE : Shimla BRANCH : Electrical

Percentage Rate Tender/Item Rate Tender & Contract for Works

(A)Tender for the work of: - **Provision of Equipment earthing & Tower Earthing at ITBP Taradevi,Distt Shimla.**

- (i) To be submitted by 15.00 hours on 30-12-2016 to **O/o.Sub-Divisional Engineer (E), BSNL, Electrical Sub-Division, 1st Floor Block No. 35 SDA complex, Kasumpti, Shimla (HP) pin 171009** to be opened in presence of tenderers who may be present at 15.30 hours on 30-12-2016 in the office of **O/o.Sub-Divisional Engineer (E),BSNL, Electrical Sub-Division, 1st Floor Block No. 35 SDA complex, Kasumpti, Shimla (HP) pin 171009**

Issued to : \_\_\_\_\_

(contractor)

Signature of officer issuing the documents \_\_\_\_\_

Designation **Sub-Divisional Engineer (E)**

Date of issue : \_\_\_\_\_

**T E N D E R**

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.

I/We hereby tender for the execution of the work specified for the B.S.N.L. within the time specified in Schedule 'F', viz. schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and a Clause 11 of the Conditions of contract and with such materials as are provided for by and in respects in accordance with, such conditions as far as applicable.

We agree to keep the tender open for **Ninety (90) days** from the due date of submissions thereof and not to make any modifications in its terms and conditions.

A sum of **Rs. 588.00 (Rs. Five Hundred Eighty Eight Only)** is hereby forwarded in the shape of DD/ FDR/CDR/ Bank Guarantee in prescribed form, from the scheduled Bank or Nationalized Bank/State Bank guaranteed by Reserve Bank of India as earnest money.. If I/we fail to commence the work specified I/we agree that the said B.S.N.L. or his successors in office shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely otherwise the said earnest money shall be retained by him towards security deposit 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, upto maximum of the percentage mentioned in Schedule 'F' and those in excess of that limit at the rates to be determined in accordance with the provision contained In Clause 12.2 and 12.3 of the tender form.

**8.**

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 a person to whom I/We am/are authorised to communicate the same or use the information in any manner prejudicial to the safety of the State.

I/We agree that should I/we fail to commence the work specified in the above memorandum, an amount equal to the amount of the earnest money mentioned in the form of invitation of tender shall be absolutely forfeited to the B.S.N.L. and the same may at the option of the competent authority on behalf of the B.S.N.L. 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.

**Dated .....**

**Signature of Contractor**

**Postal Address-----**

**Witness :**

**Address :**

**Occupation :**

**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 \_\_\_\_\_**

**9.**

**PROFORMA OF SCHEDULES**

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

**SCHEDULE 'A'**

Schedule of quantities (as per PWD-3)

As Per Page No. 20-21

**SCHEDULE 'B'**

Schedule of material to be issued to the contractor.

S.No.	Description of item	Quantity	Rates of figures & works at which the material will be charged to the contractor	Place of issue
1	2	3	4	5
----- <b>NIL</b> -----				

**SCHEDULE 'C'**

Tools and plants to be hired to the contractor

S.No.	Description	Hire charges per day	Place of issue
1	2	3	4
----- <b>NIL</b> -----			

**SCHEDULE 'D'**

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

----- **NIL**-----

**SCHEDULE 'E'**

Schedule of component of Materials, Labour etc. for escalation.

**CLASUE 10CC**

Component of materials expressed as percent of total value of work. "X" =   **NIL**  .

Component of labour expressed as percent of total value of work. "Y" =   **NIL**  .

Component of P.O.L. expressed as percent of total value of work. "Z" =   **NIL**  .

**10.**  
**SCHEDULE “F”**

Reference to General Conditions of contract.

**Name of work: - Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.**

Estimated cost of work : **Rs. 29385.00**  
Earnest money : **Rs. 588.00**

**Performance guarantee:** N/A (Refer page no. 86 of BSNL EW-8 under Schedule “F” of Performa of Schedule).

**Security Deposit:** 10% of the tendered value. (Refer page no. 86 of BSNL EW-8 under Schedule “F” of Performa of Schedule). The amount shall be refunded after Six Months from the actual date of completion of work.

**GENERAL RULES & DIRECTIONS :** Officer inviting tender Sub-Divisional Engineer (E)  
Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3. See below.

Direction :

2(v)	Engineer-in-Charge	Sub-Divisional Engineer (E)
2(viii)	<b>Accepting Authority</b>	<b>Sub-Divisional Engineer (E)</b> <b>B.S.N.L. Electrical Sub-Division,</b> <b>Shimla</b>
2(x)	Percentage on cost of materials and labour to cover all overheads and profits.	10%
2(xi)	Department	Bharat Sanchar Nigam Ltd.
2(xii)	Standard Schedule of Rates	DSR-2012
9 (ii)	Standard CPWD Contract form	CPWD form 7/8 as modified & corrected upto

**Clause 2**

Authority for fixing compensation under clause 2.

Superintending Engineer (E)

**Clause 5**

Time allowed for execution of work.  
Authority to give fair and reasonable extension of time for completion of work.

**15 Days.**  
Executive Engineer (E)

## 11.

### Clause 7

Gross work to be done together with net payment/ adjustment of advance for materials collected, If any, since the last such payment for being eligible to interim payment.

FIVE THOUSAND

### Clause 11

Specifications to be followed for execution of work.

AS PER SPECIFICATION ATTACHED & CPWD

### Clause 12

**12.1(ii)** Schedule of rates for determining rates for additional, altered or substituted items that cannot be determined under 12.1(i) & (ii)

DSR-2012

**12.1 (iii)** Plus/minus the % over the rate entered in the schedule of rates.

-----do-----

**12.1(v) A** Deviation Limit beyond which sub-clauses (i) to (v) shall not apply and clauses 12.2 & 12.3 shall apply

25%  
and can be extended up to 50% in urgent nature as per clause 12(a) & (b) Page15

**12.1(vi) B(a)** Limit for value of any item of any individual trade beyond which sub-clauses (i) to (v) shall not apply and clauses 12.2 & 12.3 shall apply

-----do-----

**Clause 16** Competent Authority for deciding reduced rates.

Superintending Engineer (E)

**Clause 36(i)** Minimum Qualification & experience required for Principal Technical Representative.

(a) For works with estimated cost put to tender more than  
(i) Rs. 10 Lacs for Civil work  
(ii) Rs. 5 Lacs for Elect./Mech. Works

Graduate or retired AE possessing at least recognized diploma.

(b) For works with estimated cost put to tender  
(i) More than Rs. 5 Lacs but less than Rs. 10 Lacs for Civil Works.  
(ii) More than Rs. 1 Lacs but less than Rs. 5 Lacs for Elect./Mech. Works.

Recognized Diploma holder.  
Elect / Mech.

**12.**

- (c) Discipline to which the Principal Technical Representative should belong. Elect./ Mech.
- (d) Minimum experience of works. 3 years.
- (e) Recovery to be effected from the contractor in the event of not fulfilling provision of clause 36(i) Rs. 4,000/- p.m. for Graduate  
Rs. 2,000/- for diploma holder

**Clause 42**

- (i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates \_\_\_ printed by C.P.W.D. -----N.A.-----
- (ii) Variations permissible on theoretical quantities.
- (a) i) Cement for works with estimated cost put to tender not more than Rs. 5 Lacs. -----N.A.-----
- ii) for works with estimated cost put to tender more than Rs. 5 Lacs. -----N.A.-----.
- (b) Bitumen all works. -----N.A.-----
- (c) Steel Reinforcement and structural steel sections for each diameter, section and category. -----N.A.-----
- (d) All other materials. Nil

**RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION**

Sl. No.	Description of item	Rates in figures and words at which recovery shall be made from the Contractor	
		Excess beyond permissible variation	less use beyond the permissible variation
1.	Cement		
2.	Steel Reinforcement		
3.	Structural Sections		----- N.A.-----
4.	Bitumen issued free		
5.	Bitumen issued at stipulated fixed price.		

## **13.**

### **IMPORTANT NOTE FOR CONTRACTORS**

#### **1.0 Tax and Duties:-**

1.1 All taxes, Levies, duties etc. excluding Service Tax in respect of this contract payable by the vendor & BSNL will not entertain any claim in respect of the same.

1.2 SERVICE TAX- The Service tax shall be reimbursed to the firm on production of proof of payment to taxation authority clearly showing Agreement no./name of work & service tax registration no.

1.3 BSNL shall deduct statutory taxes and duties like income tax, works contract tax etc. excluding Service Tax from payment due to the firm as per rule of the State. Central Government. The Accounts Officer of the concerned division shall issue certificates for such deductions to the firm.

#### **2.0 Work Contract Tax:-**

The rates offered by the firm shall be inclusive of the works contract tax as applicable in the state. The Department shall deduct works contract tax from payments due to the firm as per rules of the state Government. Certificates for such deductions shall be issued to the firm by the Accounts Officer of the Division.

#### **3.0 Octroi Certificate:-**

“No octroi exemption certificate will be issued by the department”.

#### **4.0 Department reserves the right to accept the quantities in full or in parts.**

#### **5.0 SPLITTING OF WORKS:- Nil**

100 % work shall be awarded to lowest tenderer.

#### **6.0 VARIATION IN EXCISE DUTY :**

Price adjustment provision on account of change in excise duty shall not be applicable.

#### **6.0(a) “SALES TAX AND OTHER TAXES”**

Tendered rates are inclusive of taxes and statutory levies payable under the respective statutes. However pursuant to the constitution (Forty Six Amendment) Act 1982, if any further tax or levy is imposed by statute after the date of receipt of tenders and the contractor (s) thereupon necessarily and properly pays taxes or levies the contractor (s) shall be reimbursed the amount also paid provided such payment if any is not in the opinion of SE (whose decision shall be final and binding) attributable to delay in execution of work within the control of the contractor (s).

## 14.

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

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

**NOTE:-** No additional condition whatsoever will be accepted for turnover tax/sales tax on works contract . In case of additional conditions for the payment of such claims by the contractor the tender may be liable to be summarily rejected by the accepting authority . (Standing order No. 258)

**7. EARNEST MONEY:-** Firm has option to deposit earnest money in the of demand draft/pay order of schedule bank of nationalized bank /state bank guaranteed by reserve bank of India drawn in favour of Account Officer, BSNL, Electrical Division Shimla.

### **8. PERFORMANCE GUARANTEE:**

N/A (Refer page no. 86 of BSNL EW-8 under Schedule "F" of Performa of Schedule).

### **9. SECURITY DEPOSIT:**

10% of the tendered value. (Refer page no. 86 of BSNL EW-8 under Schedule "F" of Performa of Schedule).

### **10. TERMS OF PAYMENT:-**

- a) 80% of prorated of the approved price break-up of contract value on receipt of equipment at site.
- b) 10% of prorated of the approved price break up of contract value after successful installation
- c) 10 % of the approved contract value after successful completion of the testing and commissioning.

### **11. DEVIATION:-**

- a) The ordering quantity can be increased/decreased up to the extent of 25 %( deviation limit) without the consent of the firm within the currency of contract. The firm shall execute such quantities at the rate quoted in the tender without any change in terms and conditions of the contract.
- b) In exceptional situation where the requirement is of an emergent nature and it is necessary to ensure continued supplies from the existing vendors, the purchaser reserves the right to place repeat order up to 50% of the quantities of goods and services contained in the running tender/contract within a period of twelve months from date of award of work at the same rate or a rate negotiated (downwardly) with the existing vendors considering the reasonability of rates based on prevailing market conditions and the impact of reduction in duties and taxes etc.



## 15.

### 12. Guarantee & Defects Liability Period

The guarantee shall be valid for 6 (six) months after successful performance testing. The contractor shall guarantee that all the equipment shall be free from any defect due to the defective materials and/ or bad workmanship and also the equipment shall work satisfactorily with performance and efficiencies not less than the guaranteed values.

- a) Any parts found defective during the guarantee period shall be replaced free of cost by the contractor. The services of the contractors personnel, if required during this period shall be made available free of cost to the department.
- b) The contractor shall depute his representative to the site within 36 (thirty six) hours of notification of defects by the department.
- c) The representative of department and firm shall prepare a joint report regarding the nature of defect and remedial action required. Time schedule for such action shall be also finalised.
- d) In case the contractor fails to depute his representative within 36 (thirty six) hours of notification of defects or fails to cause remedial measure within a reasonable time as decided during joint inspection, the department may proceed to do so at the contractor's risk and expenses without prejudice to any other right.
- e) The contractor shall visit and inspect the work in the presence of Department official at least 2 times (once in three months) during the Guarantee period to check the health of the installation as per manufacturer's maintenance schedule. The Engineer-in-charge or his representative shall certify this fact. In case the contractor does not comply with this provision in respective quarter period, the Department will forfeit 10% of security deposit amount for each quarter.

### 13. COMPENSATION FOR DELAY

If the contractor fails to maintain the required progress or complete the work and clear the site on or before the contract or extended date of completion, he has to pay the compensation for delay which is limited to **0.5% per week of work order value for the first 10 weeks and 0.7% per week for next 10 weeks and thereafter subject to a maximum of 12%** of the work order value for the location where the work is delayed and the firm is found responsible for the same. **Flow chart of the procurement process/contract shall be supplied by the contractor and approved by Executive Engineer concerned.**

## 16.

### 14. Participation of near relatives of the BSNL employees

All near relatives of 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 detailed guidelines in this regard are given in the following paragraphs :-

I) 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).

II) As per Government of India's CCS Conduct rule 4, no Government servant shall in the discharge of his official duties deal with any matter or sanction any contract to any company or for any other person if any member of his family is employed in that company or firm or under that person or if he or any member of his family is interested in such matter or contact to his official superior. This clause is applicable to all BSNL employees and in view to this as soon as any BSNL employee becomes aware of the above aspect, he must intimate this to the prescribed authority.

For non executive employees this authority is SSA Head/Circle Head/Chief Engineer Chief Archt./

Corporate office under whom he is posted. For executive employees (at present some of them are called as Gazetted officers ) the prescribed authority for this purpose is Circle Head/Chief Engineer/Chief Archt. Corporate office under whom he is posted.

III) (a) The company or firm or any other person is not permitted to tender for works in BSNL Units

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 Engineer/Chief Architect/Corporate office for executive employees (those called as Gazatted officers at present). Therefore, it has been decided by the competent authority that a clause must be added in the tender and other related documents that 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. In case of proprietorship firm certificate will be given by all the partners and in case of limited company by all the Directors of the company. Any breach of these conditions by the company or firm or any other person, the tender/work will be cancelled and earnest money/security deposit will be forfeited at any stage whenever it is so noticed. The department 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.

(b) In respect of case where the tender notice /work related orders have been issued and are waiting for submission the concerned unit should issue corrigendum for inclusion of above clause.

However, where tender/work related documents have been opened and are waiting for finalization the certificate may be taken from the company or firm or any other concerned person giving details of the relatives employed in the

jurisdiction of the tender. The company or firm or the person concerned will not be debarred in this case but his work will be kept under proper watch to avoid any further complaint. Further, the relative will not be involved in the decision making and execution of the work.

- (c) Where the tenders or the work are already in operation (or awarded ) the tenderer may be requested to give details of relatives employed in the jurisdiction of the tender in such cases the tenderer will be allowed to continue the work but special watch may have to be kept about his performance to avoid any complaint. The concerned relative will not be involved in execution and settlement of claims of the contractor.

**18.**

**ANNEXURE-I**  
**MODEL FORM OF BANK GUARANTEE**

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 B.S.N.L.") in the sum of  
\_\_\_\_\_ for which payment will and truly to be made of the said B.S.N.L., the Bank  
binds itself, its successors and assigns by the 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 Bharat Sanchar Nigam Limited 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 Bharat Sanchar Nigam Limited upto the above amount upon receipt of its first written demand, without B.S.N.L. having to substantiate its demand, provided that in its demand B.S.N.L. 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. The guarantee will remain in force as specified in the Tender Document upto 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**

**Name of witness**

**Signature of the Witness**

**Address of witness**

**ANNEXURE-II****MODEL FORM OF PERFORMANCE GUARANTEE**

- I) BANK GUARANTEE BOND FOR PERFORMANCE GUARANTEE FOR ELECTRICAL INSTALLATION/O & M/ AIR CONDITIONING, DIESEL ENGINE ALTERNATOR, LIFTS AND SUB-STATION WORKS etc.

\_\_\_\_\_ for \_\_\_\_\_  
 \_\_\_\_\_(Name of work) and

Whereas ----- (here in after called" the Contractor(s)" has submitted its Tender dated \_\_\_\_\_ for \_\_\_\_\_(Name of work) and

Whereas------(here in after called" the Contractor(s)" has been communicated the acceptance of its tender dated \_\_\_\_\_ for \_\_\_\_\_(Name of work)vide letter No. \_\_\_\_\_ dated \_\_\_\_\_ BSNL.

KNOWN ALL MEN by these presents that We \_\_\_\_\_ of \_\_\_\_\_ having our registered office at \_\_\_\_\_(here in after called "The bank")are bound up to \_\_\_\_\_(here in after 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.

- i) We (name of the bank) \_\_\_\_\_ do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the BSNL by reason of breach by the said contractor(s)'of any of the terms or conditions contained in the said Agreement or by reason of the contractor(s)'failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of BSNL in these counts shall be final and binding on the bank. However, our liability under this guarantee shall be restricted to an amount not exceeding \_\_\_\_\_.
- ii) We under take to pay to the BSNL any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/supplier(s) in any suit or proceeding pending before any court or tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the contractor(s)/supplier(s) shall have no claim against us for making such payment.
- iii) We (name of the bank) \_\_\_\_\_ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the BSNL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till \_\_\_\_\_(office/Department) BSNL certifies that the terms and conditions of the said Agreement have been fully or properly carried out by the said contractor(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the expiry of TWO/TWO AND HALF/THREE YEARS(as specified in the agreement) from the date hereof, we shall be discharged from all liabilities under this guarantee thereafter.

## 20.

- iv) We (name of the bank) \_\_\_\_\_ further agree with the BSNL that the BSNL shall have the further 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 to postpone for any time or from time to time any of the powers exercisable by the BSNL against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act or omission on the part of the BSNL or any indulgence by the BSNL to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
- v) This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s)/supplier(s).
- vi) We (name of the bank) \_\_\_\_\_ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the BSNL in writing .

Dated \_\_\_\_\_ day of \_\_\_\_\_

For \_\_\_\_\_  
(Indicate the name of bank)

**DECLARATION TO BE GIVEN BY CONTRACTOR**

I.....

S/o.....r/o..... 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”.

**DATED: -----**

**Signature of contractor**

-----  
-----  
-----

22.

**ABSTRACT OF COST**

**NAME OF WORK:** - Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.

<b>S.No.</b>	<b>Description of Items</b>	<b>Amount</b>
1.	Total	Rs
		<b>Total Rs.</b>

Sub-Divisional Engineer (E)  
BSNL Electrical Sub-Division  
Shimla



23.

NAME OF WORK: - Provision of Equipment earthing & Tower Earthing at ITBP Taradevi, Distt Shimla.

S. No.	Description of items	Qty	Rate	Unit	Amount
1	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories alongwith 45 kg GEL or soil improvement materials (SIM) and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	1 Set		Set	
2	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	15 Mtrs		Mtr	

**DATED:**

**SIGNATURE OF FIRM WITH SEAL**

Sub-Divisional Engineer (E)  
BSNL ESD, Shimla

## **SPECIFICATION**

1. The work shall be done as per the specifications of the Department.
2. The work shall be supervised by the qualified Engineer - in- Charge or his duly authorized representative at the site of work..
3. The layout of the work will be given by the Engineer - in- Charge or his duly authorized representative at the site of work..
4. Any damage done to the building by the contractor during the execution of work shall be made good by the contractor at his risk & cost, if the damages are not made good by the contractor in reasonable time determine by the Engineer - in- Charge the same will be got done at his cost departmentally after serving notice to him.
5. The material used at site of work shall be got approved by the competent authority before its erection at site.
6. All dismantled material shall be the property of the contractor.
7. The material replaced should be of the same make & modal of the existing.
8. No extra payment will be made for any kind of transportation.

**SUB DIVISIONAL ENGINEER (E)  
BSNL ELECTRICAL SUB DIVISION  
SHIMLA**

**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)

- (a) Pipe earth electrode.
- (b) Plate earth electrode.
- (c) Strip or conductor earth electrode.

**1.2.1.2. Electrode materials and dimensions:-**

- (i) The materials and minimum sizes of earth electrodes shall be as per table VIII.
- (ii) GI pipe electrodes shall be cut tapered at the bottom, and provided with holes of 12mm dia, drilled not less than 7.5cm from each other upto 2m of length from the bottom.
- (iii) The length of the buried strip or conductor earth electrode shall be not less than 15m. This length shall suitably be increased if necessary, on the basis of the information available about soil resistance, so that the required earth resistance is obtained. Prior approval of the Engineer-in-charge shall be taken for any such in-crease in length.

**1.2.2. EARTHING CONDUCTOR:-**

- (i) The earthing conductor (protective conductor from earth electrode 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.
- (ii) 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).
  - (a) 5mm dia (6SWG) for GI, or 4mm dia (8SWG) for copper wire.
  - (b) 25mmx4mm in the case of GI strip, or

- (c) 20mmx3mm in the case of copper strip.
- (iii) Earthing conductor larger than the following sectional areas need not be used, unless otherwise specified.
  - (a) 150 Sq.mm. in case of GI in case of GI,
  - or,
  - (b) 100 Sq.mm. in the case of copper strip.

#### 1.2.3. **EARTH BUS:-**

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

- (i). The material and size of protective conductors shall be as specified.(For criteria in design of these)
- (ii). The minimum cross sectional area of a protective conductor (not contained within a cable or flexible cord) shall be:-
  - (a). 2 mm dia (14 SWG) in case of copper.
  - (b). 2.5 mm dia (12 SWG) in case of GI,or.
  - (c). 2.24 mm dia (13 SWG) in case of Aluminum.
- (iii). Unless otherwise specified, GI conductor should not be ordinarily used as protective conductor within any circuit, beyond a DB down stream.

#### 1.3. **LOCATION FOR EARTH ELECTRODES:-**

- (i). Normally an earth electrode shall not be located closer than 1.5 m from any building. Care shall be taken to see that the excavation for earth electrode does not affect the foundation of the building, in such cases, electrodes may be located further away from the building, with the prior approval of the Engineer-in-charge.
- (ii). The location of the earth electrode will be such that the soil has a reasonable chance of remaining moist as far as possible. Entrances, 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) (a) Pipe electrode shall be buried in the ground vertically with its top at not less than 20cm below the ground level.  
 (b) In locations where the full length of pipe electrode is not possible to be installed due to meeting a water table, hard soil or rock, the electrode may be to reduced length, provided the required earth resistance result is achieved with or without additional electrodes, or any alternative method of earthing may be adopted, with the prior approval of the Engineer-in-charge. Pipe electrodes may also be installed in horizontal formation in such exceptional cases.
- (ii) Plate electrode shall be buried in ground with its faces vertical, and its top not less than 3 m below the ground level.
- (iii) 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
- (a) The strip or conductor electrode shall be buried in trench not less than 0.5m deep.  
 (b) 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.
- (c) If the electrode cannot be laid in a straight length, it may be laid in a zig-zag manner with a deviation up to 45 degrees from the axis of the strip. It can also be laid in the form of an arc with curvature more than 1m or a polygon.**

#### 1.4.1.2. 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.
 In the case of substations or alternators, the termination shall be made on the earthing terminal of the neutral point on the equipment and/or the earth bus, as the case may be.

#### **1.4.3. EARTH BUS AND MAIN EARTHING TERMINAL:-**

- (i) In the case of substations and generating stations, two numbers copper/GI (as specified) earth bus shall provided, duly connected to two numbers of independent electrodes, exclusively for equipment (body) earthing of substation or generating station equipments.
- (ii) In all other installations, main earthing terminal shall be provided at the main switch board. This may be in the form of earth stud or single earth bar depending on the type of the switch board.
- (iii) Following conductors shall be terminated on to the main earthing terminal.
  - (a) Earth connection from electric supply company (where provided).
  - (b) Earthing conductor from electrode.
  - (c) Protective conductors.
  - (d) Equipotential bonding conductors.

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

- (i) Earth terminal of every switch board in the distribution system shall be bonded to the earth bar/terminal of the upstream switch board by protective conductor (s).
- (ii) Two protective conductors shall be provided for a switch board carrying a 3 phase switch gear thereon.
- (iii) 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.
- (iv) 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.
- (v) 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 upto the DB.
- (vi) 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.
- (vii) Double earthing strips in rising mains, bus trunking etc. shall be securely connected to the earth bar/earth stud at the sending end switch board. In the case of overhead busbar systems, protective conductor shall be provided in addition to feeder cable armouring connection.

**1.5. EARTH RESISTANCE:-**

- (I) The earth resistance at each electrode shall be measured. No earth electrode shall have a greater ohmic resistance than 5 ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to 8 ohms.
- (II) Where the above stated earth resistance is not achieved, necessary improvement shall be made by additional provisions, such as additional electrode (s), different type of electrode, or artificial chemical treatments of soil etc., as may be directed by the Engineer-in-charge.
- (III) In addition to the above (I) The earthing is to be got A/T'ed in the presence of representatives of A/T wing or any other nominated authority as per A/T Schedule till the final results are achieved. The testing equipment required that at site shall be arranged by the contractor without any extra charges.

**1.6 MARKING:-**

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

**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

**Specification for Chemical Earthing :-**

Maintenance free Chemical earth stations should be joined through 25 mm x 3 mm copper strip with adjustable clamp to achieve the earth resistance not greater than 5 ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to 8 ohms, with the following specifications :-

- A.** minimum 1800mm long, 17 mm (nominal size) copper bonded rod for each station (minimum 250 micron copper cladding)
- B.** Soil Improvement Materials or GEL =60 kg for each earth station)
- C.** 25 mm x 3 mm copper strip for connectivity of two each pits i.e. minimum 2 meters.
- d.** Adjustable clamp along with clamping hardware (2 Nos. )
- e.** All the nuts and bolts shall be of G.I. or Brass.



### 31.

#### 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(Ics=Icu)	L&T/ Schneider Electric / Siemens
8	SDF units	L&T/ Schneider Electric / Siemens/ HPL/ Havells
9	Power Contactors	L&T/ Schneider Electric / Siemens/ Lakshmi(LECS)
10	Change Over Switch	HPL / Havells / H-H Elcon
11	Intelligent APFC Relay	L&T/EPCOS(Siemens)/ Schneider Electric / Neptune Ducati/Syntron/ABB
12	Bus Bar Trunking/ Sandwiched Bus Duct	Moeller/L&T/Schneider Electric/ABB /Legrand/Zeta
13	Power Capacitors (MPP/APP)	L&T/EPCOS(Siemens)/ABB/Crompton/ Schneider Electric/Neptune Ducati
14	Digital/ 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
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:1. In case of External / PMC works, the list of approved makes may be modified as per client's requirement.

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

3.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-1/200