

Name of Work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).



TENDER DOCUMENT
FOR THE WORK

Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

ELECTRICAL DIVISION - II
HYDERABAD-63

Name of Work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

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Certified that this tender document contains (37) pages only.

EXECUTIVE ENGINEER (E)
BSNL Electrical Division-II
Hyderabad.

Name of Work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).



BHARAT SANCHAR NIGAM LIMITED

(A Govt. of India Enterprise)
(Electrical Wing)

% EXECUTIVE ENGINEER (E), BSNL Electrical Division-II,
6th floor, NW wing, BSNL Bhavan, 5-9-25, Hill Fort Road,
Adarsh Nagar, Hyderabad. -500063
Tel No : 040- 23224152, Fax No: 040-23224156

SHORT NOTICE INVING TENDER

The Executive Engineer (Electrical), BSNL Electrical Division – II, Hyderabad invites on behalf of BSNL sealed item rate tenders for the work of

S. No	Name of work	NIT No	Estimated cost Rs.	EMD Rs.	Tender cost (non-refundable)	Time for completion
1	Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).	84	1,93,505/-	3,870/-	590/-	One Month

The Firms who fulfill the following requirements shall be eligible to bid:

The Contractors satisfying the following conditions:

1.1 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

1.2 (A) BSNL Enlisted contractors in Electrical category of respective class as per their tendering limits
(OR)

(B) Original Equipment Manufacturers of Chemical Earthing / GI Plate Earthing.

(OR)

(C) 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 :

(i) Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender.

OR

(ii) Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender.

OR

(iii) One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender.

NOTE:

(i) Similar work means any “Chemical Earthing/GI Earthing Works”

GENERAL CONDITIONS

(a) Valid Chartered Accountant Certificate with latest returns & Registration certificate with attested copies as applicable along with application on their printed letterheads for purchase of Tenders.

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- (b) List of works completed of the requisite magnitude along with attested copies of certificate, testimonials of the satisfactory certificate from the department concerned obtained from an officer not below the rank of Executive Engineer.
- (c) Self-Attested copy of PAN card
- (d) Self-Attested copy of CA certificate for turnover (as applicable).
- (e) Self-attested copy of valid GST registration Certificate.
- (f) Self-attested copy of EPF Registration Certificate & ESI Registration certificate (As applicable)
- (g) Self-Declaration by Agency stating that the firm has not been black listed by GST authorities.
- (h) The Tender shall be submitted in **two sealed covers marked as cover 1st and Cover 2nd, with mention of Name of work, date of opening of bids on both the covers**. The First cover shall contain Tender cost in the form of **Demand Draft** Only, Earnest Money Deposit in the form of **Demand Draft/FDR/ BG** (As per MODEL FORM OF BANK GUARANTEE)/ CDR of a nationalized/scheduled bank guaranteed by the Reserve Bank of India drawn in favour of **Accounts officer (cash), Main, BSNL, Hyderabad**, Self-Attested certified copies of PAN card, CA certificate for turnover, GST registration Certificate, EPF Registration Certificate & ESI Registration certificate (As applicable), Self-Declaration by Agency stating that the firm has not been black listed by GST authorities, if not certified by the BSNL Executive then original document shall be produced at the time of opening and the second cover should *contain* the tender document. In case the first cover is not annexed with all above mentioned credentials in proper form then second cover containing tenders shall not be opened at all.
- (i) The tender will be received up to 3.00 P.M. on **28/03/2024** and opened at 3.30 P.M. on the same day.
- (j) In case holiday is declared on the opening day, the tenders will be opened on the next working day.

Note:-Tender documents & BSNL EW-8 General conditions of contract work for electrical works can also be downloaded from the website
http://www.telangana.bsnl.co.in/tenders_active.php

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

- 1) Two sealed covers marked as cover 1st and Cover 2nd, with mention of Name of work, date of opening of bids.
- 2) The First envelope containing tender application, tender fee (non-refundable) in the form of separate DD, credentials of the tenderer which also includes authorization letter from dealer if any, self-attested **and** certified by the BSNL Executive. If not certified by the BSNL Executive then original document shall be produced at the time of opening (As per MODEL FORM OF Declaration shall be attached for tender fee and EMD Second Envelope shall contain duly filled tender document.
- 3) First envelope containing tender fee, EMD and attested document providing fulfillment of eligibility criteria in proper form shall be opened first
- 4) The second envelope shall not be opened in case
 - i) Tender fee and EMD is not submitted in proper form
 - ii) Firm fails to fulfill eligibility criteria on the basis of document submitted in the first envelope
- 5) If any found/discrepancies found in the downloaded tender form, the contents in the hard copy issued from division office shall be final and binding.
- 6) Tenders received by post / courier shall not be accepted.

Executive Engineer (E)

Name of Work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

Lr. No. 24(1)/BEDH-II/2023-24/374

Dated: 23-03-2024

- 1) The Chief Engineer (E), BSNL AP Zone, Hyderabad.
- 2) The Superintending Engineer (E), BSNL Electrical Circle, Hyderabad/Vijayawada.
- 3) The Executive Engineer (E), BSNL, Electrical Div. No.I, Hyd./Vijayawada, VSP/TPT/WGL/ATP.
- 4) SDE (E) Electrical Sub Division I, II, III & V, Hyderabad.
- 5) All Eligible Contractors.
- 6) SR SS/SDE (EP)/AO/Cashier/Auditor/Notice Board.

Executive Engineer (E)
BSNL Electrical Division – II
HYDERABAD

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

SCHEDULE OF QUANTITIES

Name of Work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1)						
S	DESCRIPTION OF ITEM	QTY		RATE	UNIT	AMT
SH-I	CHEMICAL EARTHING					
1	Supply and installation of Maintenance free Chemical Earthing with following components complete with excavation, civil works, including Labor Charges for completing the process, Installation, commissioning & Testing of earthing pits etc., as required. (Note: work has to be carried out as per RDSO specification NO. RDSO/SPN/197/2014 and materials supplied shall be as per the specifications attached.) i) A hole of 100mm to 125mm dia shall be augured /dug to a depth of about 2.8 meters. ii) Earthing electrode shall be made of high tensile low carbon steel circular rod, molecularly bonded with copper with minimum thickness 250 Microns of 17 mm dia 3m long with UL Certified. iii) Back filled component of Non-bentonite chemical i.e. earth enhancement material (Minimum approximate 30-35 KGs). iv) Copper strip of 300x25x6 mm, to terminate earth rod - 1 no (To be exo-thermally welded to earth electrode) v) Construction of earth pit cover with heavy duty FRP Material of suitable size.	1	job		Job	
2	Supplying and laying of 35 sqmm. multi strand single core PVC insulated copper cable from Main earth electrode to DC earth busbar i/c terminations with cu lugs on surface/recess/ in the existing pipe etc.,as required	10	Mtr		Mtrs	
3	Supplying and laying of 40 mm dia rigid PVC pipe for mechanical protection of 35 sq mm cable, on surface of wall / tray i/c clamps, cable ties, bends etc.,as required	5	Mtr		Mtrs	
SH- II	GI PLATE EARTHING					
4	Providing Earthing with G.I. earth plate of 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	9	Sets		Set	
5	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and refilling etc. as required.	27	Mtr		Mtrs	
6	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	135	Mtr		Mtrs	

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7	Supplying and laying of 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm) (For interconnection of existing earthings)	90	Mtr		Mtrs
SH-III EARTH RECONDITIONING					
EARTH STRIP CONTINUITY CHECK					
8	Improving of earth continuity from existing earth electrode upto to the earth bus/ earth terminations by making good of loose connections/joints including providing missing bolts/nuts, spring washers etc.,,as required.	6	Jobs		Job
9	Measurement of existing earth electrode resistance value by arrangement of earth megger, technician, etc., as required.	3	Jobs		Job
MINOR MODIFICATIONS					
10	Providing minor repair works for existing earth pit by making good of loose connections, cleaning GI strip surface of the terminals with sand paper and providing nuts, bolts, spring washers, water funnel and adding salt water to improve earth resistance value to one Ohm and providing earth manhole cover made of heavy duty FRP material and sign writing etc., as required.	2	jobs		Job
11	Providing the following sizes of bus bars as main earth bus bar on wall surface on suitable insulators having suitable no.of holes for connections complete etc., as required.				
	a) 300mm x 50mm x 6 mm thick GI bus bar	4	Jobs		Job
	b) 300mm x 50mm x 3 mm thick copper bus bar	1	Jobs		Job
SH-IV LIGHTNING CONDUCTOR					
12	Providing and fixing 20 mm X 3 mm G.I. strip along the tower/Wall with suitable insulators /clamps fixed at suitable interval etc., as required.(For Vertical Run)	60	Mtrs		Mtrs
13	Providing and fixing of lightning conductor finial made of 25mm dia 1000 mm long GI pipe (B-class) having single prong at top of the tower with suitable size GI base plate including holes etc. complete as required.	2	Nos		Each
				Net Amount	
					Add GST @18%
					Total including GST

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ELECTRICAL WING

BSNL EW-8

Zone: - BSNL TS Electrical Zone, Hyderabad
Division: - **BSNL Electrical Division-II**, Hyderabad

Tender for the work of **Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).**

Name of Contractor/firm:.....

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 Rates and 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 BSNL within the time specified, as per the 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. 3,870/-** is hereby forwarded in the form of CDR/FDR/DD or bank guarantee in department's attached format and manner 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 upto 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 letter of Acceptance. I / We agree to keep the Performance Bank Guarantee validity as per relevant clause of Notice Inviting Tenders.
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 authorised to communicate the same or use the information in any manner prejudicial to the safety or interest of BSNL.

Signature of Witness
(Required in case thumb impression is given by the contractor in place of signature)
(Name & Postal address)

Signature of contractor
(Seal of Contractor)

Occupation of Witness

Date:

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ACCEPTANCE

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

(Rupees _____)

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

- a)
- b)
- c)

For & on behalf of **BSNL**
Signature

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

IMPORTANT INSTRUCTIONS TO TENDERERS DOWNLOADING THE TENDER DOCUMENT FROM WEB SITE

The Tenderers, who have down loaded the tenders from the web site, shall read the following important instructions carefully before quoting the rates and submitting the tender documents:-

1. The tenderer should see carefully and ensure that the tender document containing all the pages as per the index has been down loaded for making required entries. The balance pages of Standard **BSNL EW 8** forms will be attached with the agreement after the award of work. The contractor shall read the **BSNL EW 8** and keep themselves aware of the said Clauses.
2. A clear print out of tender document shall be taken on good quality A4 size paper and the printer settings, etc., shall be such that the document is printed as appearing in the web and without any change in format, number of pages, etc., and shall also ensure that no page is missing. Only original computer print out of the document shall be used. Photocopy shall not be accepted.
3. In case of any doubt in the downloaded tender, the same shall be got clarified from the Engineer in charge calling the NIT before submission of tenders.
4. The name of the tenderer shall be filled on the relevant pages of **BSNL EW 6** form etc., and all the pages shall be invariably signed and seal affixed.
5. The tenderer shall ensure that the downloaded tender document is properly stitched and sealed with sealing wax before submitting the document. Loose / spiral bound tenders shall not be accepted. Sealing of the tenders with adhesive tapes is not acceptable and the tenders are liable to be summarily rejected.
6. There shall be no correction / addition / alteration / omission made in the text of the downloaded tender document. If found otherwise, the same shall be treated as non-responsive and summarily rejected.
7. The tenderer shall sign the declaration enclosed before submitting the tender.
8. Tenders received by post/courier shall not be entertained.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

IMPORTANT INSTRUCTIONS TO THE TENDERERS

Please note that the offers, which do not comply the following, will not be considered and will be summarily rejected. These instructions supersede the **BSNL EW 8** clauses in case of any Disparity.

1. **Tenders with any condition including that of conditional rebates shall be rejected forthwith summarily.**
2. Insurance, loading, unloading, transportation etc., should be included on works contact basis.
3. No Octroi exemption certificate shall be issued by the department nor will the Octroi duty paid by the contractor be reimbursed. Hence Octroi charges shall be included in the offer.
4. The price shall be firm and fixed during the currency of the contract. No cost escalation is permitted. Clause10CC is not applicable.
5. The Extension of time for completion of the works is governed by clause 5 of the tender documents.
6. No advance payments can be made. The payment is governed by the normal department practice. Stipulations like levy of interest if pay mention to make in specified time is not acceptable.
7. The firm should deposit EMD before submission of their offer. The EMD of other works refundable to them cannot be adjusted against this work. The firm's offer shall be liable for rejection without EMD for this particular work.

8) **TAXES AND DUTIES**

The firm shall quote rates for all the items inclusive of all taxes and duties, inclusive of Octroi, entry tax, work contract tax, Service tax/ GST. No concession form will be issued by the Department. **However the agency shall clearly indicate the GST/ Service portion in case of composite works at the time of submission of tender itself for the purpose GST/ service tax calculation.**

Tendered rates shall be inclusive of all taxes and levies payable under the respective statutes. However pursuant to the constitution (Forty sixth amendment) Act, 1982, If any further tax or levies imposed by statute, after the date of receipt of tenders and the contractors there-upon necessarily and properly pays such taxes/levies the contractor shall be reimbursed the amount so paid, provided such payment, if any in the opinion of Superintending Engineer whose decision shall be final and binding is not attributable to delay in execution of work within the control of the contractor.

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

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

Note: No additional condition whatsoever will be accepted for turnover tax/ sale tax on works contract. In case of additional conditions for the payment of such claims by the contractor, the tender may be summarily rejected by the accepting authority.

9) **INCREASE /DECREASE OF TENDERED QUANTITY**

a) BSNL will have the right to increase or decrease up to 25% of the Contract value depending upon the requirement of goods and services specified in the schedule of items without any change in the unit price or other terms and conditions at the time of award of contract.

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 orders

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up to 50% of the quantity of goods and services contained in the running tender/contract within a period of 12 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.

10) CURTAILMENT OF QUANTITY:-

BSNL reserves the right to enforce curtailment in the assigned quantum of work for any contractor on the grounds of defaults/delay in regard to execution of the individual work assigned.

11) COMPLETION OF WORK:-

11.1 The time period will be reckoned from the 10th day after the date on which the order of commence the work issued to the contractor. **The time allowed for completion of work is One month**

12) EXTENSION OF TIME:-

If the contractor shall desire an extension of time for completion of work on the grounds of his having been unavoidably hindered in its execution or on any other grounds, he shall apply in writing to the Engineer in charge within 30 days of the hindrance on the account on which he desires such extension as aforesaid, and the Engineer in charge shall if in his opinion reasonable grounds to be shown therefore, authorize such provisional extension of time, if any as in his opinion be necessary are proper.

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 the tendered 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 tendered value for the location where the work is delayed and the firm is found responsible for the same. The clause 2 of **BSNL EW - 8 forms** stands modified accordingly. Flow chart of the procurement process/ contract shall be supplied by the contractor and approved by Executive Engineer concerned.

14) PAYMENT TERMS:-

Payment to the Contractors during progress of work is regulated for all the items as below.

- a) 80% of pro rata of the approved price breakup of contract value on receipt of equipment at site and after satisfactory physical inspection.
- b) 20% of pro rata of the approved price break up of the contract value after successful installation and commissioning of equipment.

15) EPF PROVISIONS:-

The agency has to comply with the provisions of EPF and miscellaneous provisions Act-1952 and employees provident fund scheme-1952 as amended upto date in respect of labours / employees engaged by them for this work. Any consequence arising due to non- complying of provisions as specified above shall be the sole responsibility of the firm only.

15(a) Agency has to observe all the labour rules & regulation in force. Agency shall be fully responsible for any violation observed at any time.

16 Inspection of Site and Contract Documents

For the purpose of inspection of site and relevant documents, the contractor is required to contact E.E (Elect) concerned who shall give reasonable facilities for Inspection of the same. The contractor shall inspect and examine the site and its surroundings and shall satisfy himself before commencement of work as to the form and nature of the site, the quantities and nature of work, materials necessary for completion of the works, the means of access to the site, the accommodation he may require and in general shall himself obtain all

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necessary information as to risks, contingencies and other circumstances which may influence or affect his work. No extra charges consequent on any misunderstanding or otherwise shall be allowed.

17 Variation in quantities in respect of unit rates items will be governed by unit rates in the Agreement. This applies to all variations ordered during the currency of the main contract regardless of the quantity of variation. For any item of work not covered by the schedule of work Clause 12 of **BSNL EW -8** shall apply.

18. **I.S. Standards:**

The entire system shall conform to relevant Bureau of Indian Standards as amended up to date. Where IS standards are not available the British standard(s) shall be followed. In case of conflict, the requirements of these specifications shall be given over-riding priority. The electrical and earthing work shall be carried out as per CPWD specifications for electrical works (internal) and electrical works (external) as amended upto date.

19. **Modifications/Alterations.**

19.1 Modifications or alterations in the design/specifications of any equipment/material will not be permitted by the department as a matter of principle.

19.2 However, the department may relax the above stipulation in exceptional circumstance where:

a) The same is necessitated due to non-availability of material/component of certain specifications or make.

OR

b) Such alterations constitute an improvement in the opinion of the contractor.

19.3 Prior written approval of the department shall be obtained before execution of such alterations/modifications.

20. **Quality Assurance**

The EI works are to be executed in accordance to the CPWD specifications. The work is considered to be completed only after the successful completion of testing.

21. **Procedure for submission of bills:**

The agency shall clearly indicate the GST/ **service tax number** on the bill copy / invoice. The bill shall contain measurement (work done / supplies) portion and the GST/ service tax portion separately. Bills received without these particulars will not be considered.

22. **Termination of contract on death of contractor**

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

23. **Indulging of contractor on criminal / anti-social activities and cases under investigation/ charge sheeted by CBI or any other Government agencies Etc**

If the CBI/ Independent External Monitor (IEM) / Income tax/Sales tax/Central Excise /Customs Departments recommends such a course – action will be taken as per the directions of CBI or concerned department.

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PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities: Appended from page **6-7**

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

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

SCHEDULE 'C'

Tools and plants to be hired to the contractor

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

SCHEDULE 'D'

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

I. Model form of bank guarantee: Appended from **page 18**

SCHEDULE 'E'

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

NIL

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CLAUSE 10 CC

Component of Cement expressed as per cent of total value of work	Xc	_____ %	} Not Applicable
Component of Steel expressed as per cent of total value of work	Xs	_____ %	
Component of civil(except cement and steel) / Electrical construction Materials expressed as per cent of total value of work	Xm	_____ %	
Component of Labour expressed as per cent of total value of work	Y	_____ %	

<u>SCHEDULE 'F'</u>	
Reference to General Conditions of contract.	
Name of work:	Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1)
Estimated cost of work:	Rs 1,93,505 /-
i) Earnest money :	Rs 3,870/-
ii) Performance Guarantee :	5% of tendered value of work.
iii) Security Deposit :	5 % of the tendered value of the work.(Total SD is 10% with i/c 5% of performance Guarantee)
GENERAL RULES and DIRECTIONS:	
Definitions:	See below
2(v) Engineer-in-Charge	Executive Engineer (E) – BSNL Electrical Division- II, Hyderabad.
2(viii) Accepting Authority	Executive Engineer (E), BSNL Electrical Division-II, Hyderabad.
2(x) Percentage on cost of materials and labour to cover all overheads and profits.	10%
2(xi) Standard Schedule of Rates	-----
2(xii) Department	BSNL
9(ii) Standard contract Form	BSNL EW-8 as modified and corrected upto date.
Clause 1	
i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance, in days.	15 Days (As per Tender)

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

ii) Maximum allowable extension beyond the period provided in I) above in days			
Clause 2 Authority for fixing compensation under Clause 2.		Superintending Engineer (E), BSNL Electrical Zone, Hyderabad.	
Clause 5 Number of days from the date of issue of award letter of acceptance for reckoning date of start Milestone(s) as per table given below:-		10 days	
Table of Mile Stone(s)			
Sl. No.	Description of Milestone (Physical)	Time allowed in days (from date of start)	Amount to be with-held in case of non-achievement of milestone
1	Not Applicable		
2			
OR			
Sl. No.	Financial Progress	Time allowed (from date of start)	Amount to be with-held in case of non-achievement of milestone
1	1/8 th (of whole	1/8 th (of whole	Not Applicable
2	3/8 th (of whole work)	1/2 (of whole work)	
3	3/4 th (of whole work)	3/4 th (of whole work)	
4	Full	Full	
Time allowed for execution of work.		One Month	
Authority to give fair and reasonable extension of time for completion of work.		EE(E), SE(E)	
Clause 7 Gross work to be done together with net payment/ adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment.		As Applicable.	
Clause 10CC Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column.		NOT APPLICABLE	
Clause 11 Specifications to be followed for execution of work (separately for each component of work)		Specifications as appended with Schedule of work.	
Clause 12 12.2 & 12.3 Deviation Limit beyond which clauses 12.2 and 12.3 shall apply		50%	

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

12.5 Deviation Limit beyond which clauses 12.2 and 12.3 shall apply for foundation work	NOT APPLICABLE
Clause 16 Competent Authority for deciding reduced rates.	Superintending Engineer (E), BSNL Electrical Zone, Hyderabad.
Clause 30 (i) Minimum Qualifications and experience required for Principal Technical Representative.	
a) For works with estimated cost put to tender more than Rs. 5 Lakhs for Elect/ Mech. Works	Graduate Engineer(Electrical) or Diploma Holder in Electrical With 3 Years Experience.
b) For works with estimated cost put to tender more than Rs. 2 lakh but less than Rs.5 Lakhs for Elect/ Mech. Works	NA
c) Discipline to which the Principal Technical Representatives should belong.	Elect./Mech.
d) Minimum experience of works	Three (3) years
e) Recovery to be effected from the contractor in the event of not fulfilling provision of clause 30(i)	Rs.4,000/- p.m. for Graduate Rs.2,000/- p.m. for Diploma holder

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

MODEL FORM OF BANK GUARANTEE

(Bank Guarantee bond for EMD for Air Conditioning, Diesel Engine Alternator, Lifts and Substation works, Wherever the amount of EMD is more than Rs.20,000/=)

Whereas _____ (hereinafter called "the contractor(s)") has submitted its Tender dated for the 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

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

UNDERTAKINGS TO BE FURNISHED BY THE TENDERER

NO NEAR RELATIVE WORKING CERTIFICATE

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.

- **In case of proprietorship firm, certificate will be given by the proprietor & for partnership firm certificate will be given by all the Directors of the company**

(Seal of the firm)

(Signature of Bidder)

UNDERTAKING REGARDING EPF PROVISIONS

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

- * I/We have employed only ----- persons in our establishment and hence the EPF and Miscellaneous provisions Act, 1952 is not applicable to my / our establishment.
- * I/ We have registered as per the EPF and Miscellaneous provisions Act, 1952 and our registration no is ----- . We undertake to keep it valid during the currency of contract. In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".
- * Strikeout whichever is not applicable
- ** Attach a self-attested photo copy of the above said EPF registration certificate.

(Seal of the firm)

(Signature of Bidder)

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

UNDERTAKING REGARDING ESI PROVISIONS

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

- * I/We have employed only ----- persons in our establishment and hence the ESI and Miscellaneous provisions Act, 1948 is not applicable to my / our establishment.
- * I/ We have registered as per the ESI and Miscellaneous provisions Act, 1948 and our registration no is ----- . We undertake to keep it valid during the currency of contract. In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".
- * Strikeout whichever is not applicable
- ** Attach a self-attested photo copy of the above said ESI registration certificate.

(Seal of the firm)

(Signature of Bidder)

UNDERTAKING TO ABIDE BY EW 6 & EW 8

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

(Seal of the firm)

(Signature of Bidder)

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

COMPLIANCE SHEET

I/We..... (Name of firm) have read/Understood all the terms and conditions as mentioned in bid Document and accept the same unconditionally.

I/We state to comply in full manner with all the General, Commercial, Technical and Operating financial conditions of the tender document for the work "Supplying and fixing of LED flood lights, repairs to lights and fans at Auditorium, Asman Mahal, Hyderabad. SH: Supplying and fixing of LED bulbs in first floor of auditorium and other connected works" with out any reservation and deviation.

(Seal of the firm)

(Dated Signature of Contractor)

IMPORTANT NOTE: The BSNL EW 8 Form is available at <http://www.telangana.bsnl.co.in> for ready reference and download.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

Declaration by Contractor

(To be given by tenderers downloading the tender document from the web)

This is to certify that:

- 1) I / We have submitted the tenders in the proforma as downloaded directly from the web sites which are same as available in the web site and there is no change in the format, no. of pages, etc.
- 2) I / We have not made any modifications / corrections / additions etc., in the tender documents downloaded from web by me / us.
- 3) I / We have checked that no page is missing and all pages as per the index are available and that all pages of tender document submitted by us are clear and legible.
- 4) I / We have signed (with stamp) all the pages of tender document before submitting the same.
- 5) I / We have stitched and wax sealed the tender documents properly before submitting the same.
- 6) I / We have submitted the cost of the tender along with EMD in the first cover as prescribed.
- 7) I / We have read carefully and understood the 'Important instructions to contractors', 'important instructions to tenderers downloading the tender documents from web site' and entire standard BSNL EW 8 clauses and proforma form available in division office.
- 8) In case at later stage, it is noticed that there is any difference in my / our tender documents with the original documents, BSNL shall have the right to cancel the tender / work, forfeit the Earnest Money / Security Deposit, take appropriate action as per the prevailing rules in force and BSNL shall not be bound to pay any damages to me / us on this account.

Dated.....
(SIGN WITH SEAL)

(CONTRACTOR)

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

COMPUTERISED MEASUREMENT BOOK

CLAUSE 6A

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract.

All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4 size as per the format of the department so that a complete record is obtained of all the items of works performed under the contract.

All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative. After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.

Whenever bill is due for payment, the contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/test checked from the Engineer-in-Charge and/or his authorized representative. The contractor will, thereafter, incorporate such changes as may be done during these checks/test checks in his draft computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer-in-Charge and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks.

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerized MBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

The contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered alongwith two spare copies of the bill. Thereafter, this bill will be processed by the Division Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements/levels by the Engineer-in-Charge or his representative.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard, method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.

The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the "Same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent, in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded by contractor and all provisions stipulated herein above shall Inapplicable to such checking of measurements or levels.

It is also a term of this contract that checking and/or test checking the measurements of any item of work in the measurement book and/or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

1. As per the CPWD Works Manual 2014

7.1 Computerised Measurement Books (CMB's) and Bills to be submitted by the contractor

7.2 Application and format of the Computerised M.B.

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

Register in Form CPWA 92.

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

7.3 Mode of measurements

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

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

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

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

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

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

7.4. Cutting or over-writing in the computerised M.B. not allowed

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

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

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

(4) The contractor shall submit as many copies of Computerised Measurement Books as may be required, and as are specified in the NIT/contract, for the purpose of reference and record in the various offices of the department.

7.5. Computerised Bill to be submitted by the contractor

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

(2) The contractor shall submit as many copies of the computerized bills as may be required for the purpose of reference and record in the various offices of the department.

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

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

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

7.6. Review of Measurement Books

(1) The Measurement Books are required to be reviewed by Divisional Accountant under the supervision of Executive Engineer (E). The Sub-Divisional Engineer(E)s are required to submit the Measurement Books in use in the Sub-Divisions to the Divisional Office, from time to time, so that at least once a year the entries recorded in each of the Books are subjected to a percentage check. The Divisional Officer should ensure that this annual review is conducted regularly and positively every year.

(2) The review by the Divisional Accountant shall be in the following respects:-

(i) To compare the books in use with part I of the Register of Measurement Books maintained in CPWA Form 92, and to note necessary corrections in the Register.

(ii) To see that no original sheet is torn out of a Measurement Book, nor any entry erased or disfigured, and that the corrections made therein are initialed.

(iii) To see that pencil entries are not inked over.

(iv) To test check the accuracy of calculations, and to ensure that the instructions regarding writing of Measurement Books, recording of measurements, and their test check are being followed properly.

(3) On receipt of the Measurement Books in the Divisional Office, the Executive Engineer (E) should indicate in column 2 of the "Review Notes" in each Measurement Book as referred to in para 7.6(5) below as to which of the calculations are to be test checked by the Divisional Accountant. The extent of this check will be determined by the Executive Engineer (E) having regard to the result of the last review, and should cover complete set of measurements.

(4) Payments based on the entries reviewed should be traced into various accounts and verified. Similarly, supplies or issue of materials should be traced into the various accounts, contractor's ledger, etc. and verified.

(5) Communication of discrepancies

The defects, discrepancies, etc. noticed should be communicated to the Sub-Divisional Engineer (E) concerned and summarized in the following form in the Measurement Book that has been test audited:

Review Notes by Divisional Accountant

Pages reviewed generally	Calculations selected by Divisional Officer for re-check		Defects and discrepancies noticed	Dated initials of	
	Pages	Dated initials		Divisional Accountant	Divisional Officer
1	2	3	4	5	6

(6) The Measurement Book completed and returned for record during the year should also be similarly examined prior to their final record in the Divisional Office.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

7.7. Loss of Measurement Books

(1) When a Measurement Book is lost, an FIR should be lodged with the police.

(2) An immediate report of the facts of the case together with an explanation of all parties concerned responsible for the loss should also be made promptly to the Chief Engineer, who is empowered to sanction the write off of the lost Measurement Books. In case of theft or loss of a blank Measurement Book, the Superintending Engineer shall be the competent authority to write off the loss.

(3) Such losses for write off should be reported in the proforma as at Appendix 10.

(4) It is also necessary that the measurements in the lost Measurement Book should be reconstructed at the earliest.

2. The M.B. movement Register is opened in the Sub Division and all other routine procedures followed in case of normal Measurement books are also followed in computer Measurement Books also.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

TECHNICAL SPECIFICATIONS

1. The work shall be carried out as per current CPWD specifications for Electrical works as amended from time to time and Indian Electricity Rules as amended up to date.
2. The work shall be supervised by a qualified technical staff.
3. Layout of the work will be given by the Engineer in charge or his duty authorized representative at the site of work.
4. Following categories of wiring shall be done on separate conduits.
 - a) Power plug
 - b) Light and fan wiring
 - c) Emergency light point wiring
 - d) Telephone wiring
 - e) AC unit wiring.
5. The No. of power plug points and emergency light point (fed from DC supply) shall not exceed 2 per circuit.
6. Earthing sets work shall be carried out in the presence of the Engineer-in-charge or his authorized representative.
7. Samples of all the materials, fittings accessories switch gears etc., shall be approved from the Engineer-in-charge before using the same on the work. Rejected material shall be removed immediately from the site of work.
8. The contractor will have to carry out the following test at his cost and intimate test results before final bills are paid. Nothing extra will be paid to him on this account.
 - 1) Earth test
 - 2) Polarity test
 - 3) Insulation test
 - 4) Earth continuity test of the surface recessed conduit pipes.
9. Any damages done to the building by the contractor during the executing of the work shall have to be made good at his cost and risk. If it is not done within a reasonable time determined by the Executive Engineer (E) then the same will be got done at his cost departmentally after giving notice to him.
10. The outlet boxes, IC boxes for switch gears and ends of conduit etc., for different categories of conduit runs catering for different types of electrical wiring as mentioned in clause above shall be painted inside/outside with different colours satisfying different categories mentioned so as to avoid mixing of various circuits and their wiring and nothing extra will be paid for this.
11. At the time of laying conduit pipes in the slab and in recess the contractor will keep wire of 15 SWG GI throughout the conduit pipe and will have to take special care so that the conduit does not pass through air conditioning ducts, grills columns, beams etc. If any such necessity is foreseen special written permission of Executive Engineer (Electrical) should be obtained before such work is carried out. In case of failure the contractor will not be paid on this account. The contractor should recess the conduit in the walls before they are plastered and co-ordination with the progress of building work. Any damages thus done will have to be made good at the cost of the contractor. The conduit pipes should be mechanically and electrically continuous.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

12. The Bakelite covers for the switches; plug sockets etc., shall not be removed or broken for taking connections which shall be done at their back by providing suitable wooden reaper in the IC boxes where found necessary. All wooden boxes for switches, plug, regulator etc., shall be provided with 1/8" thick Bakelite sheet covers.
13. The runs of various circuits wiring at various places shall be kept minimum by taking the runs on walls where cross of columns is not necessary. This has to be decided before casting of slab so that unnecessary length of conduit is not laid there in.
14. All the IC distribution sub-main board and corresponding switch near shall be sign-written clearly indicating the No. of distribution boards, type of load it is serving and the number of circuits contained in the distribution box. Details of the routes led from a particular distribution box shall be placed in tabular form on the reverse of the cover of the distribution box.
15. Underground cables both of 11KV and 1.1 KV grade should be subjected to pressure of insulation tests before and after laying the same in the ducts. In case of unsatisfactory tests, the cost of all repairs and replacement and all extra works of removal and relaying will have to be made good by the contractor at his own risk.
16. While making the end connections of wires, no strand shall be cut and the termination of wires shall be done with necessary lugs and ferrules without any extra payment.
17. The bus bars of the single-phase distribution box shall be of solid aluminium strip instead of sheet metal.
18. Lugs should be provided while terminating 8 SWG GI wire for earth continuity without any extra payment.
19. The termination of conduit etc., in the junction box to be provided above DBs should be done by making proper holes knockouts instead of cutting the box.
20. The contractors will have to make arrangements to take the materials to site of work at his own cost and risk. Octroi, if paid by the contractor for the materials supplied by the Department can be claimed by him against the original vouchers.
21. If any conduits were laid before award of this work the recovery for the same will be made from the contractor at rates specified in the SR 94 (internal) plus abatement of tender.
22. The contractor shall submit the completion plan as required vide general specifications for electrical works. Part-I (internal) & part - II (external) as applicable within 30 days the completion of the work. In case of contractor fails to submit the completion plan as aforesaid he shall be liable to pay sum equivalent to 2.5% of the value of the work subject to a ceiling of Rs. 2500/- as may be fixed by the S.E. (E).

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

LIST OF APPROVED MAKES- BSNL ELECTRICAL WING

S. No.	Item	Makes
1	Engine	Ashok Leyland /Cummins/ Cater pillar / KOEL/ Volvo Penta / Mahindra & Mahindra (up to 40 KVA) /Escorts (up to 30 KVA)/ Eicher (up to 20 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 Circuit Breaker/SF6)	BieccoLawrie / Crompton / Kirloskar / MEI / Jyoti Ltd
5	Transformer (Oil filled / Dry type)	ABB / Schneider Electric /Andrew Yule / Bharat Bijlee / Crompton / EMCO / Kirloskar / Siemens
	a) Above 400 KVA	
	b) Up to 400 KVA	In addition to above makes, Uttam/Automatic Electric Gear(AEG)/Patson/Rajasthan Transformer and Switchgear
6	Air Circuit Breaker	L&T/ Schneider Electric / Siemens
7	MCCB (Ics=Icu)	L&T/ Schneider Electric / Siemens
8	SDF units	L&T/ Schneider Electric / Siemens/ HPL/Havells
9	Power Contactors	L&T/ Schneider Electric / Siemens/ Lakshmi(LECS)
10	Change Over Switch	HPL / Havells / H-H Elcon
11	Intelligent APFC Relay	L&T/EPCOS(Siemens)/ Schneider Electric / Neptune Ducati /Syntron /ABB
12	Bus Bar Trunking / Sandwiched Bus Duct	Moeller/L&T/Schneider Electric/ABB/Legrand/Zeta
13	Power Capacitors (MPP/APP)	L&T/EPCOS(Siemens)/ABB/Crompton/ Schneider Electric/Neptune Ducati
14	Digital/ KWHr meter	Schneider Electric/ AE/ Digitron / IMP/ Meco / Rishabh / Universal/HPL/L&T/ABB
15	Cold shrink HT/LT Cable Joint	Denson / 3M(M-Seal)/ Raychem
16	Rubber Matting	ISI mark
17	MCB/ Isolator /ELCB/RCCB/ Distribution Board	Crompton / Havells / Indokopp / MDS Legrand/ L&T / Schneider Electric/ Siemens / Standard/ C&S/ABB/HPL
18	MS/ PVC Conduit	ISI mark
19	Cable Tray	MEM/Bharti/Ratan/Slotco/Profab
20	HT/LT Cables	ISI mark
21	PVC insulated copper conductor wire	ISI mark
22	Centrifugal Pump	Amrut / BE / Beacon / Batliboi / Crompton / Jyoti / Kirloskar / KSB / Mather&platt / WASP/Grundfos

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

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 /
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 /
40	Photo Electric Smoke Detector	Appollo / Cerebrus / Edward / Fenwal/ Hochiki / Nitton / Wormald
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	ISI mark
43	Fire Extinguisher	ISI mark
44	Lift	OTIS, Kone, Mitsubishi ,Schindler,Johnson

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 equipments are also acceptable in addition.
3. Any additional makes may be approved by concerned PCEs/Sr CEs/CEs(Elect) for the work under his jurisdiction as already accorded vide letter no. 3-2-5/EW/VEP-1/2007 dated 05-07-2007.

Name of work: Providing Chemical Earthing, GI plate Earthing and Lightning conductor works for RAN sites under Phase IX.2 4G Project of HTD BA. (Phase - I) SH: Providing Earthing and associated works for 4G RAN sites under TBN Area of GM(Area-1).

ANNEXURE

LIST OF INDIAN STANDARDS

- I.S.277 Galvanized steel sheets.
- I.S.325 Three Phase Induction Motors
- I.S.655 Metal Air Ducts
- I.S.732 Code of Practice for Electrical Wiring and fittings for Buildings.
- I.S.778 Gun Metal Gate, Globe and Check Valves for general purposes.
- I.S.900 Code of Practice for Installation and Maintenance of Induction Motors.
- I.S.996 Single Phase small AC and Universal Motors.
- I.S.1239 Mild Steel Tubes, G.I. Pipes, Tubular and other wrought steel fittings.
- I.S.1248 Direct Acting Electrical Indicating Instruments.
- I.S.1520 Horizontal Centrifugal Pumps for clear, cold and fresh water.
- I.S.1554 PVC Insulated (heavy duty) Electrical Cables (Part-I) for working voltages up to and including 110 volts.
- I.S.2372 Timber for cooling towers.
- I.S.2516 AC Circuit Breakers.
- I.S.2592 Recommendation for Methods of Measurements of Fluid flow by Means of Orifice Plates and Nozzles.
- I.S.1822 Motor Starters of Voltage not exceeding 1000 volts.
- I.S.2208 HRC Cartridge Fuse – Links up to 650 volts.
- I.S.3589 Electrically welded steel pipes for water, gas and sewage.
- I.S.3624 Bourden Tube Pressure and Vacuum Gauges.

- I.S.4047 Heavy Duty air break switches and composite units of air break Switches and fuses for voltage not exceeding 1000 volts.
- I.S.6392 Steel Pipe Flanges.
- I.S.7403 Code of Practice for Selection of Standard Worm and Helical Gear Boxes.
- I.S.8148 Specification for packaged air conditioning.

IMPORTANT NOTE

All references to I.S.I. appearing in this specification may be read as Bureau of Indian Standards, Latest amended versions.

ANNEXURE

LIST OF SAFETY STANDARDS

- I.S.618 Code of Practice for safety and health requirements in Electrical and Gas Welding and Cutting Operations.
- I.S.659 Safety code for Air Conditioning.
- I.S.660 Safety code for Mechanical Refrigeration.
- I.S.3016 Code of Practice for Fire precautions in welding and cutting operations.
- I.S.3210 Code for Safety procedures and practices in Electrical works.
- I.S.3696 Safety for Scaffolds and Ladders.

INDIAN ELECTRICITY RULES 1956

Note:-Tender documents & BSNL EW-8 General conditions of contract work for electrical works can also be downloaded from the website

http://www.telangana.bsnl.co.in/tenders_active.php

TECHNICAL SPECIFICATIONS

I. SPECIFICATIONS FOR MAINTENANCE FREE CHEMICAL EARTHING:-

The work shall be carried out as per the Specification indicated as follows: The material supplied by the vendor shall conform to the following requirements.

1 Design of Earthing & Bonding system

1.1 Earth Electrode:-

- The earth electrode shall be made of high tensile low carbon steel circular rods, molecularly bonded with copper on the outer surface to meet the requirements of Underwriters Laboratories (UL) 467-2007 or latest or IEC 62561. Such copper bonded steel **core** rod is preferred due to its overall combination of strength, corrosion resistance, low resistance path to earth and cost effectiveness.
- The earth electrode shall be UL listed and of minimum 17.0mm diameter and minimum 3.0mtrs. long.
- The minimum copper bonding thickness shall be of 250 microns.
- Marking: UL marking, Manufacturer's name or trade name, length, diameter, catalog number must be punched on every earth electrode.
- Earth electrode can be visually inspected, checked for dimensions and thickness of copper coating using micron gauge. The supplier shall arrange for such inspection at the time of supply, if so desired.

1.2 Earth enhancement material:-

Earth enhancement material is a superior conductive material that improves earthing effectiveness, especially in areas of poor conductivity (rocky ground, areas of moisture variation, sandy soils etc.). It improves conductivity of the earth electrode and ground contact area. It shall be tested and confirm to the requirements of IEC 62561-7 having following characteristics:-

- Shall mainly consist of graphite. Bentonite content shall be negligible.
- Shall have high conductivity, improves earth's absorbing power and humidity retention capability.
- Shall be non-corrosive in nature having low water solubility but highly hygroscopic.
- Shall have resistivity of less than 0.2 ohms-meter.
- Shall be suitable for installation in dry form or in a slurry form.
- Shall not depend on the continuous presence of water to maintain its conductivity.
- Shall be permanent & maintenance free and in its "set form", maintains constant earth resistance with time.
- Shall be thermally stable between -10 Deg C to +60 deg C ambient temperatures.
- Shall not dissolve, decompose or leach out with time.
- Shall not require periodic charging treatment nor replacement and maintenance.
- Shall be suitable for soils of different resistivity.
- Shall not pollute the soil or local water table and meets environmental friendly requirements for landfill.

- Shall not be explosive.
- Shall not cause burns, irritation to eye, skin etc.
- Marking: The Earth enhancement material shall be supplied in sealed moisture proof bags. These bags shall be marked with Manufacturer"s name or trade name, quantity etc.

1.3 Backfill material

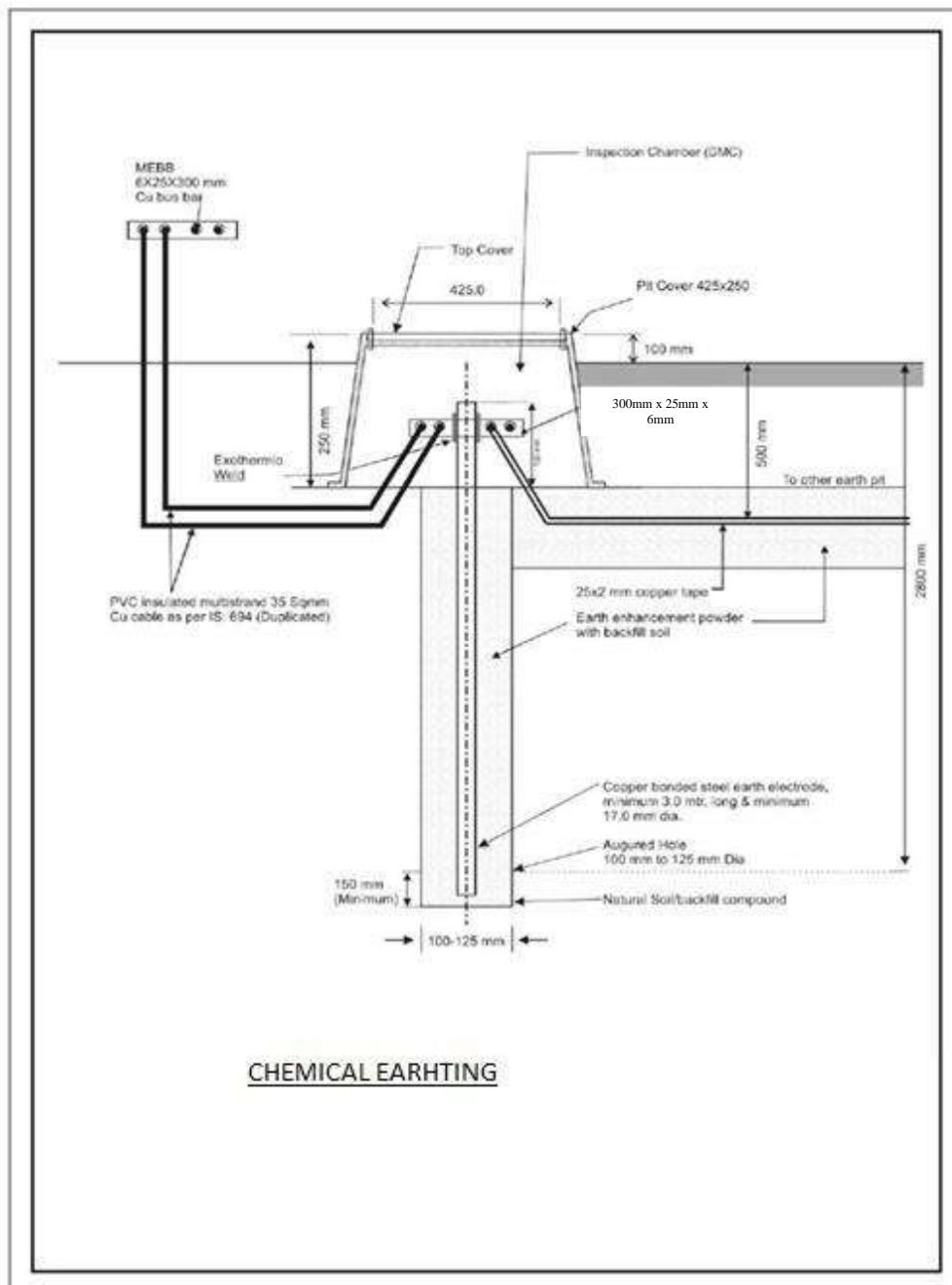
The excavated soil is suitable as a backfill but should be sieved to remove any large stones and placed around the electrode taking care to ensure that it is well compacted. Material like sand, salt, coke breeze, cinders and ash shall not be used because of its acidic and corrosive nature.

1.4 Earth Pit

- Construction of unit earth pit: Refer typical installation drawing indicated at page-3 below.
- A hole of 100mm to 125mm dia shall be augered /dug to a depth of about 2.8 meters.
- The earth electrode shall be placed into this hole.
- It will be penetrated into the soil by gently driving on the top of the rod. Here natural soil is assumed to be available at the bottom of the electrode so that min. 150 mm of the electrode shall be inserted in the natural soil.
- Earth enhancement material (minimum approx. 30-35 kg) shall be filled into the augured/dug hole in slurry form and allowed to set. After the material gets set, the diameter of the composite structure (earth electrode + earth enhancement material) shall be of minimum 100mm dia covering the entire length of the hole.
- Remaining portion of the hole shall be covered by backfill soil, which is taken out during auguring /digging.
- A copper strip of 300mmX25mmX6mm shall be exothermically welded to main earth electrode for taking the connection to the main equi-potential earth busbar in the equipment room and to other earth pits, if any.
- Exothermic weld material shall be tested as per provisions of IEEE 837 by NABL/ILAC member labs.
- The main earth pit shall be located as near as possible to the main equi-potential earth busbar.

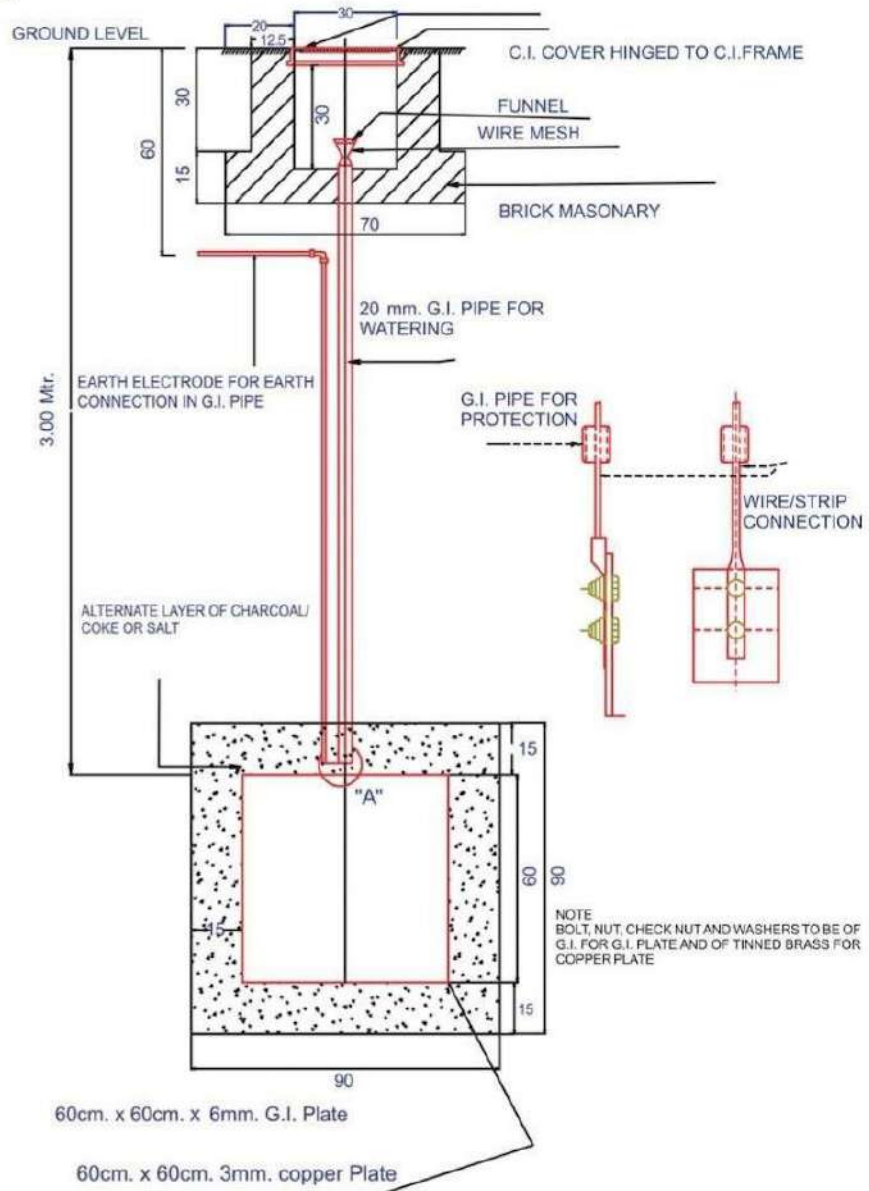
II. GI PLATE EARTHING/ LC WORKS:-

Works shall be carried out as per the latest CPWD internal specifications for Electrical Works.



CHEMICAL EARHTING

NOT TO SCALE



LIST OF APPROVED MAKES OF BSNL ELECTRICAL WING

S. No.	Item	Makes
1	Chemical Earthing	Firms meeting the specification or better than indicated specifications
2	PVC insulated copper conductor wire/cable	ISI mark
3	GI/MS Pipe	ISI mark, B class
4	PVC pipe	Rigid PVC pipe with ISI mark

NOTE:

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