

**BHARATSANCHARNIGAMLIMITED**

(A Government of India Enterprise)

**Executive Engineer (E-P), O/o Sr CE(E)****Sanchar Sadan, CGMT Bldg., Sec-34 Chandigarh**(Phone No: – 0172-2601502, [e-mail-eeepbsnlchandigarh@gmail.com](mailto:eeepbsnlchandigarh@gmail.com))**E-Tender Notice**

**From:** Executive Engineer(E-P)  
O/o Sr CE(E) Sanchar Sadan  
CGMT Bldg., Sec-34 Chandigarh

**To,**

**Prospective Bidders**  
.....  
.....

**Name of Work: - Supplying, Installation, Testing and Commissioning of 1x1600 KVA Dry Transformer Substation and associated works at TE Bldg. Manimajra.**

Tender No.: EE(E-P)/BSNL/EZ/CHD/2026-27/03

Dated: - 08.04.2026

Please find enclosed the tender document in respect of above-mentioned tender which contains the following.

**INDEX**

S. No.	Item	Page No.
1	DETAILED NIT	02 to 09
2	TENDER SUBMISSION FORMAT	10 to 12
3	DECLARATION AND UNDERTAKINGS A,B,C,D,E & F	13 to 16
4	TENDER FORM BSNL EW - 8	17 to 18
5	GENERAL RULES AND DIRECTIONS	19 to 20
6	PROFORMA OF SCHEDULES	21 to 22
7	TENDER INFORMATION	23 to 24
8	GENERAL SPECIFICATIONS FOR SUB STATIONS WORKS,HV PANEL, SPECIFICATION FOR TRANSFORMER,RING MAIN UNIT, MV PANEL, CABLE WORKS,EARTHING SYSTEM,SAFETY REQUIREMENT,CONDITION OF CONTRACT,SPECIFICATIONS FORMNOUTDOOR TYPE SANDWICH BUS TRUNKING,ADDITIONAL SPECIFICATIONS FOR ELECTRICAL WORKS,GENERAL RULES AND DIRECTIONS	25 to 63
9	CONDITION OF THE CONTRACT	64 to 66
10	IMPORTANT NOTES	67 to 68
11	ADDITIONAL SPECIFICATIONS FOR SUBSTATION WORKS	69 to 70
12	COMMERCIAL TERMS & CONDITIONS (SPECIAL CONDITIONS BROUGHT TO THE NOTICE OF THE TENDERERS)	71 to 85
13	LABOUR REPORT	86
14	PROFORMAS	87 to 97
15	SCHEDULE OF REQUIREMENT	98 to 106
16	LIST OF APPROVED MAKES- BSNL ELECTRICAL WING	107 to 108

This NIT contains 105 pages marked as 1 to 105

**SECTION- 1 ADDITIONAL TERMS, CONDITIONS & SPECIFICATIONS****BHARAT SANCHAR NIGAM LIMITED***(A Govt. Of India Enterprise)*

O/o Executive Engineer (E-P)O/o Sr CE(E) ,Sanchar Sadan, Sec-34,Chandigarh -160022

(Email ID-[eeepbsnlchandigarh@gmail.com](mailto:eeepbsnlchandigarh@gmail.com))**NOTICE INVITING GeM-TENDER (NIT)****NIT No.:EE(E-P)/BSNL/EZ/CHD/2026-27/03****Dated: 08.04.2026**

1.0 Sealed Tenders (Digitally in case of GeM-tendering & ~~Wax/ Tape sealed in case of manual tendering~~) are invited by **Executive Engineer (E-P) O/o Sr CE(E) , Sanchar Sadan, Sec-34,Chandigarh (Phone No: -0172-2601535)** on behalf of **CMD, Bharat Sanchar Nigam Limited (A Government of India Enterprise)** from eligible contractors for the following work: -

Name of work	Estimated cost (Rs.) (I/C GST)	Earnest Money Deposit (Rs.)	Time for completion of Work
Supplying, Installation, Testing and Commissioning of 1x1600 KVA Dry Transformer Substation and associated works at TE Bldg. Manimajra	Rs. 68,47,337/-	Rs. 1,36,947/-	2.5 Months

**Note 1:** The quantity stated above are estimated and BSNL reserves the right to vary the quantity to the extent of -25 % to +25 % of specified quantity at the time of award of the contract i.e. APO without any change in unit price or other terms & conditions.

**Note 2:** ~~25% of the Estimated Quantity/requirement in this tender Enquiry is earmarked for procurement from the eligible Micro & Small Enterprises(MSEs).However, in case eligible Micro & Small Enterprises (MSEs) bidder(s) are not available then this quantity would be de-reserved & procured from participating bidders.~~

**In case of any discrepancies between the clauses in this ATC and those appearing elsewhere in the bid document, the clauses of this ATC shall prevail.**

**2.0 Purchase of Tender Document:** Tender document can be obtained by downloading it from the website <http://www.gem.gov.in> following "Link for GeM-tenders by BSNL". Tender doc can also be viewed on <http://www.punjab.bsnl.co.in/>

**3.0 Availability of Tender Document:** As per Section I, point no. 2.

**3.1** As this is the GeM-tender, physical copy of the tender document would not be available for sale.

**Note 3:** The Tender document shall not be available for download on its submission/ closing date.

#### 4.0 Eligibility Criteria: -

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

**(a) Financial norms:**

- I. Average annual turnover during the last 3 years, ending 31<sup>st</sup> March of the previous financial year, should be at least 30% of the estimated cost put to tender.

**AND**

**(b) Physical norms:**

BSNL Class I(E) Enlisted contactor

OR

Experience of having successfully completed similar works in Central/State Govt./CPSU's/PSU/ Autonomous bodies during last 7 years ending last day of the month previous to 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 with minimum transformer capacity not less than 750 KVA.

OR

- Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender with minimum transformer capacity not less than 750 KVA.

OR

- One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender with minimum transformer capacity not less than 750 KVA .

**AND**

- Firm shall submit Authorization certificate from OEM of HT Panel / Transformer.

**NOTE: -**

1. **Similar work stands for supplying, installation, testing, commissioning of Dry/Oil type Transformer Substation.**
2. **The work completion certificate issuing authority in respect of above shall not be below the rank of Executive Engineer.**
3. **The firm /contractor should possess an applicable voltage category Electrical License valid for that state where work is to be executed.**
4. **Electrical License:-** If the applicant bidder possess the valid Electrical License of a state other than Chandigarh UT in his own name, he shall submit an undertaking in the application form, to associate an agency having valid electrical license of Chandigarh UT of appropriate voltage in its name issued by the licensing authority of Chandigarh UT under Section 45 of the India Electricity Rules, 1956 as amended from time to time. Such associate agency shall keep valid Electrical License throughout the period of execution of work by getting it renewed at suitable intervals.
5. The bidder shall submit the following documents/undertakings as per annexures provided **in section section 6:-**

- i) **UNDERTAKING-** Section 6(H)

- ii) Affidavit of Associate Vendor having Valid Electrical License:- Section 6(I)
- iv) MEMORANDUM OF UNDERSTANDING: - As per Section 6(J)

5. **Tender Accessibility:** (i) Tender document can be accessed/obtained by down loading it from website [www.punjab.bsnl.co.in](http://www.punjab.bsnl.co.in)

**Note: The tender shall be available for viewing only on <http://www.punjab.bsnl.co.in/GEM>.**

(ii) The tender document for participating in GeM-tender shall be available on [www.gem.gov.in](http://www.gem.gov.in)

**Note:** The Tenderer shall upload bids, quote his rates **online only** on [www.gem.gov.in](http://www.gem.gov.in).

6.0 **Bid Security/EMD: Rs.1,36,947/-** in the form of Demand Draft / Pay Order / Bankers Cheque / Deposit at Call Receipt/FDR/BG of Nationalized / Scheduled Bank drawn in favour of "**AO (Cash) BSNL , O/o CGMT Chandigarh**" alternatively can be deposited in the account details as below:

**Account no. – 98130200000197**

**Name of the Bank- Bank of Baroda**

**Name of Account- Current A/C**

**Branch Name- Sector 34 A, Chandigarh.**

**IFSC- BARBOEXTSEC**

**Note:**

1. **The Bid Security / EMD shall be valid for 90 days.**
2. Following categories of Sellers shall however, be exempted from furnishing EMD:
  - i. Micro and Small Enterprises who are manufacturer of the Primary Product Category or Service Provider of the Primary Service Category are registered as per given below NIC codes:

Sr. No.	NIC (02 Digit)	NIC (04 Digit)	NIC (05 Digit)	Description of activity
1	27	2710	27102	Manufacture of electric power distribution transformers, arc-welding transformers, fluorescent ballasts, transmission and distribution voltage regulators

And submit (Upload) Udyam Aadhar Registration Certificate incorporating above category.

**If anybody other than above NIC codes, it will be verified from latest NIC codes and if not found appropriate tender will be rejected.**

- i Start-ups as recognized by Department of Industrial Policy and Promotion (DIPP).
- ii. KVIC, ACASH, WDO, Coir Board, TRIFED and Kendriya Bhandar.
- iii. Sellers who have got their credentials verified through the process of Vendor Assessment by Vendor Assessment Agencies for the Primary Product / Primary Service for which Bid / RA has been invited.
- iv. Sellers/ Service Provider having annual turnover of Rs 500 Crore or more.
- v. Micro and Small Enterprises registered with NSIC for the Primary Product Category whose credentials are validated through NSIC database and through uploaded supporting documents.
- vi. Micro and Small Enterprises registered with DIC for the Primary Product Category whose credentials are validated through DIC database and through uploaded supporting documents.

- vii. Sellers / Service Providers holding BIS License for the Primary Product Category whose credentials are validated through BIS database and through uploaded supporting documents.
  - viii. Central / State PSUs.
  - ix. Seller / Service Provider registered with designated Agency / Authority as specified in the bid document by the Buyer – such bidder shall have to upload scanned copy of relevant registration document in place of EMD document while bidding.
- (a)** EMD submitted by the bidder shall be forfeited, if the bidder:
- i. Withdraws or modify or impairs or derogates from the bid in any respect within the period of validity of its bid (90 days); or
  - ii. If it comes to notice that the information / documents furnished in its bid is false, misleading or forged; or
  - iii. Fails to furnish requisite performance security / PBG within stipulated time required as per e-bid / RA conditions.
- (b)** Notwithstanding above, GeM SPV / GeM Admin also reserve the right to debar such seller from GeM portal. Such debarment shall be for minimum 3 months initially on first such offence and on repeat offence, the debarment period can be increased suitably by GeM SPV / GeM Admin. By submitting a bid on GeM, the Bidder explicitly undertakes to abide by the above clause.
- (c)** Earnest money of unsuccessful bidders shall be returned within 15 days after the award of contract or expiry of bid validity whichever is earlier. Earnest money of successful bidder shall be returned within 15 days after receipt of Performance Security / e-PBG.
- (d)** Account details of AO for online payment

<b>Beneficiary Account Name</b>	<b>AO (Cash) BSNL , O/o CGMT Chandigarh</b>
<b>ADRESS</b>	<b>Chandigarh</b>
<b>Type of Account</b>	Current
<b>Beneficiary Account Number</b>	98130200000197
<b>Beneficiary Bank IFSC code</b>	BARBOEXTSEC
<b>Beneficiary Bank Name</b>	Bank of Baroda
<b>9 –DIGIT MICR</b>	<b>160012012</b>
<b>Beneficiary Bank Branch Name</b>	Sector 34 A, Chandigarh
<b>Beneficiary Bank Address 1</b>	Sector 34 A, Chandigarh

- Note: 1) This procurement is for BSNL (**Chandigarh**).
- 2) The Seller shall confirm the billing details and the GST number before (On-line / off line) invoicing for the item.
- 3) Subsequently invoice shall be drawn by the successful bidder in the name of buyers/ officer who enters in to the agreement of work.

## 7. Tender Submission Details:

### 7.1 (A) ONLINE SUBMISSION: -

The Seller shall possess and upload the following over and above that mentioned in Buyer added Specific Additional Terms and Conditions of the GeM BID documents: -

- a) Authorization Document / Power of Attorney if Applicable.
- b) Documentary proof of satisfying the eligibility conditions as per 4 above.
- c) PAN card.
- d) Valid GST Registration.
- e) Valid MSME Registration (If applicable).
- f) CA certificate for turnover for last three financial years.
- g) ITR for latest financial year.
- h) Tender Submission Format (for e-Tender)
- i) Declaration by Contractor- "A"
- j) Undertaking- "B" to "F".
- k) EPF Registration.
- l) ESI Registration.
- m) Copy of Earnest Money in the form of Demand Draft/Pay Order/ Banker Cheque/ Deposit at call receipt/FDR/BG of Nationalized/ Scheduled bank drawn in favour of "**AO (Cash) BSNL, O/o CGMT Chandigarh**" or Transaction receipt (UTR Slip) of EMD submitted ON LINE.
- n) Self-Certification under Preference to "**Make In India**" Policy – as per Section 7(E)
- o) **Duly filled technical data sheet for 1600 KVA transformer under SECTION- 3 Part C.**
- p) Self- Declaration about GST % considered by the Seller for this BID since price quoting in GeM is inclusive of Tax.
- q) **Applicable voltage category Electrical License valid for that state where work is to be executed.**
- r) Any other document required as per ATC.

**7.1(B) OFFLINE SUBMISSION: -**

Following documents are required to be submitted in physical form (Offline) in a sealed envelope in the O/o "**Executive Engineer (E-P) O/o Sr CE(E) ,Sanchar Sadan, Sec-34,Chandigarh (Phone No: –0172-2601502)**", on any date before or within 5 days of bid submission end date failing which the tender bid (if already opened on the basis of scanned copies uploaded in 1st envelope i.e. technical envelop) shall be rejected

**The envelope shall bear the ID of tender, name of work,** This envelope should be dropped in the tender box provided by tendering authority. The documents sent by post will not be accepted. The responsibility for ensuring that the envelopes are delivered in time would vest with the bidder.

The Envelope shall contain the following documents.

- a) Authorization Document / Power of Attorney if applicable as per 7.1
- b) **Earnest Money ( if not submitted through e-payment mode) in the form of Demand Draft / Pay Order / Bankers Cheque / Deposit at call receipt / FDR /BG of Nationalized / Scheduled bank drawn in favour of "AO (Cash) BSNL , O/o CGMT Chandigarh" in original.**

**Note: MSE registered bidders are exempted from depositing of EMD if they are registered in class and subclass offered in tender.** In this case bidder shall submit Valid MSE Certificate / Udyam Registration Certificate.

**Note-**

1. All above documents must be clearly displayed & seen by the tender opening authority before opening the actual bid. If required, BSNL may ask to submit original copies of credentials for verification after opening of tender at any stage.
2. In case the eligibility credentials i/c registration with GST, are found to be fake or falsified at any stage i.e. before award of work or during execution of the work or after completion of the work, the contractor will be debarred from tendering in BSNL for three years including any other action under the contract or existing law.

### 8.1 Place of opening of Tender bids:

BSNL has adopted GeM tendering process, any authorized representatives of bidders (Maximum Two) can attend at the **O/o the Executive Engineer (E-P) O/o Sr CE(E), Sanchar Sadan, Sec-34, Chandigarh**. Where BSNL's Tender Opening Officers would be conducting GeM Online Tender Opening Event (TOE). (Authorization Document to be provided at the time of Tender Opening Event (TOE))

### 8.2 INVALID AND NON-RESPONSIVE BIDS

The tender submitted shall become invalid & nonresponsive and shall not be opened if:

- (i) The tenderer is found ineligible.
- (ii) **The tenderer does not upload all the documents as stipulated in the bid document as detailed in PARA 7.1 (A) above.**
- (iii) **The Tenderer does not submit documents within due date in physical form as detailed in PARA- 7.1 (B) above in Tender Box available in the O/o Executive Engineer (E-P)O/o Sr CE(E) ,Sanchar Sadan, Sec-34,Chandigarh.**
- (iv) However, if tenderer has uploaded all the required documents and some further clarifications are needed in uploaded documents then tenderer may be asked to clarify the same and will not be treated as invalid and non-responsive.
- (v) Any discrepancy is noticed between the documents as uploaded online at the time of submission of bid and hard copies as submitted off line physically in the office of tender opening authority. The decision of NIT approving authority will be final.

**Note:** - Date fixed for opening of tender, if subsequently, is declared as holiday by the BSNL, then, revised date and schedule will be notified, however in absence of such notification, the tender will be opened on next working day, time and venue remaining unaltered.

**8.3** Eligibility credential & technical Bid will be opened first at the first instance and evaluated. At the second stage financial bids of only the technically & commercially accepted offers will be opened for further evaluation & ranking before awarding the contract. The Financial bid shall be opened subsequently on a date & time to be notified by BSNL later.

**9. a)** The site for the work is available. In case the agency fails to start the awarded work, Performance Guarantee shall be forfeited.

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

### 10. Performance Guarantee / Security

**a) Performance Guarantee (PG):** - The Firm shall have to furnish Performance guarantee @ **3% (Three)** of the contract value of the contract within Fifteen Days of the issue of acceptance letter in the form of Bank guarantee on a Nationalized/Scheduled bank in standard format (**Annexure B**)/ CDR/ FDR/ TDR/DD. This performance guarantee shall be submitted in the Electrical Division in the name of concerned Accounts Officer. The validity period of the performance security in the form of performance bank guarantee shall be up to the date of actual completion of work. In the event of failure on the part of successful tenderer to furnish the performance guarantee within fifteen days from the date of communication of acceptance to the contractor, contractor will be suspended / barred / banned for the period of one year in BSNL.

**Note:** -This as per order of Department of Expenditure (Ministry of Finance) Dated 03.04.2023.

**b) Security Deposit:** -In addition to performance guarantee stated above, a sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum

deducted will amount to security deposit of 7% of the Tendered value of the work. This Security Deposit shall be released after one year after the date of actual completion of work.

This **Performance Guarantee & Security Deposit** shall be refunded after one year from successful date of completion of work.

11. The acceptance authority does not bind himself to accept the lowest tender or any other tender and reserves to himself the authority to reject lowest or all the tenders received without assigning any reason. All tenders in which any of the prescribed conditions are not fulfilled or incomplete in any respect are liable to be rejected.
12. Canvassing, in connection with tender is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.
13. The BSNL reserves itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted.
14. i) The tenderer should give a certificate that none of his/her relative is employed in BSNL units. In case of proprietorship firm, certificate will be given by the proprietor and for partnership firm certificate will be given by all the Directors of the company.  
  
ii) Near relatives of all BSNL employees either directly recruited or on deputation are prohibited from participation in tenders and execution of works in the different units of BSNL. The near relatives for this purpose are defined as:  
  
a) Members of a Hindu Undivided family.  
  
b) They are husband 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).  
  
iii) The company or firm or any other person is not permitted to tender for works in BSNL Unit in which his near relative(s) is (are) posted. The unit is defined as SSA/Circle/Chief Engineer/Chief Architect/Corporate office for non-executive employees and all SSA in a circle including Circle Office/Chief Engineer /Chief Architect / Corporate office for executive employees (including those called as Gazetted officers at present). The tenderer should give a certificate that none of his/her such near relative is working in the units as defined above where he is going to apply for tender/work, for proprietorship, partnership firms and limited company certificate shall be given by the authorized signatory of the firm. Any breach of these conditions by the company or firm or any other person, the tender/work will be cancelled and earnest money/performance guarantee will be forfeited at any stage whenever it is so noticed. BSNL will not pay any damages to the company or firm or the concerned person. The company or firm or the person will also be debarred for further participation in the BSNL. The format of the certificate to be given is prescribed as per "**UNDERTAKING – F**".
15. No employee in BSNL/ Govt. of India is allowed to work as a contractor for a period of two years of his retirement from service without the prior permission. The contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission as aforesaid before submission of tender and engagement in the contractor's service.  
The tenders for the work shall remain open for acceptance for a period of **90 days** from the date of opening of the tenders. If any tenderer withdraws his tender before the said period or makes any modification in the terms and conditions of the tender which is not acceptable to the BSNL shall, action shall be taken as per undertaking D (Bid security Declaration)

16. **Extension of validity:** In case, where the letter of award of work cannot be placed within the validity period of the tender, the BSNL can request all tenderers to extend the validity of their respective tenders. While BSNL can make the request for extension, the tenderer is free to either extend the validity or refuse the request to extend the validity.

**17. Consignee, Buyer or Engineer In charge: I) Consignee:**

Sr. No.	SSA	Name of site	Name of Consignee	Mail ID	Designation and mobile No.	Address
1	Chandigarh	Manimajra	Sh. Rakesh Kumar Gupta	<a href="mailto:xenchd@gmail.com">xenchd@gmail.com</a>	Executive Engineer (E-P), MOB. No . 9416002600	O/o. The Executive Engineer (E), Electrical Division, 2 <sup>nd</sup> Floor,TE Bldg.Sec-34, Chandigarh- 160022.

**II) Buyer / Engineer In Charge**

Sr. No.	Name	Mail ID	Designation and mobile No.	Address
1	Sh. Rakesh Kumar Gupta	<a href="mailto:xenchd@gmail.com">xenchd@gmail.com</a>	Executive Engineer (E), MOB. No. 9416002600	<b>Executive Engineer (E), BSNL Electrical Division Chandigarh</b>

18. The contractor should read the tender documents carefully before submitting the tender.
19. This Notice Inviting Tender shall form part of the Contract document. The successful tenderer/contractor on acceptance of his tender by the Accepting authority, shall, within **07 days** from the stipulated date of start of the work, sign the contract consisting of: -
- 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.
  - Standard Tender document BSNL EW-8.

**20. SPECIAL CONDITIONS**

- Termination of Contract on Death of Contractor:** - Without prejudice of any of the rights or remedies under this contract, if the contractor dies, the Engineer-In-Charge on behalf of the BSNL shall have the option of terminating the contract without compensation to the contractor.
- Indulging of Contractor in Criminal/Antisocial Activities & cases under investigation /Charge Sheeted by CBI OR Any Other Government Agencies etc.:** - If the CBI/Independent External Monitor (IEM)/Income Tax/ Sales Tax/ Central Excise/ Custom Departments/GST recommends such a course –Action will be taken as per the directions of CBI or concerned department.

Executive Engineer (E-P),  
O/o Sr CE(E) ,Sanchar Sadan,  
For & on Behalf of BSNL

**TENDER SUBMISSION FORMAT**

To,

The **Executive Engineer (E-P)**,  
**O/o Sr CE(E) ,Sanchar Sadan,**  
**Sec-34,Chandigarh.**

**Important Note:** Bidder must verify the check list properly before submitting the tender document on line & uploading of their scanned copies as per PARA 7.1 (A) & (B).

**Subject:** Submission of GeM-Tender for the work of **“Supplying, Installation, Testing and Commissioning of 1x1600 KVA Dry Transformer Substation and associated works at TE Bldg. Manimajra.”**

As per tender publication advertised by your office and display of Notice Inviting Tender on web site [punjab.bsnl.co.in](http://punjab.bsnl.co.in) and [www.gem.gov.in](http://www.gem.gov.in) we are hereby submitting the following documents duly attested.

**ENVELOPE – I**

S.N.	DOCUMENTS	DETAILS
1.	Tender due on	
2.	Details of firm / Company	
a.	Name of firm / Company, e-mail address (mandatory)	
b.	Name of Proprietor / Partner / Managing Director	
c.	Address	
	Pin Code	
	Telephone	
	E- mail address <b>(MANDATORY)</b>	
d.	Electrical Contractor's License No.	
	Issuing authority, Date of issue & Letter No.	
	Class of Registration	
	Limit	
	Valid up to	
e.	Electrical Supervisor license No.	
	In the Name of	
	Qualification	

f.	Address of Branch / Head Office Name In BSNL Division H.Q.	
	Pin Code	
	Phone	
	Mobile No	
	E-Mail Address	
3.	<b>Income Tax returns / Chartered Accountant Certificate Date</b>	
4.	<b>GST Registration No. &amp; Date</b>	
5.	<b>EPF Registration No.</b>	
6.	<b>ESI Registration No.</b>	
7.	<b>Bank details of agency for RTGS/online payment</b>	
	Bank Account No:-	
	Bank Name & Branch:-	
	IFSC code:-	

**8. Lists of 3 works carried out satisfactorily (Certifying Officer not below the rank of Executive Engineer).**

(To be issued by the user on his printed letterhead to the tenderer)

This is to certify that the work has been completed satisfactorily as per details given in tender document / P.O.

Sl. No	Name of Work	Date of start	Date of Completion	Amount of work Done	Department and P.O. / Agreement No.
1.					
2.					
3.					

**9. Annual Turn over**

**(To be issued by Chartered Accountant on his letter head indicating following)**

Sl. No	Year	Annual turn over
1		Rs.
2		Rs.
3		Rs.

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

Place: - .....  
Yours sincerely

Date: - .....  
(Signature)

(Name in block letter)

Seal of firm

**Declaration by Contractor "A"**

(To be furnished by the firm)

- 1.0 I / We do hereby undertake to have gone through the terms & conditions / clauses of all the tender documents including Tender Form BSNL EW-8. & agree to abide by the same. We understand that same shall form part of the agreement.
- 2.0 I/we hereby declare that no addition /deletion/correction have been made in the tender document submitted and is identical to the tender document appearing on website.
- 3.0 In case of failure to comply as above, our offer will stand withdrawn and our tender documents may be returned in original at the time of opening of tender by the tender opening officer. The decision of tender opening officer in this regard shall be final & binding on me.

**Signature of contractor/authorized representative  
With seal of the firm**

**1. UNDERTAKING REGARDING PROVISIONS-B**

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

\* 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.

\* I/ We have registered as per the ESI regulations and our registration no is \_\_\_\_\_. We undertake to keep it valid during the currency of contract.

Any consequence arising due to non-complying of EPF & ESI Act provision shall be sole liability of the undersigned contractor. In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".

\* Strike out whichever is not applicable.

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

**2. UNDERTAKING 'C'**

I/ We hereby declare that I/we are not Black Listed by GST authority as on date. I/We undertake to intimate change of status during the currency of contract.

PAN No. :.....

GST Registration No :.....

\* **The Agency shall fill up the above data**

**(Signature of Contractor)**

**(Seal of the firm)**

**6. UNDERTAKING 'D': Bid Security Declaration**

I/ We undertake that if we withdraw or modify our bid during validity period; I/ We will be suspended/ debarred/ banned for the period of one year in BSNL.

**(Signature of Contractor)**

**(Seal of the firm)**

**4. UNDERTAKING 'E'**

For understanding the terms & condition of Tender & Spec. of work

a) Certified that:

1. I/ We ..... have read, understood and agree with all the terms and conditions, specifications included in the tender documents & offer to execute the work at the rates quoted by us in the tender form.
2. If I/ We fail to enter into the agreement & commence the work in time, the Performance guarantee deposited by us will stand forfeited to the BSNL.

b) The tenderer hereby covenants and declares that:

1. All the information, Documents, Photo copies of the Documents/Certificates enclosed along with the Tender offer are correct.
2. If anything is found false and/or incorrect and/or reveals any suppression of fact at any time, BSNL reserves the right to debar our tender offer/ cancel the LOA/ Purchase/ work order if issued and forfeit the EMD/ SD/ Bill amount pending with BSNL. In addition, BSNL may debar the contractor from participation in its future tenders.

Date: .....

Signature of Tenderer

Place: .....

Name of Tenderer .....  
(Seal of the firm)

**UNDERTAKING 'F'**

NEAR-RELATIONSHIP CERTIFICATE:

**[To be signed Proprietor in case of Proprietorship Firm &  
By all Directors in case of Partnership Firms]**

(Format of the Certificate to be given as per the clause 34.4 of Section-4 Part-A by the bidder in respect of status of employment of his/ her near relation in BSNL)

The format of the certificate to be given is "I..... s/o.....  
..... r/o..... here by 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."

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).

**Signature of the tenderer**

**With date and Seal**

**TENDER FORM BSNL EW - 8**  
**BHARAT SANCHAR NIGAM LIMITED**

(A) Tender for the work of: -

**“Supplying, Installation, Testing and commissioning of 1x1600 KVA Dry Transformer and associated works at TE Bldg. Manimajra, Chandigarh”**

Name of Contractor / Firm - .....

**TENDER**

- 1.0 I /we have read and examined the notice inviting tender, schedules, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.
- 2.0 I/We hereby tender for the execution of the work specified for the BSNL within the time specified, schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions and other documents and rules referred to in the conditions of contract and all other contents in the tender document for the work.
- 3.0 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.
- 4.0 If I/We, fail to furnish the prescribed performance guarantee within prescribed period I/We agree that the said BSNL shall without prejudice to any other right or remedy to take action as per **Undertaking 'D': Bid Security Declaration**. Further if I/ We fail to commence work as specified , I/ We agree that the said BSNL shall without prejudice to any other right or remedy, be at liberty to forfeit the amount of performance guaranty 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.
- 5.0 Should this tender be accepted, I/We agree to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered up to maximum of percentage mentioned in Clause 12.3 of the tender form and those in excess of that limit at rates to be determined in accordance with provisions contained in relevant clause 12.2.
- 6.0 I/we agree to furnish Performance Guarantee to BSNL in the form of Deposit at call receipt/FDR/ Bank guarantee of a Nationalized/ Scheduled Bank for an amount equal to 3% of the contract value in a standard format within Seven Days from the date of issue of letter of Acceptance. I/We agree to keep the performance bank guarantee valid as per the terms of the ATC.
- 7.0 I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety or interest of BSNL.

Dated: - \_\_\_\_\_

**(Signature of Contractor)**  
**Seal of Contractor**

**ACCEPTANCE**

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

(Rupees \_\_\_\_\_ )

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

- a)
- b)
- c)

Place \_\_\_\_\_

Dated \_\_\_\_\_

Signature  
For & on behalf of the BSNL  
Designation

**SECTION- 1**  
**GENERAL RULES AND DIRECTIONS**

- 1.0** All works proposed for execution by contractor will be notified in a form of invitation to tender displayed on Notice Board in select BSNL offices and signed by the officer inviting tender or GeM portal / BSNL Portal.
- 2.0** This form will state the work to be carried out, as well as the date of submitting and opening tenders and the time allowed for carrying out the work, the amount of performance guarantee to be deposited by the successful tenderer(s). Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the Officer inviting tender shall also be open for inspection by the contractor at the office of Officer inviting tender during office hours.
- 3.0** Receipts for payments made on account of work when executed by a firm, must also be signed by authorized signatory.
- 4.0** Any person who submits a tender shall fill up the Price Bid (Schedule of work) stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other condition of any sort, including conditional rebates will be summarily rejected.
- 5.0** The Officer inviting tender or his duly authorized assistant will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amounts of the participating tenders.
- 6.0** The officer inviting tenders shall have the right of rejecting all or any of the tenders, and, will not be bound to accept the lowest or any other tender.
- 7.0** The tenderer shall sign a declaration under the officials Secret Act, 1923 for maintaining secrecy of the tender documents drawings or other records connected with the work given to them.
- 8.0** Other agencies will also simultaneously execute the works like horticulture, external services, Installation of telephone exchange equipment and other building works for the same project along with this work in particular. The contractor shall afford necessary facilities for the same. No claim in the matter shall be entertained.
- 9.0** Some restrictions may be imposed by the security staff etc. on the working and/or movement of labour, material etc. The contractor shall be bound to follow all such restrictions /instructions and nothing extra shall be payable on this account.
- 10.0** The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-charge may in his discretion without prejudice to any other right or remedy available in law cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
- 11.0** Agency has to observe all labour rules and regulations in force. Agency shall be fully responsible for any violation observed at any time during currency of contract.
- 12.0** Bye laws Indemnity against liabilities

- The contractor shall comply with all by laws and regulations of the local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fees and other charges and giving and receiving all necessary notices and keep the Engineer –in-charge informed about the notices issued and received.
- The contractor shall indemnify the department against all claims in respect of patent rights design, trademark or name of other protected rights in respect of any plant, machine, work or materials used for or in connection with the works or temporary works and from and against all claims demands, proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto. The contractor shall defend all actions arising from such claims and shall himself pay all royalties, License fees, damages, costs and charges of all and every sort that may be legally incurred in respect hereof shall be borne by the contractor.
- All liabilities / penal recoveries on matters arising out of other taxes /levies/ GST such as incorrect deductions discrepancies in the filing of returns, revised assessments by the concerned authorities etc., shall be borne by the contractor.

**13.0** Rates quoted by the contractor shall be firm and shall be valid for the currency of Contract. No cost escalation shall be permitted during the currency of contract.

**14.0** No engineer of gazetted rank or executive of BSNL employed in engineering or administrative duties in an engineering department of the government of India/BSNL is allowed to work as a contractor for a period of two years of his retirement from government service without the previous permission of government of India / BSNL. This contract is liable to be cancelled if either the contractor or any of his employee is found at 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 contractor's service as the case may be.

**PROFORMA OF SCHEDULES**

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

**SCHEDULE 'A'**: Schedule of quantities: Appended on page –111 to 113**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 –

- a. Special conditions of contract: - Appended on page No.93.
- b. Specifications: - from page 29 to 54
- c. Performa for Agreement from page No 97 to 98
- d. Approved makes: Appended from pages – 31 to 32

**SCHEDULE 'E'**: Schedule of component of Materials, Labour etc. for escalation**Clause 10 CC --- Not Applicable****SCHEDULE 'F'**: -Reference to General Conditions of contract.

Definitions:	See below
1)Engineer-in-Charge	Executive Engineer (E), BSNL Electrical Division, Chandigarh.
2)Accepting Authority	Sr. CE(E) Chandigarh
3) Percentage on cost of materials and labour to cover all overheads and profits.	10%
Standard Contract Form	BSNL EW Form 8 and amended update
Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance, in days	07 days
Authority for fixing compensation for delay in completion of work.	<b>SE (E)</b> , No compensation will be allowed but deviation (Amount & period) as per Clause 2.1 & 2.2 of BSNL EW 8
Number of days from the date of issue of letter of acceptance for reckoning date of start	07 days

Time allowed for execution of work.  Authority to give fair and reasonable extension of time for completion of work.	<b>2.5 Months</b>  SE (E)
Price escalation clause: - 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	Special conditions of Contract & Specifications as per Section 1 to 3 of Contract document with Schedule of work.
Clause 12 12.2 schedule of rates for determining the rates of additional, altered or substituted items that cannot be determined under 12.2(i) & (ii)	As Applicable
Clause 12 12.2(iii) plus/minus +/- the % over the rate entered in the schedule of rates	As Applicable
Clause 12 Deviation Limit beyond which clause 12.3 shall apply	BSNL reserves the right to vary the quantity to the extent of -25% to +25% of specified quantity at the time of award of the contract i.e. without any change in unit price or other terms & condition.
Clause 25 Settlement of disputes and Arbitration	Arbitration & Conciliation Act -1996 and amended up to date.

**SECTION- 2**  
**Tender Information**

**1. Type of tender: -**

- a) **No. of Bid Submission Stages for tender: Single Stage.** (Please See Note-1).
- b) **No. of Envelopes for submission of Bids:** Two Nos. Electronic envelope system (Two Stage opening) (Please See Note-1).
- c) **Reverse auction (In case of tenders invited through GeM-tendering only):** YES

**Note 1:** The bidder shall submit Techno-commercial & Financial bid simultaneously.

**Note 2:** The bids will be evaluated techno-commercially first and thereafter financial bids of techno-commercially compliant bidders only shall be opened.

**2. CLARIFICATION OF BID DOCUMENTS**

- 2.1 A prospective bidder, requiring any clarification on the Bid Documents shall notify the Purchaser in writing by E-mail of the Purchaser as indicated in the invitation of Bid. The Purchaser shall respond in writing to any request for the clarification of the Bid Documents, which it receives **05 days** prior to the date of opening of the Tenders. Copies of the query (without identifying the source) and clarifications by the Purchaser shall be sent to all the prospective bidders who have received the bid documents uploaded on the GeM Portal and BSNL Portal.

**3. AMENDMENT OF BID DOCUMENTS**

- 3.1 The Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, may modify bid documents by amendments prior to the date of submission of Bids with due notification to prospective bidders on GeM Portal.
- 3.2 The amendments shall be notified in writing by Addendum through GeM portal and these amendments will be binding on all the bidders.
- 3.3 In order to afford prospective bidders a reasonable time to take the amendment into account in preparing their bids, the purchaser may, at its discretion, extend the deadline for the submission of bids suitably.

**4. Bid Validity Period/Validity of bid Offer: 90 days** from the tender opening date.

**5. PAYMENT TERMS: -**

No advance payment will be made. The bill of the vendor shall be prepared during progress of work as under:

- I. 80% of prorata of the approved price break up of contract value on receipt of equipment at site and after satisfactory physical inspection.
- II. 10% of prorata of the approved price break up of contract value after successful installation of equipment.
- III. 10% of prorate of the approved contract value after successful commissioning and handover

**NOTE:** - 1) No payment will be made for goods rejected at the site on testing, payment, if made, for such items shall be recovered from subsequent bills or other bills.

2) **Stipulations like levy of interest if payment is not made in specific time is not at all acceptable to BSNL.**

3) **Delivery Schedule:** Time allowed to carry out the work shall be **Two & half months** after the award of work.

6. The programme for execution shall be –

- 1- Submission of drawing – Within **Five (05) Days** of stipulated commencement of work.
- 2- Supply of major equipment – Within **Forty Five (45) Days** of stipulated commencement of work.
- 3- Installation, testing and commissioning – In next **Twenty (20) Days.**
- 4- Testing and completion of work – In next **FIVE (05) days.**
5. **Engineer In-charge:** Executive Engineer (E), BSNL, Electrical Division, Chandigarh.

7. **Completion of Work: -**

1. **DATE OF COMPLETION: -**

Date of successful Testing & commissioning of equipment on load after inspection as per applicable by-laws of local Authorities shall be taken as completion date of the work. Agency has to arrange all tool/ equipment required for testing i/c coordination with local authorities. Nothing extra shall be paid on this account.

2. **COMPLETION DRAWINGS: -**

The firm shall supply three sets of drawings / documents immediately on completion of the as detailed below-

- 1.0 Schematic diagram of control wiring.
- 2.0 Operation and maintenance manual of all Major component.

## **SECTION 3 PART- A GENERAL SPECIFICATIONS FOR SUB STATIONS WORKS**

### **1. CONFORMITY WITH STATUTORY ACTS, RULES, REGULATIONS, STANDARDS AND SAFETY CODES**

#### **1.1.1 Indian Electricity Act and Rules**

All electrical works in connection with installation of electric sub-stations shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and the Indian Electricity Rules, 1956 amended upto date. Wherever I.E. rule numbers have been indicated, they are based on I.E. Rules, 1956 amended upto date.

#### **1.1.2 CPWD Specifications**

The electrical works shall also conform to CPWD General Specifications for Electrical works Part I (Internal) 2013 and Part II (External) 1994 as amended upto date wherever relevant and applicable.

#### **1.1.3 Indian Standards**

The sub-station equipments and their installation shall conform to relevant Indian standards.

#### **1.1.4 Other Acts and Rules**

The installation shall also comply with the following:-

- (i) Factories Act wherever applicable.
- (ii) Any other Act or Rules in force.

#### **1.1.5 Safety Codes and Labour Regulations**

In respect of all labour employed directly or indirectly on the work, the tenderer, here in after called the contractor, at his own expense will arrange for the safety provision outlined in section 8 of these specifications to comply with the statutory regulations, ISI recommendations and CPWD codes.

In case of default, the department shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the contractor.

The contractor shall provide necessary barriers warning signals and other safety measures to avoid accidents. He shall also indemnify CPWD against claims for compensation arising out of negligence in this respect.

Nothing in these specifications shall be construed to relieve the contractor of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with applicable statutory regulations and safety codes in force from the safety angle.

### **1.2 INFORMATIONS AND DRAWINGS TO BE SUPPLIED BY THE DEPTT.**

#### **1.2.1 Specification**

The tender specifications shall indicate, for a particular job, to help the contractor to work out the tender.

#### **1.2.2 Schedule of Work**

The department shall supply a schedule of work as per format detailing the equipments; materials required type and anticipated quantity/ numbers in respect of each item.

### **1.3 WORKS TO BE ARRANGED BY THE DEPARTMENT**

Unless otherwise mentioned in the tender specifications the following works shall be carried out by the department.

- (i) Providing suitable space for erection of sub-station building/premises
- (ii) Cable trench, manholes for drawing of cables, manhole covers etc. as per requirements.
- (iii) Construction of necessary soak pits, drainage arrangement for soak pit etc., if required.
- (iv) ) Provision of storage space at site during the contract period free of cost. However safe custody of material shall be the responsibility of the agency.

### **1.4 WORKS TO BE DONE BY THE CONTRACTOR**

In addition to supply, installation, testing and commissioning of all equipment as per schedule of work shall be deemed to be included within the scope of work, to be executed by the contractor.

- (i) All minor building works, such as cutting and making good holes, grouting of channels belts as required. Cutting and making good damages etc. wherever required.
- (ii) Provision of supports / clamps for equipment's, cables etc. wherever required.
- (iii) Small wiring, inter-connection etc. inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.
- (iv) Closing of the cable entry points in sub-station against seepage of water, rodents etc.
- (v) Tools and tackles required for handling and installation.
- (vi) Necessary testing equipment's for commissioning.
- (vii) Watch and Ward of materials and/or installation and equipment's till their handing over to the department.
- (viii) Water/electricity required during execution shall be arranged by the agency.

### **1.5 SITE CONDITIONS**

All the equipment's and their installation shall be suitable for the environmental conditions encountered at the location.

### **1.6 INSPECTION OF SITE AND COLLECTION OF DATA**

The work is to be carried out in the existing working system and new equipment is to be integrated with the existing working equipment's. Minimum shut-down shall be ensured by the agency for installing and integrating of new equipment with existing equipment. The bidders are advised to inspect the site and acquaint him with the site before quoting.

### **1.7 INTER CHANGEABILITY**

All similar equipment's, materials, removable parts of similar equipment's etc. shall be interchangeable with each other.

### **1.8 INTERFERENCE WITH COMMUNICATION EQUIPMENT**

Suppressors or other protection devices shall be provided, if required as per schedule of quantities, wherever the sub-station installation is likely to interfere during the operation with any other electric or electronic equipment.

## 1.9 EXTENT OF WORK

The scope of work shall consist of cost of all materials, labour i/c supervision, installation, calibration, adjustments as required for commissioning of the sub-station. The term complete installation shall mean, not only, major item of the plant and the equipment's covered by these specifications, but also, incidental sundry components necessary for complete execution and satisfactory performance of installation with all labour charges, whether or not specifically mentioned in the tender documents, which shall be provided by the contractor at no extra cost.

## 1.10 COMPLETENESS OF TENDER

All fittings, unit assemblies accessories, hardware foundation bolts, terminals blocks for connections, cable glands and miscellaneous materials and accessories of items of work which are useful and necessary for efficient assembly and working of the equipment shall be deemed to have been included within the scope of the work in the tender and within the overall details for complete item whether they have been specifically mentioned or not.

## 1.11 DATA MANUALS AND DRAWINGS TO BE FURNISHED BY CONTRACTOR

### 1.11.1 After Award of Work

The contractor shall submit the following drawing within a fortnight of the award of the work or as specified in tender document which shall prevail, for approval by the department.

- (i) General arrangement or location drawing of the equipment complete with dimensions and clearances.
- (ii) General arrangement drawing of H.V. Panel, Transformers, M.V. panels, Earthing, Cable route etc. including details of grouting of channels / bolts of various equipments.
- (iii) All panels' schematics & wiring diagram including control wiring.
- (iv) Bar chart indicating general programme for supply, installation, testing and commissioning and handing over.
- (v) Any other drawing or data that may be necessary for the job.

### 1.11.2 Before Commencement of Installation

The contractor shall also furnish 3 copies of detailed installation, operation and maintenance manuals of manufacturers for all items of equipment together with all relevant data sheet, spare parts catalogues, repairs, assembly and adjustment procedure etc., in triplicate.

## 1.12 QUALITY OF MATERIALS AND WORKMANSHIP

All parts of equipment shall be of such design, size and material so as to function satisfactorily under all rated conditions of loading and operation. All components of the equipment shall have adequate factors of safety. Materials/components which are not conforming to standards laid down by Bureau of Indian Standards (BIS) shall be got approved from the department before use on the work.

The entire work of fabrication, assembly and installation shall conform to sound engineering practice and on the basis of "fail safe" design. The mechanical parts subject to wear and tear shall be of easily replaceable type.

The construction shall be such as to facilitate ease of operation, inspection, maintenance, and repairs. All apparatus shall also be designed to ensure satisfactory operation under working conditions as specified.

### **1.13 INSPECTION, TESTING AT MANUFACTURERS WORKS**

The contractor will be required to furnish such facilities as will be necessary for inspection of the equipment before dispatch at the manufacturer's works and also for witnessing such tests, at the works, if so required by the department. The contractor shall furnish information for this purpose and will also give sufficient notice regarding the dates proposed for such test to Inspection agency.

### **1.14 TEST CERTIFICATE**

Copies of all documents for routine, acceptance and type test certificates of the equipment carried out at the manufacturers premise shall be furnished to the department along with supply of the equipment.

### **1.15 DISPATCH OF MATERIALS AND STORAGE**

The contractor shall commence work as soon as the drawings submitted by him are approved. The contractor should dispatch all materials to site in consultation with the Department where suitable storage accommodation may be made available to him temporarily. For this purpose the programme of dispatches of materials shall be framed keeping in view the building progress so that suitable storage accommodation could be made available to the contractor. Safe custody of all machinery and equipment supplied by the contractor shall be his own responsibility till the final taking over by the Department.

### **1.16 COORDINATION WITH OTHER AGENCIES**

The contractor shall coordinate his work and cooperate with other agencies by exchange of all technical information like details of foundation if required, weight, over all dimensions, clearance and other technical data required for successful and proper completion of his portion of the work in relation to the work of others without any reservation. No remuneration should be claimed from the department for such technical cooperation. Care shall be taken not to damage the water proofing done in the case of substations constructed below ground level. If any unreasonable hindrance is caused to other agencies and any completed portion of the works has to be dismantled and redone for want of the cooperation and coordination by the contractor during the course of work, such expenditure incurred will be recovered from the contractor during the course of work, if the restoration work to the original condition of specification of the dismantled portion of the work was not under taken by the contractor.

### **1.17 CARE OF BUILDINGS**

Care shall be taken, while handling/ installing the equipment to avoid damage to the building. On completion of the installation, the contractor shall arrange to repair all damages to the building caused during plant installation so as to bring to the original condition. He shall also arrange to remove all unwanted waste materials from substation room and other areas used by him.

### **1.18 PAINTING AND PROTECTION**

All damages to painting during transport and installation shall be set right to the satisfaction of the department before handing over. All structural frame work for support of various items of equipment shall be given the final coat of paint of approved shade at site after erection is complete. Additional protection measures against corrosion shall be provided when installed in special environment.

### **1.19 TRAINING OF DEPARTMENTAL PERSONNEL**

The operation and maintenance staff of the CPWD shall be associated with the contractor's personnel during the installation, testing and commissioning of the equipment's.

### **1.20 COMPLETION DRAWING**

Three sets of completion drawings comprising the following shall be submitted by the contractor while handing over the installation:

- (a) Equipments layout drawing(s) giving complete details of the entire equipments.
- (b) Electrical drawings for the entire electrical equipments showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.
- (c) Schematic diagram of the entire sub-station installation.

### **1.21 FINAL INSPECTION AND TESTING**

When the installation is complete, the contractor shall arrange for inspection and testing of the installation. Test results obtained shall be recorded. The installation shall not be accepted until it complies with the requirement of these Specifications. The Sub Station installation shall be got inspected by the contractor from local licensee and/or Concerned electricity board and their clearance taken before energizing the Sub Station. All the observations/ deficiencies pointed out by the inspecting authorities shall be complied with by the contractor on priority. The department shall render all help and pay mandatory charges to concerned electricity board and local licensee, if any, in this regard.

### **1.22 DATE OF ACCEPTANCE**

The contractor shall operate the substation for a period of 5 days after it is energisation and train BSNL staff/ maintenance staff for operation of new equipment. The date of taking over of the substation shall be reckoned after its trouble free operation during the running in period.

### **1.23 GUARANTEE**

The contractor shall guarantee the entire sub-station installation as per specifications. All equipment's shall be guaranteed for one year from the date of completion/ Taking over (whichever is later) against unsatisfactory performance or break down due to defective design, manufacture, and installation. In case additional guarantee is provided by the manufacturer of equipment beyond this period , the same shall be passed on by the contractor to BSNL. The installation shall be covered by the conditions that whole installation or any part thereof found defective within one year from the date of taking over shall be replaced or repaired by the contractor free of charge.

The warranty shall cover the following: -

- (a) Quality, strength, and performance of materials used.
- (b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.
- (c) Satisfactory operation during the maintenance period.
- (d) Performance figures and other particulars as specified by the tenderer under schedule of guaranteed technical particulars.

### **1.24 AFTER SALES SERVICES**

The contractor shall ensure adequate and prompt after sales services in the form of maintenance personnel and spares as and when required with a view to minimizing the break down period. Particular attention shall be given to ensure that all spares are easily available during the normal life of installation.

**SECTION 3 PART- B****HIGH VOLTAGE PANEL****2.1 SCOPE**

These specifications cover the detailed requirements for supply, installation, testing and commissioning of High Voltage Panels.

**2.2 TYPE OF PANELS**

(a) Vacuum circuit breaker.

(b) Gas filled Circuit Breaker: These breakers are new in the market and are being used for 33 KV and above in power distribution. These may be used on selective basis based on their availability, serviceability, and cost.

(c) Gas insulated compact Switchgears with Vacuum Circuit Breakers. These are recently introduced and may be used in cases of space crunches judiciously. However the discussions shall be limited to only Vacuum Circuit Breakers.

**VACUUM CIRCUIT BREAKER****H.V. PANEL**

2.3.1 The Panel board shall be of indoor type, having the incoming sectionalisation and outgoing switch gears as per IS 13118 : 1991 of VCB, IEC 62271-100 for Breakers and 200 for Panels/ IS 3427 of switch board. The degree of enclosure protection shall be as per latest relevant specifications. Detailed requirements shall be in accordance with the schedule of works.

**2.3.2 Rating**

All panels assembled to form a board shall be suitable for the nominal operation voltage and rupturing capacity as specified. They should be rated as specified with a minimum of 800 Amps. and suitable for operation on 11 KV, 3 phase 50 Hz system. Type test certificate for the breaking capacity of the panel shall be supplied. A circuit breaker for a given duty in service is best selected by considering the individual rated values required by load conditions and fault condition.

**2.3.3 Type**

The HV Panel Board shall be metal clad, indoor, floor mounting, free standing type. It shall be totally enclosed dust, damp and vermin proof.

**2.3.4 General Construction**

Separately earthed compartments shall be provided for circuit breakers, bus bars, relay & instruments, CT&PT and cable boxes, fully and effectively segregating these from one another so that fault in any one compartment do not cause damage to equipment(s) in other compartment(s). The housing shall be of bolted construction to ensure compact and rigid structure, presenting a neat and pleasing appearance. The sheet steel used should not be less than 2 mm thick. The panels shall be bolted together to form a continuous flush front switch gear suitable for front operation of board and for extension at both ends.

**2.3.5 General Design Aspects**

The HV panel board shall be designed such that the switchgear, instruments, relays, bus bars, small wiring etc. are arranged and mounted with due consideration for the following:-

- (i) Facility for inspection, maintenance and repairs of testing terminals and terminal boards for ease of external connection.
- (ii) Minimum noise and vibrations.
  - Risk of accidental short circuits and open circuits.
  - Secured and vibration proof connections for power and control circuits.
- (iii) Risk of accidental contact and danger to personnel due to live connections.
- (iv) Mountings at approachable height.

**2.4 CIRCUIT BREAKER****2.4.1 General Arrangements**

Contractor

EE(E)

The circuit breaker panels shall be complete with the following:

- (a) Racking in / Racking out mechanism.
- (b) Isolating plugs and sockets.
- (c) Mechanical inter-locks and safety shutters.
- (d) Mechanical ON/OFF indicator.
- (e) Minimum of 4 NO and 4 NC Auxiliary contacts directly operated by the circuit breaker. Additional NO & NC contacts can be provided with auxiliary contractors.
- (f) Suitable tripping arrangement.

#### 2.4.2 Type

The circuit breaker shall be of horizontal/ vertical isolation, horizontal draw-out pattern.

#### 2.4.3 Breaker Truck

The breaker carriage shall be fabricated from steel, providing a sturdy vehicle for the circuit breaker and its operating and tripping mechanism. The carriage shall be mounted on wheels, moving on guides, designed to align correctly and allow easy movement of the circuit breaker and for removing the carriage for inspection and maintenance purposes. Vacuum interrupters shall be hermetically sealed and shall be designed for minimum contact erosion, fast recovery of dielectric strength, maintenance free vacuum interrupter, suitable for auto reclosing. The drive mechanism shall preferably be provided with facility for pad locking at any position namely, "Service", "Test" and "Fully Isolated". It should be possible for testing the circuit breaker for its operation without energizing the power circuit in the "Testing" position. The contacts shall be made only after the breaker is inserted into service position. Interlocking should prevent contacts from being disconnected if circuit breaker is tried to be moved from service position.

#### 2.4.4 General Features

Single break contacts are provided in sealed vacuum interrupter.

#### 2.4.5 Rating

The circuit breakers shall be continuously rated as specified with a minimum rated of 630 Amps. with voltage rating and breaking capacity as specified.

#### 2.4.6 Operating Mechanism

The operating mechanism shall be one of the following as specified:-

Manually operated spring charged / motor wound spring charged with both mechanical and electrical release for closing. The operating mechanism shall be trip free.

2.4.7 External auxiliary supply shall be made available for charging motors & heaters operation.

### 2.5 BUS BAR SECTION

#### 2.5.1 General Requirement

The switch board shall be **single bus bar pattern** with air insulated encapsulated bus bars housed in a separate compartment, segregated from other compartments.

#### Material

The bus bars shall be of high conductivity electrolytic copper rated as specified with a minimum rated current of 630 Amps. The bus bars shall be sized for carrying the rated and short circuit current without over-heating. Maximum bus bar temperature shall not exceed 95 degree C.

### 2.6 CURRENT TRANSFORMER

#### 2.6.1 General Requirements

Accommodation shall be provided in the circuit breaker panel to mount one set of three numbers dual core dual ratio CTs for metering and protection purposes. Access to the CTs for cleaning, testing or changing shall be from the front, back or top of the panel.

#### 2.6.2 Rating

Dual core & dual ratio CTs of suitable burden (but not less than 15 VA) shall be

preferred with 5 Amps secondary. The ratio shall normally be as specified in Schedule of work or as approved in the drawings of HT/MV panel:(e) such other as required

**Note:** CT ratio shall be compatible with the loading pattern on HV side.

The CTs shall conform to relevant Indian Standards. The design and construction shall be robust to withstand thermal and dynamic stresses during short circuits.

Secondary terminals of CTs shall be brought out suitably to a terminal block which will be easily accessible for testing and terminal connections. The protection CTs shall be of accuracy class 5 P 10 of IS 2705 Part III 1992. The metering CTs shall conform to the metering ratio and accuracy class 0.5 of IS 2705 1992 for incomer and class 1 for outgoing panels.

## 2.7 VOLTAGE TRANSFORMER

### 2.7.1 General Requirements

A voltage transformer of burden not less than 100 VA and of proper ratio as specified shall be provided at the incoming panel. The accuracy class for the VT shall be class 0.5 as per IS 3156 Parts I to III for incomer and class 1 for outgoing panels. The transformer shall be of cast epoxy resin construction. It shall be fixed/withdrawable type. HRC fuses/ MCBs shall be provided on both HV and LV sides.

## 2.8 PROTECTION AND TRIPPING ARRANGEMENT

### 2.8.1 Protection

The Relays shall be microprocessor based numerical relays with O/L, E/F and S/C protection Tripping relay shall be used for tripping signal to the Shunt Trip Coil of Circuit Breaker operating on 24 V/ 30 V D C supply / Power pack / 110 V VT supply.

**Note:** 24V/ 30V DC shall be provided through 2 No. SMF batteries of 12/ 15 volts of minimum 26 AH capacity with a battery charger as per recommendation of the manufacturer both for protection as well as indications.

**Alternatively,** Power Pack converters fed through PT/ 230V externally could be provided with 2 Nos., 12/ 15 volt, 7 AH SMF batteries (Power pack with condenser/ capacitor backup are also available which do not need batteries, these should not be used) for tripping. In cases where tripping is fed through PT, VA burden of PT shall be suitably increased (say 200 VA) as recommended by the manufacturer depending upon the number of panels and connected controls. In addition, external 24 volt / 30 volt DC supply shall be provided for indications etc. through 2 No. SMF batteries of 12/ 15 volts of minimum 26 AH capacity with a battery charger as per recommendation of the manufacturer.

### 2.8.2 Relays

Over current Relays shall have adjustable setting for current from 50% to 200% and earth fault from 10% to 40% or 20% to 80%. These should be of manual reset type. All relays shall have a LED indicator which will indicate operation for each function. It shall be possible to reset it only by manual operation. The number and types of relays shall be as specified.

## 2.9 SMALL WIRING

The small wiring shall be carried out with minimum 1.5 sq. mm or specified by Approved OEM FRLS/ HFFR insulated copper conductor cables. CT wiring shall be done with minimum 2.5 sq mm wires with colour code: RYB, Gray for auxiliary DC circuits and Black for auxiliary AC circuits. The wiring shall be securely fixed and neatly arranged to enable easy tracing of wires. Identification tags shall be fitted to all wire terminals to render identification easy and to facilitate checking in accordance with IS 375. Necessary terminal blocks and cable entries shall be provided for RTD relay wiring, power supply etc.

## 2.10 METERING INSTRUMENT, PANEL ACCESSORIES (DIGITAL)

### 2.10.1 Metering

Energy metering shall be done either on the incomers or on the feeders as specified in Schedule of work.

### 2.10.2 Voltage Selection Scheme

Where a bus coupler is incorporated and only one incomer feeder (out of two available)

is intended to be operated at a time, a VT Transfer Relay shall be incorporated to provide necessary potential for metering. This will be necessary when energy metering is done on individual feeders or where VT supply is used for trip circuits. Alternatively PTs shall be provided on both the bus sections (incomers) with individual metering on each incomer.

### 2.10.3 Instrument Panels

The instrument panel shall form part of the housing. Relays, meters and instruments shall be mounted as per general arrangement drawings to be submitted by the tenderer. They shall be preferably of flush mounting type at a maximum height of 1800 mm.

### 2.10.4 Instrumentation

(a) A voltmeter of class 1.5 accuracy as per IS 1248 shall be provided at each incomer panel, with selector switch. The instrument shall be calibrated for the ranges specified.

(b) Energy meters of class 1.0 conforming to IS 722 (Part IX) and power factor meter of class of accuracy of 2 shall be provided, if specified.

(c) Ammeter of specified range of class 1.5 accuracy as per IS 1248 shall be provided at both incomer and outgoing panels along with necessary selector switches.

(d) The panel assembly shall also take care of the following requirements:

i) Lamp indication shall be provided to indicate ON/ OFF (by red green respectively) of switch gear.

(ii) Panel illuminating lamp.

(iii) Mechanical indication for spring charged status. If possible, an indicating lamp could be provided.

(iv) Lamp indicating tripping at fault status.

(v) Healthy trip supply shall be indicated by clear lamp.

(vi) Separate fuses/ MCBs shall be provided for lamps, heaters, voltmeters and other instrumentation etc. on each panel.

(vii) Anti condensation space heaters shall be provided, and shall be suitable for operation on 240 V, 1 phase, 50 Hz A.C. for each panel if specified.

(viii) Where there is more than one incomer and bus sections, these shall be castle key interlocked as per interlocking scheme as specified.

### 2.11 CABLE BOXES

Cable boxes shall be situated in a compartment at the rear / side of the housing as specified.

### 2.12 CABLE ENTRY

Provision for top (bus ducts preferred for top entry) / bottom or such other side entry shall be made as per requirement with sufficient head room for cable termination. 3 mm thick removable gland plate shall be provided for cable termination.

### 2.13 EARTHING

The earthing of the breaker body and moving portion shall be so arranged that the earthing of the non-current carrying structure to the frame earth bar is completed well before the main circuit breaker plugs enter the fixed house sockets. The entire panel board shall have a common tinned copper earth bar of suitable section with 2 earth terminals for effectively earthing metallic portion of the panels.

### 2.14 INSTALLATION

The installation work shall cover assembly of panels lining up, grouting the units etc.

In the case of multi panels switch boards after connecting up the bus bar all joint shall be insulated with HV insulation tape or with approved insulation compound. A common earth bar shall be run preferably at the back of the switch board connecting all the sections for connecting the earth system. All protection, indications & metering connections and wirings shall be completed. Where trip supply battery is installed, the unit shall be commissioned, completing initial charging of the batteries. All relay instruments and meters shall be mounted and connected with appropriate wiring. Calibration checks of units as necessary and required by the licensee like CTs, VTs Energy Meters etc. shall be completed before pre commission checks are undertaken.

**2.15 TESTING AND COMMISSIONING**

~~Procedure for testing and commissioning of relay shall be in general accordance with good practice. Commissioning checks and tests shall include in addition to checking of all small wiring connections, relays calibration and setting tests by secondary injection method and primary injection method. Primary injection test will be preferred for operation of relay through CTs. Before panel board is commissioned, provision of the safety namely fire extinguishers, rubber mats and danger board shall be ensured. In addition, all routine megger tests shall be performed. Checks and test shall include following:~~

~~(a) Operation checks and lubrication of all moving parts.~~

~~(b) Interlock function checks.~~

~~(c) Continuity checks of wiring, fuses etc. as required.~~

~~(d) Insulation tests.~~

~~(e) Trip test and protection gear tests.~~

~~(f) The complete panel shall be tested with 5000 V megger for insulation between poles and poles to earth. Insulation test of secondary of CTs and VT to earth shall be conducted using 500 V megger.~~

~~(g) Any other tests as may be required by the Licensee / Inspector shall be conducted.~~

~~(h) Where specified, the entire switch board shall withstand high voltage test after installation.~~

~~(i) Any other test required by the consignee/ inspecting officer.~~

**SECTION 3 PART- C**  
**SPECIFICATION FOR TRANSFORMER**

**GENERAL DATA:-**

i.	No. of Transformer required	ONE (DRY TYPE).
ii.	Single or Polyphase	Polyphase
iii.	No. of phases on system	3 phase
iv.	Frequency	50 HZ
v.	Double wound or Auto Transformer	Double Wound
vi.	Winding Material	Copper Wound
vii.	Type of cooling	AN
viii.	Rated voltage	H.V. side      11 KV L.V. side      433 volts.
ix.	Rated KVA	1600 KVA
x.	Steps required	+5% to-15% in steps of 2.5%
xi.	Tapping	Off Load
xii.	Vector Group	Dyn-II
xiii.	Neutral	Neutral to be brought out separately on LV side for earthing.
xiv.	Parallel operation	Not applicable
xv.	Transformer size limitation	As per standard

**CONSTRUCTION DATA**

- |    |                        |   |
|----|------------------------|---|
| 1. | Type of installation   | INDOOR  |
| 2. | Terminal details       | On HV Side ( Cable end box suitable for 3 core 150-300sqmm XLPE cable)<br>On LV Side (Bus trunking termination suitable for 2500Amps.)                      |
| 3  | Extra fitting required | Lifting lugs, rating & diagram<br>plates, with NO/NC contact point, thermometer pocket,<br>Four standard rollers, earthing lugs, air release device<br>etc. |
| 4  | Make                   | BSNL Approved makes   |

**TESTS(for transformer)**

All routine and other tests prescribed by relevant IS shall be carried out at the manufacturers works before the dispatch of the transformer. The copies of the test certificate shall be furnished to the deptt.

**TEST AT SITE**

In addition to tests at manufacturer's premises, pre commissioning checks and tests shall be done before energization. The following tests are to be particularly done before cable jointing or connecting the busbar trunking.

- a) Insulation test between H.V. to earth and H.V to M.V with a 5000 volts megger.
- b) Insulation test between M.V to earth with 500 volts megger.

All tests shall be carried out by the contractor in the presence of the Engineer-in-charge.

**SECTION 3 PART- D**  
**RING MAINS UNIT (RMU)**

**1.) SCOPE:**

This specification is intended for the design, manufacture, assembly, testing, inspection, performance guarantee and delivery to site, installation and commissioning of factory-built, RMU type, SF6 gas insulated metal-enclosed switchgear.

This specification shall be read in conjunction with Schedule of Quantities.

**2.) STANDARDS AND CODES:**

Unless otherwise specifically mentioned in the document, the design, manufacture, testing and performance of all equipment shall conform to latest edition of the following standards:

Standard	Description
IEC60529	Classification of degrees of protection provided by enclosures of electrical equipment
IEC60298	A.C metal-enclosed switchgear and control gear for rated voltages above 1KV and up to and including 52KV
IEC1330	High voltage/Low voltage prefabricated substations
IEC60694	Common specification for HV switchgear standards
IEC60265	High-voltage switches-Part 1: Switches for rated voltages above 1kV and less than 52 kV
IEC60801	Monitoring and control
IEC60185	Current Transformers
BS159	BusBar
IEC60137	Bushings
CP 1013(British Code of Practice)	Earthing
IEC60255	Specification for Static Protective Relays
BS6231	Wires and wiring
IEC61000	Electromagnetic compatibility
IEC60129	Alternating current Disconnecter (isolators) and earthing switches
IEC62271-200	Metalenclosed BS5311 switchgear
IEC62271-100	MVAC circuit breaker
IEC60060-1 BS923	High Voltage test technique
IEC60947-4-1	Control Gears
IEC60376	Specification of SF6 gas in RMU

Sr.No.	Parameters	
1	Existing system details	11KV,3Ph,50Hz, Neutral Solidly earthed
2	RMU Configuration	As per BOQ
3	Type of ring main unit	Metal enclosed compact type
4	Insulating gas & nominal operating gas pressure	SF6 & 0.3 bar or as per manufacturer's standard.
5	Rated voltage & frequency	11kV & 50Hz
6	Highest system voltage	12 kV
7	Rated withstand voltage at power frequency of 50Hz. (in kV rms)	28kVrms
<b>8</b>	<b>Rated current rating of inside the cubicle</b>	
8.1	Busbar	630 A
8.2	Isolator	630 A
8.3	Vacuum Circuit Breaker	630 A (as per BOQ)
9	Rated Breaking Capacity of VCB ( in kA)	21 kA for 3sec
10	Rated Making capacity	62.5 kA (peak)
11	Rated internal arc capacity	21kA for 1sec.
12	Internal Arc classification	As per BOQ
13	Relays	Self-powered numerical relay providing over current & earth fault protection included in VCB
14	Control Supply	As per BOQ.
15	HT metering	Multifunction meter of accuracy class1.0 to be provided
16	Power Cable entry	Bottom
17	Isolator/ Breaker indication	Mechanical indication showing the "OPEN" and "CLOSE" position of Isolator/circuit breaker.
18	Bus-Bar	The bus bar shall be made of high conductivity, electrolytic copper and be designed to carry rated current continuously within the cubicle. Temp. of bus bars and busbars connection within the cubicle when carrying rated current at rated frequency shall not exceed the temperature specified in relevant I.S. Tap off to outgoing also shall be for rated current.
19	Rated Ingress Protection Class of enclosure	IP 2X for front cover mechanism of RMU IP 3X for cable covers of RMU
20	Current Transformers	Current Transformers shall be considered as per manufacturer's recommendation.
21	Voltage Transformers	Voltage Transformer shall be considered as per manufacturer's recommendation

### 3.0 Constructional Features (General)

SF6 Insulated RMU, comprising of Vacuum Circuit Breakers as per configuration indicated in the BOQ, with self-powered over current & earth fault relays.

RMU shall be made of robotically welded stainless steel with all live parts i.e. load break cable switch, VCB, Bus bars; inside stainless steel tank of not less than 2.0 mm thick and SF6 gas shall be used as dielectric medium to make it compact. The operating mechanism of the switches and breakers shall be outside the SF6 tank and accessible from front. The tank should be filled with SF6 gas at adequate pressure. The degree of protection for gas tank should be IP 67. Moreover, the stainless Steel Gas Tank shall confirm to the sealed pressure system as per IEC and ensure the gas leakage to 0.1% per year requiring no gas filling for its functional life.

It should consist of an SF6 cubicle housing a load break switch and an earthing switch. Busbars and all electrical connections are located inside the tank. The operating shafts for the switches should be have rotary seals where they enter the SF6 cubicle. Front covers containing the mimic diagram and having a degree of protection IP2X close the fronts.

Circuit breaker should be consisting of an SF6 cubicle housing a Vacuum circuit breaker unit and a disconnecter earthing switch. An integrated relay and related CTs is used for tripping of the circuit breaker on O/C+ E/F. Bus bars and all electrical connections should be located inside the tank. The operating shafts for the switches should be have rotary seals where they enter the SF6 cubicle. Cable bushings should be located on the front of the SF6 cubicle in a separate cable compartment. Front covers containing the mimic diagram having a degree of protection IP2X seal off the fronts. The circuit breaker main circuit should be

Connected in series with a three-position disconnecter earthing switch. The operation between circuit breaker and disconnecter earthing must be interlocked.

Circuit breaker complete with operating mechanism, self-powered, static type O/C, E/F protection relay with associated current transformers shall be used for control and protection of feeder. An integral cable earthing switch with full making capacity shall be provided.

General finish shall be totally enclosed, metal enclosed, vermin and dust proof suitable for tropical climate use as detailed in the specification.

The load break switches along with earthing switches shall be capable for breaking rated full load current. The bus bars should be fully encapsulated by SF6 gas inside steel tank.

The circuit breaker shall be fitted with static type self-powered relay (with flag indicator for short circuit & earth fault); inside the front cover to avoid any tampering. The same shall be used in conjunction with suitable CT's and Tripping Coil for fault tripping of the Circuit Breakers. CT's shall be mounted on cable inside cable compartment.

The CT & PT burden shall be considered as per manufacturer's recommendation.

#### 4.0 Environmental Conditions

All materials supplied and installed shall be capable of operating without fault in a tropical climate, which exhibits a high level of ultra-violet radiation and severe thunderstorms. Relevant environmental conditions are listed as follows:

- Maximum ambient air temperature :45°C
- ReferenceAmbientTemperatureforDesign:40°C
- Minimum ambient air temperature :0°C
- Maximum relative humidity :100%
- Average thunderstorm days per annum :50
- Altitude: Within 1000 m above mean sea level

## 5.0 Distribution Network Electrical Parameters

The main parameters of the BSNL:

- Nominal system voltage :11kV(rms)
- Highest system voltage :12kV(rms)
- Number of phases :3Phase,3wire
- Frequency :50Hz
- Type of earthing :Solidly Earthed
- Power frequency withstand voltage :28 kV for 1 min
- Basic impulse withstand voltage :75 KV peak
- Short time withstand capacity (minimum) :21kA for 3sec
- Climatic Condition : Moderately hot

## 6.0 RMU Design Features

The key design features include those that relate to:

- Availability, maintainability and lifespan
- Ability to operate in severe outdoor environmental conditions
- Immunity to electrical stress and disturbance
- Acceptable insulation properties
- Acceptable surge suppression characteristics

In these and all other specified respects, the RMU shall meet or exceed the cited standards or where appropriate, other equivalent industry standards.

## 7.0 Availability, Maintainability and Life Span

### 7.1 Availability:

The RMU shall be designed to have a fully enclosed metal housing combined with the single- phase insulation of all primary live parts to reduce the risk of internal faults to an absolute minimum and to provide a high degree of safety as well as availability. Nevertheless, manufacturer standard designs shall be used to the fullest extent possible.

To ensure high degree of availability, the RMUs shall be fabricated, assembled, and finished with workmanship of the highest production quality and shall conform to all applicable quality control standards. All materials comprising the RMU shall be new, unused, and of the best industrial grade, and the RMU shall incorporate all recent improvements in both design and materials. All components shall be of current production from reliable component manufacturers.

## 8.0 Maintainability:

BSNL intends to be self-reliant for RMU maintenance. To this end, the Bidder shall provide the support, documentation, necessary to operate and repair the RMU. This shall include, but shall not be limited to the maintenance manuals and repair kits.

Preferably RMU designs are such that do not require periodic preventive maintenance and inspections. If periodic maintenance is required, it shall be possible to perform all such working the field without requiring the associated distribution network circuits to be de-energized.

#### **9.0 Life Span:**

RMU shall have a design life of at least 15 years from the date of final acceptance.

#### **10.0 General**

The RMUs shall be designed specifically for outdoor installation and, in this respect, shall be suitable for continuous operation in a adverse weather that includes exposure to severe frequently occurring rain. They shall also be suitable for conditions in which they will be exposed to heavy industrial pollution, and high levels of airborne dust.

In addition to the above, materials promoting the growth off of fungus susceptibility to corrosion and heat degradation shall not be used, and steps shall be taken to provide rodent proof installations.

All live parts, high voltage components, excluding the HV cable termination of the switchgear shall be insulated/ protected in SF<sub>6</sub> to provide complete proofing against dangers of flashover between phase and earth and between phases. In particular, the equipment shall be climate free in that no high voltage connection will be exposed to the environment.

#### **11.0 Corrosion Protection**

The fabricated parts are pre treated using 7 tank process and then coated by layer of zinc phosphate. A finish coat with high scratch resistance or epoxy powder finish paint shall be applied over the primer. The coat thickness shall be minimum 60 microns.

#### **12.0 Material**

Except for main tank and external hardware which made of stainless steel, all structural steel and outer enclosure as well as nuts and bolts etc. shall be of CRCA steel with epoxy powder finish paint.

#### **13.0 Immunity to Electrical Stress and Disturbance**

The electrical and electronic components of the RMU shall conform to relevant standards concerning insulation, isolation, and immunity from electromagnetic interference, radiated disturbance, and electrostatic discharge.

#### **14.0 Minimum Insulation of Equipment**

The RMUs shall have SF<sub>6</sub> gas-insulated type stainless steel tank with joints inside tank. All live parts shall be fully insulated throughout their joints.

**15.0 Surge Voltage Suppression**

The RMU equipment shall be designed to operate on input power containing voltage spikes. Equipment shall be protected against part failure or malfunction such as intermittent firing of triggering devices due to surge voltage spikes occurring randomly over the instantaneous supply voltage.

**16.0 Name plate Information**

RMU name plate information shall be determined in agreement with BSNL. This information may include for example:

- . Name of manufacturer and country
- . Type, design, and serial number
- . Rated voltage and current
- . Rated frequency
- . Rated symmetrical breaking capacity
- . Rated making capacity
- . Rated short time current and its duration
- . Rated Duty Cycle
- . Month and year of supply

**17.0 Danger Board:**

The Danger Board plate as per relevant IS shall be riveted on the front plate of the RMU.

**18.0 Sulphur Hexa Fluoride Gas (SF6GAS):**

The SF6 gas shall comply with IEC60376, 60376A and 60376B and shall be suitable in all respects for use in RMUs under the stipulated service conditions. The SF6 shall be tested for purity, dew point air hydrolysable fluorides and water content as per IEC 60376 ,60376A and 60376B and test certificate shall be furnished to the owner indicating all the tests as per IEC60376.

**19.0 ENCLOSURE:**

All enclosures shall be sized to provide convenient access to all enclosed components. It shall not be necessary to remove any component to gain access to another component for maintenance purposes or any other reason.

The enclosures shall also be designed to ensure that the enclosure remains rigid and retain its structural integrity under all operating and service conditions with and without the enclosure door closed.

**20.0 Outer Enclosure:**

The RMU enclosure (Outer) shall be made up of CRCA steel of 2 mm thickness. The complete RMU enclosure shall be of degree of protection IP 54. The enclosure shall provide full insulation, making the Switchgear insensitive to the environment like temporary flooding, high humidity

etc. The active parts of the Switchgear shall be maintenance-free and the unit shall be of minimum maintenance.

Each switchboard shall be identified by an appropriately sized label which clearly indicates the functional units and their electrical characteristics.

The Switchgear and Switchboards shall be designed such that the position of the different devices is visible to the operator on the front of the Switchboard and operations are visible.

In accordance with the standards in effect, the switchboards shall be designed so as to prevent access to all live parts during operation without the use of tools.

### **21.0 Inner enclosure (Main tank)**

The tanks shall be robotically/TIG welded stainless steel sheet of minimum 2mm to ensure leak rate less than 0.1% per year. The tank shall be sealed and no handling of gas is required throughout the service life. However, the SF6 gas pressure inside the tank shall be constantly monitored by a temperature compensating gas pressure indicator offering a simple go, no-go indication. The gas pressure indicator shall be provided with green pressure and red pressure zones. There shall be one Non-return valve to fill up the gas. The manufacturer shall give guarantee for maximum leakage rate of SF6 gas will be lower than 0.1% per year. There shall be no requirement to top up the SF6 gas. The minimum degree of protection of the inner enclosure shall be IP67.

The compact RMU Unit shall be provided with a pedestal made up of M.S. Angle to mount the unit on plain surface. The height of the bottom of cable box shall be 310 mm (minimum) to provide the turning radius for the HT cable termination.

### **22.0 Earthing**

- 22.1.1 There shall be continuity between metallic parts of the RMUs and cables so that there is no dangerous electric field in the surrounding air and the safety of personnel is ensured.
- 22.1.2 The RMU frames shall be connected to the main earth bars, and the cables shall be earthed by an Earthing Switch having the specified short circuit making capacity.
- 22.1.3 The Earthing Switch shall be operable only when the main switch is open. In this respect, a suitable mechanical fail-proof interlock shall be provided.
- 22.1.4 The Earthing Switch shall be provided with a suitable earthing terminal for connection to an earthing conductor having a clamping screw suitable for the specified earth fault conditions. The connection point shall be marked with the earth symbol.
- 22.1.5 The Earthing Switch shall be fitted with its own operating mechanism.

In this respect, manual closing shall be driven by a fast acting mechanism independent of the operator's action.

- 22.1.6 All parts of the switchgear metal enclosure, metal relay and instrument cases, cable glands, earthing terminals and other metal work on switchgear shall be connected to earth by means of main and subsidiary earth bus bars.
- 22.1.7 The switchgear earth bar and earth conductors shall be of high conductivity copper and its sizes shall be minimum 90sq.mm to carry the rated short circuit currents of the switchgear.
- 22.1.8 All metal parts of the switchgear which do not belong to main circuit and which can collect electric charges causing dangerous effect shall be connected to the earthing conductor. Each end of conductor shall be terminated by M12/equivalent quality and type of terminal for connection to earth system installation. Earth conductor location shall not obstruct access to cable terminations.
- 22.1.9 The following items are to be connected to the main earth conductor by rigid copper conductors (a) earthing switches (b) Cable sheath or screen (c) capacitors used in voltage control devices, if any.
- 22.1.10 The metallic cases of the relays, instruments and other panel mounted equipment's shall be connected to the earth bus. The colour code of earthing wire shall be green. Earthing wires shall be connected on the terminals with suitable clamp connectors and soldering shall not be permitted.

### **23.0 Circuit Breakers**

The Circuit Breakers shall be maintenance free and, when standing in front of the RMU with enclosure doors open, their positions shall be clearly visible. The position indicator shall provide positive contact indication in accordance with IS 9920. In addition, the manufacturer shall prove the reliability of indication in accordance with IS 9921.

The breakers shall have three positions (or states), i.e., Open, Closed, and Earthed, and shall be constructed in such a way that natural interlocking prevents unauthorized operations. They shall be fully assembled, tested, and inspected in the factory.

An operating mechanism shall be used to manually close the Circuit Breaker and charge the mechanism in a single movement. It shall be fitted with a local system for manual tripping. There shall be no automatic reclosing. The Circuit Breaker shall be capable of closing fully and latching against the rated making current. Mechanical indication of the OPEN, CLOSED, and EARTHED positions of the Circuit Breaker shall be provided.

The Circuit Breaker closing mechanism is of the spring operated type, it shall not be possible for the Circuit Breaker to close until the spring is fully charged and the associated charging mechanism is fully ready for closing. An external spring charging handle is required to charge the spring; it shall be ensured that the same is not allowed to move during release of the spring energy. Alternatively, it shall not be possible to release the spring energy until the

charging handle is completely disengaged from the mechanism. A visual mechanical indicating device shall be provided to indicate the status of the spring, i.e., SRING CHARGED or SPRING FREE. It shall be possible to charge the spring when the Circuit Breaker is closed and, if the spring is released, the Circuit Breaker shall not open. Nor shall this operation result in any mechanical damage to the component of the Circuit Breaker or its operating mechanism. Alternatively, a fast acting reflex mechanism for Circuit Breakers is also acceptable.

The circuit breaker shall be fitted with a mechanical flag, which shall operate in the event of fault occurrences. The breaker indications ON and OFF positions shall be indicated by suitable flag. For ON position indication by Red flag and OFF position indication by Green flag shall be provided.

The circuit breaker shall be operated by the same unidirectional handle or switch. The rated operating sequence shall be O-3min-CO-3min-CO.

Each Circuit Breaker shall operate in conjunction with a suitable protection relay under lateral circuit phase and earth fault conditions.

#### **24.0 BUSBARS:**

The three nos. of continuous Busbars made up of copper of rating 630A shall be provided. The Short time rating current shall be minimum 18.4 KA for 3 seconds for 12 kV. All joints and connectors shall be SF6 insulated in accordance to this specification. Any component directly connected to the power cables shall also be capable of Withstanding the DC test voltage applied to the cables. Cross section of the busbar shall not be less than that stated in GTP.

#### **25.0 Current Transformers**

A panel shall be provided in each circuit breaker enclosure to mount a three-phase, single-core, CT for protection purposes. CT access for maintenance or any other purpose shall be from the rear back of these panels.

The CTs shall conform to IS 2705. The design and construction shall be sufficiently robust to withstand thermal and dynamic stresses during short circuits. Secondary terminals of CTs shall be brought out suitably to a terminal block, which will be easily accessible for testing and terminal connections.

#### **26.0 Cable Termination**

Each Cable compartment shall be provided with three bushings of adequate sizes to terminate the incoming & outgoing XLPE cables of sizes specified in BOQ. There shall be enough height from the base of the mounted switchgear so that the cables can be bent and taken vertically up to the bushings. The Cable termination shall be done by Heat shrinkable Termination method so that adequate clearances shall be maintained between phases for Termination. Access to all the cables

should be possible from the front of RMU. Cable Termination boots shall be supplied by the switchgear manufacturer.

## **27.0 HT Metering**

There shall be a multi-function meter for monitoring power and energy parameters, of accuracy class 1, along with measuring CT & PT for HT metering.

## **28.0 Front covers**

### **28.1 Other Main Features of RMU:**

The front cover contains the mimic diagram of the main circuit with the position indicators for the switching devices. The voltage indicators are situated on the front panels. Access to the cable bushings is in the lower part of each module.

### **28.2 Position indicators**

The position indicators are visible through the front cover and are directly linked to the operating shaft of the switching devices.

### **28.3 Voltage indicator**

The voltage indicators are situated on the front cover, one for each module, and indicate the voltage condition of each incoming cable. Identification of the phases is achieved with labels L1, L2 and L3 on the front of the voltage indicators. The voltage indicator satisfies the requirements of IEC61243.

### **28.4 Cable compartment**

It should be possible to terminate Al XLPE incoming & outgoing cables of sizes as indicated in BOQ, in each cable compartment. The access to the compartment will be possible by removing the cable cover, only when earth switch is ON. Cable Compartments of outdoor RMU should be Arc Proof and interlocked with respective Earth Switches. Each module has a separate cable compartment that is segregated from each other by means of a partition wall. A partition wall should be fitted to divide the cable compartment from the rear side of the switchgear. In case of an arc inside the tank, followed by the opening of the pressure relief, the partition wall prevents the hot gases flowing out from the pressure relief to enter the cable compartments. All covers are removable. The ground continuity is achieved when the covers are in place by means of hinged connections.

### **28.5 Power connection:**

The cables are installed in the dedicated compartment below the mimic front cover. At the bottom of the cable compartment, an earthing bar system made of copper/GI with a minimum cross section of 150 mm<sup>2</sup> should be fitted. In each compartment the earthing bar should be fitted with 4 screws M10. The earthing system is connected to the tank by a copper bar, which rises up to the connecting point of the tank behind the rear partition wall on the middle of the switchgear.

### **28.6 Interlocking:**

The mechanism for the cable switch should be provide a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position.

The mechanism for the T-off switch should be provide a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position. The mechanism for the VCB and the disconnecter-earthing switch should have a built in interlocking system to prevent operation of the disconnecter-earthing switch when the VCB is in the closed position. Further, it should not be possible to Open the Cable doors unless the Earthing Switch is Turned ON. In case the Cable door is accidentally left open a positive interlock shall prevent operation of Load Break Switch and Isolators / Breaker from any operation.

### 28.7 Current Transformers

All current transformers should be complying with IEC60185. Current transformers should be of dry type, with ratings and ratios as required. Cable current transformers used in circuit breaker modules should be maximum 100mm wide. Current transformers used in metering cubicles should be having dimensions according to DIN 42600, Narrow type. Current transformer shall be placed in the cable covers so that it can be easily replaced at site without removing the bushings.

### 28.8 Padlocking facilities:

Circuit breakers, switches and earthing switches can be locked in the open or closed position by 1 to 3 locks.

### 28.9 Type and Routine Tests:

According to the composition of the switchboard, following type test certificates shall be submitted:

- i. Impulse with stand test,
- ii. Temperature-rise test,
- iii. Short-time withstand current test,
- iv. Mechanical operation test,
- v. Checking of degree of protection,
- vi. Switch, circuit breaker, earthing switch making capacity.
- vii. Switch, circuit breaker breaking capacity.
- viii. Internal arc withstand
- ix. Checking of partial discharge on complete unit

In addition, for switches, test reports on rated breaking and making capacity shall be supplied.

For earthing switches, test reports on making capacity, short-time withstand current and peak short-circuit current shall be provided.

The following routine tests shall be carried out at factory & shall include the following:

- I. Power frequency withstand test.
- II. Insulation resistance test
- III. Measurement of circuit resistance.
- IV. Functional tests.

### 29.0 Drawings

The design of layout and general arrangement of RMU components along with complete dimensions shall be submitted along with the offer. After placing the order the bidder shall submit to Engineer in Charge :

- i. Complete assembly drawings of the switchgear showing plan, elevation and typical sectional view.
- ii. Panel base plan showing locations of channel sills, foundation bolts and anchors, floor plans and openings.
- iii. Single Line Diagram
- iv. Complete wiring diagram including terminal wiring designations.

- v. Schematic control diagram.
- vi. Complete terminal block details, showing ferrule numbers wire destinations.  
The following shall be submitted on delivery of panels:
  - a. 4 nos.of Instruction and operation manual
  - b. 4 sets of all approved drawings.
  - c. 4 Sets of operating handles, spring charging handle and door keys

**SECTION 3 PART-E**  
**M.V. PANELS**

**4.1 SCOPE**

This Section covers the detailed requirements of medium voltage switch panel for 415 V, 3-phase 50 Hz 4 wire system. These shall be branded and/or assembled/ fabricated from a factory of repute (**CPRI Approved**). All switchgears shall be fully rated at an ambient of 40°C.

**4.2 TYPE OF PANEL**

The medium voltage switch board panel shall comprise of any one of the following types of switchgears or combination thereof as specified:

(a) Air Circuit breakers draw out or fixed type.

(b) Switch Disconnecter Fuse Units fixed type, MCCBs of suitable Ics ratings. MCCBs shall invariably be Current Limiting type. Features like Double Break, Positive Isolation functions shall be preferred. The Panel shall be indoor type having incoming sectionalization and outgoing switchgears as specified. The design shall be cubical type. The degree of enclosure protection shall be IP 42 as per IS 13947 (Part-I).

**4.3 M V PANEL****4.3.1 General Construction**

The switchboard shall be floor mounted free standing totally enclosed and extensible type. The switch board shall be dust & vermin proof and shall be suitable for the climate conditions as specified. The design shall include all provisions for safety of operation and maintenance personnel. The general construction shall conform to **IS 8623:1993** for factory assembled switch board.

**4.3.2 Cubical Type Panels**

4.3.2.1 Cubical type panels shall be fabricated out of sheet steel not less than 2.0 mm thick.

Wherever necessary, such sheet steel members shall be stiffened by angle iron frame work. General construction shall employ the principle of compartmentalization and segregation for each circuit. Unless otherwise approved, incomer and bus section panels or sections shall be separate and independent and shall not be mixed with sections required for feeders. Each section of the rear accessible type panel shall have hinged access doors at the rear. Overall height of the panel shall not exceed 2.4 meters. Operating levers, handle etc. of highest unit shall not be higher than 1.7 meters. Multi-tier mounting of feeder is permissible. The general arrangement for multi-tier construction shall be such that the horizontal tiers formed present a pleasing and aesthetic look. The general arrangement shall be approved before fabrication. Cable entries for various feeders shall be either from top or bottom. Through cable alleys located in between two circuit sections, either in the rear or in the front of the panel. All cable terminations shall be through gland plates. There shall be separate gland plate for each cable entry so that there will not be dislocation of already wired circuits when new feeders are added. Cable entry plates shall therefore be sectionalized. The construction shall include necessary cable supports for clamping the cable in the cable alley or rear cable chamber.

Cubicle panels with more than 1000 Amps bus shall be made of tested structural modular sections.

**4.3.2.2 Bus Bar and Connections**

The bus bars shall be as per schedule. The busbar system may comprise of a system of main horizontal bus bars and ancillary vertical bus bars run in bus bar alleys on either side of which the circuit could be arranged with front access cable entries. In the case of rear access, horizontal bus system shall run suitably either at the top or bottom. All connections to individual circuits from the bus bar shall preferably be solid connections; however flexible connections shall also be permitted as per recommendations of the Panel Manufacturer. All bus bars and connections shall be suitably sleeved / insulated in approved manner.

**4.3.2.3 Incomer / Termination**

Incomer termination shall be suitable for receiving bus trunking / underground cables. Cable terminations shall invariably be through terminal blocks (Polyamide or superior) or brought out solid terminals.

**4.3.2.4 Instruments**

All voltmeters and ammeters shall be flush mounted of size minimum 96 mm conforming to class 1.5 of IS 1248 for accuracy. All voltmeters shall be protected with MCB.

**4.3.2.5 Indicating Lamps**

On all the incomers of M.V panels, ON/OFF indicating LED lamps shall be provided and shall be suitable for operation on AC supply. Phase indicating LED lamps shall be associated with necessary ON/OFF toggle switch.

**4.3.2.6 Small Wiring**

All small wiring for Controls, Indication etc. shall be with suitable FRLS/ HFFR (halogen free fire retardant) copper conductor cables. Wiring shall be suitably protected within switch board. Runs of wires shall be neatly bunched, suitably supported, and clamped. Means shall be provided for easy identifications of the wires. Where wires are drawn through steel conduits, the works shall conform to CPWD General Specifications for Electrical Works (Part I- Internal), 2013 and IS 732 as the case may be. Identification ferrules shall be used at both ends of the wires. All control wiring meant for external connections are to be brought out of terminal board.

**OPERATIONAL REQUIREMENTS**

The indoor type MV panel shall conform to the following:-

- (a) The panel shall comprise of incomers, outgoing feeders and bus coupler as specified. The incomer shall be either a double break / contact repulsion MCCB or an Air Circuit Breaker. The bus coupler shall be either a circuit breaker or a double break / contact repulsion MCCB or switch disconnecter fuse unit as specified. The outgoing feeders shall be circuit breakers/ MCCBs as specified.
- (b) Bus bars for phase and neutral shall have a rating as specified in the schedule of work
- (c) The entire switch panel shall be cubical type generally conforming to IS 8623: 1993 for factory assembled switch board.
- (d) The incomer panel shall be suitable for receiving bus trunking or MV cable of size specified either from top or from bottom.
- (e) All incoming AIR CIRCUIT BREAKER/ MCCB shall have suitable adjustable tripping current and the time delay settings.
- (f) The entire panel shall have a common earth bar of size as specified with two terminals for earth connections.

**4.5 RATING AND REQUIREMENTS****4.5.1 Air Circuit Breaker**

All Air Circuit Breakers shall be 3/4 pole with minimum 50 KA breaking capacity (35 MVA at 415V) conforming to IS 13947 (Part-II). Rated current shall be as per capacities specified. The equipment shall be complete with the following:-

- (a) Necessary circuit breaker carriage with 3 position (isolate, test, service) draw out mechanism.
- (b) Necessary isolating plugs and sockets.
- (c) Necessary mechanism interlock and automatic safe shutters gear with arrangement for pad locking.
- (d) Necessary independent manual spring mechanism with mechanical On/Off indication as well as electrical On/Off indication.
- (e) Necessary bus bars with bolted type neutral links.
- (f) ACB shall be provided with microprocessor based releases having built in over load, short circuit & earth fault protection. Microprocessor release shall be EMI (Electro Magnetic Induction)/ EMC (Electro Magnetic Compatible) certified.
- (g) Necessary set of auxiliary switches.
- (h) Necessary set of CTs with ratios as specified.

- \_\_\_\_\_ (i) Necessary identification, metering requirements as specified i/c. ON/ OFF \_\_\_\_\_ indication lamps, selector switches, fuses, ammeter, voltmeter etc.
- \_\_\_\_\_ (j) In case of 4 pole breaker neutral shall be fully rated with adjustable settings from 50% to 100% of In.
- \_\_\_\_\_ (k) ACB terminals shall be suitable/ suitably brought out for direct aluminium termination as per IS 13947 Part II.

#### 4.5.2 Switch Disconnecter Fuse Units /MCCB

##### 4.5.2.1 Switch Disconnecter Fuse Units

All SDF units for feeders or outgoing circuits shall be suitable for a Breaking capacity of 80 KA (57 MVA 415V) capacity at 415V 3 phase 50 Hz AC system conforming to IS 4064. The number of units and rated current shall be as per detailed requirements specified. Switch Disconnecter Fuse unit shall be double break front operated type.

\_\_\_\_\_ The units shall be complete with following:—

- \_\_\_\_\_ (a) Necessary HRC cartridge fuses conforming to IS 9224 (Part II).
- \_\_\_\_\_ (b) Necessary operating mechanism quick break make type.
- \_\_\_\_\_ (c) Necessary set of CTs together with an ammeter and selector switch as specified.
- \_\_\_\_\_ (d) Necessary interconnections to bus bars.
- \_\_\_\_\_ (e) Necessary neutral link inside the SDF unit.
- \_\_\_\_\_ (f) All SDF units shall be AC23A utilization category.

##### 4.5.2.2 MCCB

All MCCBs shall be current limiting type with features of load line reversibility and suitable for Horizontal/ Vertical mounting without any derating. Beyond 300 Amps capacity MCCBs shall have positive isolation and preferably double break / contact repulsion & double insulation features.

\_\_\_\_\_ The MCCBs shall invariably be used with terminal spreaders.

#### 4.6 TEST AT MANUFACTURERS WORK

All routine tests shall be carried out and test certificates produced to the department.

#### 4.7 INSTALLATION

The installation work shall cover assembly of various sections of the panels lining up, grouting the units etc. In the case of multiple panel switch boards after connecting up the bus bars etc., all joints shall be insulated with necessary insulation tape or approved insulation compound. A common earth bar as per section 7 of these specifications shall be run inside at the back of switch panel connecting all the sections for connection to frame earth system. All protection and other small wirings for indication etc. shall be completed before calibration and commissioning checks are commenced. All relays, meters etc. shall be mounted and connected with appropriate wiring.

#### 4.8 TESTING AND COMMISSIONING

Commissioning checks and tests shall include all wiring checks and checking up of \_\_\_\_\_ connections. Relay adjustment/setting shall be done before commissioning in addition to routine Megger tests. Checks and tests shall include the following:—

- \_\_\_\_\_ (a) Operation checks and lubrication of all moving parts.
- \_\_\_\_\_ (b) Interlock function checks.
- \_\_\_\_\_ (c) Continuity checks of wiring, fuses etc. as required.
- \_\_\_\_\_ (d) Insulation test: When measured with 500 V Megger the insulation resistance shall not be less than 100 mega ohms.
- \_\_\_\_\_ (e) Trip tests and protection gear test.

**SECTION 3 PART- F**  
**5. CABLE WORKS**

**5.1 SCOPE**

This section covers supply, laying and jointing as required and testing and energizing all cable work.

**5.2 SPECIFICATION OF CABLE**

5.2.1. 11 KV grade XLPE insulated PVC sheathed armoured Aluminium/ Copper cable shall be 3 core earthed of sizes as specified. The cable shall conform to IS 1554, Part II

5.2.2. 1.1 KV grade XLPE insulated PVC sheathed armoured Aluminium / Copper cable shall be 3 ½ /4 core of sizes as specified. The cable shall conform to IS 1554 Part I.

5.2.3 All control wires shall be 650 V grade copper conductor Halogen free fire retardant or FRLS PVC insulated, conforming to IS 1554-Part I. The minimum size of the control wires shall be 1.5 sq. mm.

**5.3 INSTALLATION**

Cable shall be laid in ground, trenches, cable trays and on walls as specified. Installation shall include all supports and clamps as required. The complete work shall be in accordance to CPWD General Specifications for Electrical Works - Part II (External) 1994 amended upto date. As far as possible cables shall not be fixed on walls directly but laid on cable trays.

**5.4 JOINTING FOR 11 KV GRADE CABLE GLANDS**

Jointing work shall be carried out only by licensed experienced cable jointer and shall be in accordance to CPWD General Specifications for Electrical Works - Part II (External) 1994 amended up to date.

**5.5 EARTHING FOR 11 KV GRADE CABLE GLANDS**

All HV cable glands shall be connected to the earth with 2 Nos. 38.6 mm copper or equivalent G.I. conductors.

**5.6** Selection shall be made as per tables given under Table V of CPWD General Specifications for Electrical Works Part-II (External) - 1994 amended up to date.

**5.7 TESTING**

Testing of the complete cable installation shall be as per clause 2.8.2 and 2.8.3 of CPWD General Specifications for Electrical Works - Part II (External) 1994 amended Up to date.

**5.8 POWER DISTRIBUTION SYSTEM LOSSES**

The power cabling shall be adequately sized as to maintain the distribution losses notto exceed 1% of the total power usage. Record of design calculation for the losses shall be maintained. The cables be designed as per the voltage drop regulations at peak load, and the losses be calculated on the basis of the assessed load during the day, week and year and should not be limited to the peak load.

## SECTION 3 PART- G

### 6. EARTHING SYSTEM

#### 6.1 SCOPE

This section covers the general requirements of the earthing system for Sub-station installation. G.I. plate earthing with G.I. strip for sub-stations of 500 KVA capacity and copper plate earthing for sub-stations of higher capacity shall preferably be used.

#### 6.2 SYSTEMS

Earthing system shall comprise earth electrodes in accordance with clause 8.2.1 of General Specifications for Electrical Works (Part I-Internal), 2013. For every additional transformer 2 more separate and distinct earth electrodes shall be provided for neutral earthing. The body earthing for transformers, HV & MV panels shall be done to a common earth bus connected to two separate and distinct earth electrodes.

**Note:** For a single transformer Sub-station, the total number of earth electrodes shall be 4 (2 for neutral and 2 for connection to a common earth bus for body earthing). For a two transformer Sub-station total number of earth electrodes shall be 6 (4 for neutral earthing, two each for two transformers, and 2 for connection to a common earth bus for body earthing).

#### 6.3 ELECTRODES

The earth electrodes shall be as per CPWD General Specifications for Electrical Works (Part I-Internal), 2013.

#### 6.4 LOCATION OF EARTH ELECTRODES

Normally an earth electrode shall not be situated less than 1.5 m from any building. Care shall be taken that the excavation of earth electrode may not affect the column footings or foundation of the building. In such cases electrodes may be farther away from the building. The location of the electrode earth will be a place where the soil has reasonable chance of remaining moist. As far as possible, entrances, pavements and road ways, are to be definitely avoided for locating the earth electrode.

#### 6.5 WATERING ARRANGEMENT

Method of watering arrangement shall comply with CPWD general specifications.

#### 6.6 SIZE OF EARTH LEAD

The recommended sizes of r earth bus lead shall be as per schedule.

#### 6.7 INSTALLATION

All joints shall be riveted and sweated. Joints in the earth bar shall be bolted and the joints faces tinned. Where the diameter of the bolt for connecting earth bar to apparatus exceeds one quarter of the width of the earth bar, the connection to the bolt shall be made with a wider piece of flange of copper jointed to earth bar. These shall be tinned at the point of connection to equipment and special care taken to ensure a permanent low resistance contact to iron or steel. All steel bolts, nuts, washers etc. shall be cadmium plated, main earth bars shall be spaced sufficiently on the surface to which they are fixed such as walls or the side trenches to allow for ease of connections. Copper earthing shall not be fixed by ferrous fittings. The earthing shall suitably be protected from mechanical injury by galvanized pipe wherever it passes through wall and floor. The portion within ground shall be buried at least 60 cm deep.

The earthing lead shall be securely bolted and soldered to plate or pipe as the case may be. In the case of plate earthing the lead shall be connected by means of a cable socket with two bolts and nuts. All washers shall be of the same materials as the plate or pipe. All iron bolts, nuts and washers shall be galvanized.

#### 6.8 TESTING

After installation, the tests as specified in CPWD General Specifications for Electrical Work (Part I-Internal), 2013 shall be carried out and results recorded

**SECTION 3 PART- H**  
**7.0 SAFETY REQUIREMENTS**

**7.1 SCOPE**

This section covers the requirements of items to be provided in the sub-station for compliance with statutory regulations, safety and operational needs.

**7.2 REQUIREMENTS**

Safety provisions shall be generally in conformity with appendices (A) and (C) of CPWD General Specifications of Electrical Works (Part I-Internal), 2013. In particular following items shall be provided:

*(a) Insulation Mats*

Insulation mats conforming to IS 15652: 2006 shall be provided in front of main switch boards as well as other control equipment's as specified.

*(b) First Aid Charts and First Aid Box*

Charts (one in English, one in Hindi, one in Regional language), displaying methods of giving artificial respiration to a recipient of electrical shock shall be prominently provided at appropriate place. Standard first aid boxes containing materials as prescribed by St. John Ambulance brigade or Indian Red Cross should be provided in each sub-station.

*(c) Danger Plate*

Danger Plates shall be provided on HV and MV equipment's. MV danger notice plate shall be 200 mm x 150 mm made of mild steel at least 2 mm thick vitreous enamelled white on both sides and with the descriptions in signal red colour on front side as required. Notice plates of other suitable materials such as stainless steel, brass or such other permanent nature material shall also be accepted with the description engraved in signal red colour.

*(d) Fire Extinguishers*

Portable CO<sub>2</sub> conforming to IS 2878: 1976/ chemical conforming to IS 2171: 1976 extinguishers, HCFC Blend A (P-IV) shall be installed in the sub-station at suitable places. Other extinguishers recommended for electric fires may also be used.

*(e) Fire Buckets*

Fire buckets conforming to IS 2546: 1974 shall be installed with the suitable stand for storage of water and sand.

*(f) Tool Box*

A Standard tool box containing necessary tools required for operation and maintenance shall be provided in the sub-station.

*(g) Caution Board*

Necessary number of caution boards such as "Man on Line" 'Don't Switch on' etc. shall be available in the sub-station.

*(h) Key Board*

A keyboard of required size shall be provided at a proper place containing castle keys, and all other keys of sub-station and allied areas

**SECTION 3 PART- I**  
**CONDITIONS OF THE CONTRACT**

1. The work shall be carried out as per current BSNL / CPWD specifications.
2. The work shall be supervised by qualified Supervisor / Engineers.
3. Any damage done to the building during the progress of the work shall made good by the contractor and nothing extra shall be paid on this account.
4. The dismantled material will not be property of Contractor.
5. If some material is to be issued by the Department shall be issued by Engineer – in – charge from the store and contractor have to make their own arrangement to bring material from at site and nothing extra shall be paid on account of cartage.
6. BSNL approved / ISI marked (in case not in approved list) material shall be used and the sample of the material shall got approved from the competent authority before use.
7. Rate quoted by the firm shall inclusive of all taxes and duties.
8. Any accident / mishappening occurred during the execution of the work shall be responsibility of the contractors.
9. No claim for idle labor shall be entertained.
10. The contractor will be fully responsible for watch and ward of the material at site till the same is handed over to appropriate authority.
11. Any damage done to the building / premises or equipment execution of the work shall be made good by the firm and nothing extra shall be paid.
12. No cartage CST, will be paid extra to the contractor by the department therefore the rates quoted should be inclusive of all taxes, duties etc.
13. The contractor will give necessary test of installation / equipment at their own cost and nothing extra will be paid regarding tools / equipment and specialized person etc.
14. The test certificates of manufacturer wherever required shall be provided by the agency without any extra cost.

Signature of Contractor

**Executive Engineer(E)**

## SECTION 3 PART- J

<u>"Specification for Outdoor Type Sandwich Bus trunking "</u>		
1.0	Specifications	The work shall be carried out as per current relevant C.P.W.D specifications and I.E rules amended from time to time.
1.1	Scope	Design, manufacture, installation & inspection, test at works and delivery to site, installation, testing and commissioning of sandwich type metal enclosed bus duct suitable for 415V, 50Hz and having rating as per Bill of Quantity. Before fabrication Contractor will have to submit the detail fabrication shop drawings, short circuit calculations, Voltage drop calculations.
2.0	Codes and Standards	IEC 60-439. In case of conflict between the standards & specifications, the specifications shall hold good.
3.0	Technical Specifications	
3.1	Enclosure Material	16 gauge G.I.
3.2	Phase cross over chamber & Copper flexible connections	To be included in Flange end box. Current carrying capacity of copper flexible to be same as that of bus bar.
3.3	Outdoor Bus Duct enclosure	Degree of protection IP-65 or superior class of protection
3.4	Finishing	Powder coated with granule finish.
3.5	Short circuit rating of Bus duct	Not less than 50 kA
4.0	Earthing	Two runs of 25x5 mm copper earthing along with the entire Length of the bus-duct riveted to the bus-duct enclosure <b>OR</b> 50% internal aluminum bus bar. The bus bar enclosure shall not be considered as the earth bus bar. Also, the earth bus bar provided with a clamping arrangement on the enclosure is not acceptable.

5.0	MCCB Tap-off Units	Constructed from 1.6 mm thick CRCA sheet with door interlock & earth pin (make first and break last). Plug in and plug out shall not be possible when the MCCB is "ON". All the tap-off boxes shall be compatible with all the ratings of the bus-trunking. All the plug / plug in points shall have safety shutters which shall be attached to the enclosure of the bus-trunking even when the tap-off box is inserted. Undrilled cable gland plates shall be provided on three sides of the tap-off box. Minimum CLASS 'B' rating for plug in points.
6.0	Bus Conductor	Electrolytic grade aluminum.
6.1	Voltage Drop	Not more than 5% of the rated voltage. Agency to offer higher size of bus bar if drop exceeds 5% during detail engineering. Calculations to be submitted along with drawing.
6.2	Loading	Suitable for 100% loading for horizontal and vertical installation at an ambient temperature of 40 °C
6.3	Temperature rise	Shall not exceed 55 °C at 100% loading.
7.0	Jointing Coupler	UNIBLOCK coupler operated by one / two insulated HTS bolts with disc spring washers. The joint assembly shall be such that, it can be installed or removed at any time to isolate / join two adjacent sections of the bus duct in installed conditions.
8.0	Insulating Material of the Bus-bars:	<ul style="list-style-type: none"> <li>a. Multilayer insulation with one layer of GLASS MICA and two layers of POLYESTER.</li> <li style="text-align: center;"><b>OR</b></li> <li>b. EPOXY - If epoxy insulating material is offered then bends &amp; Tee's should be insulated with epoxy material &amp; firm has to offer the same for inspection.</li> <li style="text-align: center;"><b>OR</b></li> <li>c. Mylar Insulation.</li> </ul>
8.1	Rated insulation voltage	1000V. Test report to be submitted
8.2	Rated Impulse with stands voltage	12KV. Test report to be submitted.
9.1	Horizontal Bus Duct Supports	12 mm diameter fully threaded MS rod and 50x50x6mm MS angle at an interval of not less than 1.5 mtrs. However actual interval will be decided as per site requirement by Engineer-In-Charge.
9.2	Vertical Bus Duct Supports	As per manufacturers design & recommendation.

10.0	Tests & Test Reports	The following tests shall be conducted at manufacturers works prior to dispatch of the Bus-duct assembly.
		a) One minute power frequency withstand voltage test of 3.5KV.
		b) Insulation resistance test
		c) Temperature rise test for each rating.
		d) Physical verification of all components.
11.0	Type test reports as per IEC 60439.	Manufacturer shall submit following type test reports as per IEC 60439,
		a) Type test (Short circuit) test reports for the similar rating of the bus ducts.
		b) Type test (Short circuit) test reports for the similar rating of the Tap off boxes.
		c) Verification of dielectric strength.
		d) Verification of Clearances and creep age distance.
		e) Verification test for abnormal heat.
		f) Verification of 12 kV impulse voltage test.
		g) Verification of Fire resistance in building penetrations.
		h) Verification of resistance to Flame Propagation.
		i) Verification of resistance to Crushing.
		j) Verification to Structural strength
12.0	IMPORTANT INSTRUCTION	1. Agency shall visit the site and should get himself acquainted about the route of Bus Trunking
		2. The measurement of bus duct shall be measured from the center line along the length of bus duct. No separate payment shall be made for bends & elbows.
		3. Size of neutral bus bar of rising main shall be same as that of phase (100%)
		4. All the Bus Trunking / rising main, Flange end boxes and tap-off boxes shall be of the same make only.

**SECTION 3 PART- K****ADDITIONAL SPECIFICATION FOR ELECTRICAL WORK****1. Scope**

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

**2. General**

1. Unless otherwise specified particularly the entire equipment shall be suitable for operation on 415 volts/240 volts, 50Hz earthed neutral, 3/single-phase alternating current system as may be required.
2. All components, accessories, raw materials and finished parts used in manufacture and assembly of switch boards, power and control circuit wiring and earthing system shall comply with the relevant Indian Standards amended up to date. Where Indian Standards do not exist British Standards shall apply.
3. The entire work shall comply with Indian Electricity rules and C.P.W.D general specifications for electrical work. Particular care shall be taken to ensure compliance to I. E. rules 41, 45, 51 and 61.
4. When cables pass through pipes, wooden bushes shall be provided at both the ends. When cables are required to pass through floors or walls, pipe inserts shall be provided and openings sealed in approved manner.

**3. Control Wiring**

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

**4. Earthing**

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

**5. DRAWINGS TO BE SUBMITTED FOR APPROVAL**

The contractor shall get the following drawings approved before the start of the work:

- a) A dimensional drawing giving complete details of the erection of the equipment.
- b) Electric wiring diagrams for all Electrical equipment's including controls showing cable sizes and equipment capacities.

**GENERAL RULES AND DIRECTIONS****SECTION : I**

1. **Site Information:** The tenderer should, in his own interest, visit the site and familiarize himself with the site conditions before tendering, and for any clarification, tenderer may discuss with the Engineer-in-Charge.
2. **Safety Codes and Labour Regulations-** All the safety procedures outlined in the relevant safety codes shall be complied with.
3. In respect of all labour employed directly or indirectly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions, B.I.S recommendations, factory act, workman's compensation act, CPWD code and instructions issued from time to time.
4. Failure to provide such safety requirements would make the tenderer liable for penalty for Rs.1000/- for each violation. In addition the Engineer-in-charge shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the contractor.
5. The contractor shall provide necessary barriers, warning signals and other safety measures while laying pipelines, cables etc. or wherever necessary so as to avoid accident. He shall also indemnify BSNL against claims for compensation arising out of negligence in this respect.
6. Contractor shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause. BSNL shall not be responsible for any accident occurred or damage incurred or claims arising there from during the execution of work. The contractor shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the contractor due to the above provisions thereof.
7. **Works to be arranged by the BSNL :** Unless otherwise specified in the tender documents, the following works shall be arranged by the BSNL:
  - Space for accommodating all the equipment and components involved in the work.
  - Power supply, Water supply for bona fide use for installation, testing & commissioning of the system.
8. **Works to be done by the Contractor :** Unless otherwise mentioned in the tender documents, the following works shall be done by the contractor and therefore, their cost shall be deemed to be included in their tendered cost- whether specifically indicated in the schedule of work or not-
  - (i) Suspenders, brackets and floor/ wall supports for suspending/supporting pipes
  - (ii) Sealing of all floor slab/ wall openings provided by the BSNL or contractor for pipes and cables, from fire safety point of view, after laying of the same.
  - (iii) Painting of all exposed metal surfaces of equipment and components with appropriate colour.
  - (iv) Making openings in the walls/ floors/ slabs or modification in the existing openings wherever provided for carrying cables etc.
  - (v) Making good all damages caused to the structure during installation and restoring the same to their original finish.

**SECTION : II**

1. The Officer inviting tender or his duly authorized assistant, will open tenders in the presence of any intending contractor who may be present at the time.
2. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
3. The tenderer shall sign a declaration under the officials Secret Act, 1923, for maintaining secrecy of the tender documents, drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.
4. The Contractor shall claim GST with the bill clearly furnishing the complete details of GST so included. BSNL under no circumstances will consider any claim of GST not included in the bill. It will be the Contractor's responsibility to settle GST with GST authorities.
- 5 a. However, pursuant to the constitution (forty-sixth Amendment) Act, 1982, if any further tax or levy is imposed by statute, after the last date for the receipt of tender and the contractor thereupon necessarily and properly pays such taxes/ levies, the contractor shall be reimbursed the amount so paid, provided such payment, if any, is not, in the opinion of the Superintending Engineer (whose decision shall be final and binding on the contractor attributable to delay in execution of work within the control of the contractor.
- b. 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 BSNL and further shall furnish such other information/ document as the Engineer-in-Charge may require from time to time.
- c. The Contractor shall, within a period of 30 days of imposition of any such 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.
13. BSNL shall deduct works contract tax, income tax and other statutory deductions from payments due to the Contractor as per rules of the State/Central Government. The Accounts Officer of the concerned Division shall issue certificates for such deductions to the Contractor.
14. Other agencies will also simultaneously execute the works like horticulture, external services, installation of telephone exchange equipment and other building works for the same project along with this work. The contractor shall offer necessary co-operation for the same.
15. Some restrictions may be imposed by the security staff etc. on the working and/or movement of employees of the contractor, material etc. The contractor shall be bound to follow all such restrictions / instructions and nothing extra shall be payable on this account.
16. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-charge may in his discretion, without prejudice to any other right or remedy available in law, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
17. Under this agreement BSNL is the buyer and the contractor is the Goods and Services provider. The relationship between buyer and contractor under this agreement is that of principal to principal basis and neither party shall have the power or authority to bind or obligate the other party except as expressly set forth in this agreement. Therefore the contractor nor the personnel of the contractor shall become the employee of the buyer under this agreement. For the sake of clarity it is stated that the buyer shall not be responsible for any claim such as salary or allowances, Bonus, Compensation, damages or anything arising out of their employment/duty under this agreement. The buyer shall in no way be responsible for the violation of any laws from the time being in force, either by the contractor or its employees.
18. **Extent of Work:** The work shall comprises of entire labour including supervision and all material necessary to meet a complete installation and such tests and adjustment and commissioning,  
Contractor

as may be required by the department. The term complete installation shall not only mean major items of the plant and equipment covered by the specification but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in detail in the tender documents in connection with this contract. Further, it is clarified that nothing extra will be paid on account of following works which are required for completion of work.

- a) Contractor has to provide technical assistance as and when required for approval.
- b) Program chart showing all activities and its progress should be provided after award of work and updated on weekly basis.
  - Compliance with Regulations and Indian Standards:
  - All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:
    - i) Factories Act.
    - ii) Indian Electricity Rules.
    - iii) B.I.S. & other standards as applicable.
    - iv) Workmen's compensation Act.
    - v) Statutory norms prescribed by local bodies like CEA, Power Supply Co., etc.
  - Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

#### **After Sales Service:**

The contractor shall ensure adequate and prompt after sales service in the form of maintenance, spares and personnel as and when required and shall minimize the breakdown period. In case of equipment supplied by other manufacturers the firm shall furnish a guarantee from the manufacturer for the same before the installation is taken over. In case of any defects in the installation, the contractor will have to rectify the system within 2 days of notification of faults. In case of failure of the contractor to rectify the faults within stipulated period, BSNL / DOT shall be at liberty to get the faults rectified at contractor's risk and cost without affecting further guarantee period.

#### **9. Documents to be provided on Completion of Work :**

Upon completion and commissioning of entire system the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Engineer in charge's site representative or two set for Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for maintenance of each equipment.

These manuals shall include:

- i. Completion drawings showing all equipment installed
- ii. Description of the work carried out/installed.
- iii. Operating instructions.
- iv. Maintenance instructions including procedures for preventive maintenance.
- v. Three sets Manufacturers technical catalogues of all equipment and accessories.
- vi. Spare parts list.
- vii. Trouble shooting charts.
- viii. Type and routine test certificates of major items.
- ix. Operation and maintenance manual of all major equipment, detailing all adjustments, Operation and maintenance procedure.

Executive Engineer (E-P)

Contractor

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**SECTION 3 PART- M**  
**CONDITIONS OF THE CONTRACT**

1. Definitions : The 'Contract' means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of BSNL and the contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
2. In the contract the following expressions shall, unless the context there otherwise requires, have the meanings, hereby respectively assigned to them:-
  - i) The expression "works" or "work" shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
  - ii) The 'site' shall mean the land/building/or other places on, into or through which work is to be executed under the contract or any alternate land, building, path or street which may be allotted or used for the purpose of carrying out the contract.
  - iii) The 'Contractor' shall mean the individual, Contractor or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such Contractor or company, or the successors of such Contractor or company and the permitted assignees of such individual, Contractor or company.
  - iv) BSNL means the Bharat Sanchar Nigam Ltd. having its corporate office at Harish Chandra Mathur Lane, Janpath, New Delhi-110001 and its successors.
  - v) The 'Engineer-in-charge' means the Engineer officer who shall supervise and be in-charge of the work and who shall sign the contract on behalf of BSNL as mentioned in Schedule 'F' hereunder.
  - vi) Accepting Authority shall mean the authority mentioned in Performa of Schedule 'F'
  - vii) 'Excepted Risk' are risks due to riots (other than those on account of contractor's employees, war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion, revolution, insurrection, military or usurped power, any acts of Government, damages from Aircraft, Acts of God, such as earthquake, lightning and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the accepting authority or causes solely due to use or occupation by BSNL of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to BSNL's faulty design of works.
  - viii) Schedule(s) referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers or the standard Schedule of Rates of the Government mentioned in Schedule 'F' hereunder, with the amendments thereto issued upto the date of receipt of the tender.
  - ix) Tendered value means the value of the entire work as stipulated in the letter of award.
  - x) Market rate shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and workman at the site where the work is to be executed plus the percentage mentioned in Schedule 'F' to cover, all overheads and profits.
3. Scope and Performance : Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.

4. The contractor shall be furnished, free of cost, one certified copy of the contract documents except standard specifications, schedule of rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.
5. Works to be carried out : The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all workman, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the schedule of quantities shall, unless otherwise stated, be held to include wastage of materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other manpower necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.
6. Sufficiency of Tender : The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the works.
7. Discrepancies & adjustments of Error : The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
  - 7.1 In the case of discrepancy between the schedule of quantities, the specifications and/or the drawings, the following order of preference shall be observed :
    - i) Description of Schedule of Quantities
    - ii) Particular Specification and Special condition, if any
    - iii) Drawings
    - iv) BSNL/C.P.W.D. Specifications
    - v) Indian Standard Specifications of B.I.S/ IEC specifications
  - 7.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
  - 7.3 Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.
8. Signing of Contract: The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of the notice inviting tender, all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
9. The agreement to be signed on non-judicial stamp paper and the cost to be decided as per the prevailing local bye-laws or zonal head of the circle.
10. According to the BSNL policy order No. BSNL/SECTT/13-1/2018 dated 03.09.2021- Contract/Agreement/Purchase order/Work order has/have been done or to be done at divisional level, concerned Executive Engineer (E) is the Engineer-in-charge as well as "CONTRACT MANAGER"

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11. According to letter No. BSNLCO-MMT/12(13)/1/2020-MMT dated 15.09.2021 in respect to Public Procurement [preference to MAKE IN INDIA] order 2017 – notification of Telecom Goods, Services or works, it is included that-

*a) The bidder has to comply with the Public procurement [Preference to Make in India] order 2017 and subsequent Amendments / Revision in PPP-MII order 2017.*

*b) Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the competent authority specified in Annexe-I of the O.M No. 6/18/2019-PPD dated 23.07.2020 issued by the Department of Expenditure, Ministry of Finance*

Executive Engineer (E-P)

**SECTION 3 PART- N****IMPORTANT NOTES:****1.1 INPUT TAX CREDIT:**

In order to avail input Tax credit as per GST law, BSNL is entitled for input tax credit. In order to avail the INPUT TAX CREDIT, the contractor/firm has to furnish an invoice\* favouring BSNL indicating the GSTIN No of the firm and BSNL along with SAC code:- Invoice\*- indicating the quantum of goods & Service tax. (as per GST Law).

**1.2 QUOTING OF RATES:**

The rates quoted shall be inclusive of all levies and taxes, packing, forwarding, freight and insurance as mentioned .

**1.3 Evaluation of bids:-**

a) The evaluation and comparison of responsive bids shall be done on the basis of Net cost to BSNL on the prices of the goods offered along with all applicable Taxes, packing Forwarding Freight & Insurance charges etc exclusive of GST.

b) The entire scope of work shall be awarded to LOWEST bidder without any splitting.

1.3.1 Duties, taxes & Cesses for which the firm has to furnish GST Challans / Tax Invoices will be indicated separately in the PO / APO.

**1.5** Contractor should furnish the correct HSN / SAC classification / Customs tariff Head in the invoice.

If the credit for the Duties, Taxes and Cesses under provision/ rules under GST law is found to be not admissible at any stage subsequently owing to wrong furnishing of Tariff Head, then the contractor will be liable to refund such non-admissible amount, if already paid, along with penalty and interest if charged by the concerned authority.

**1.6** In case the Duties, Taxes and Cesses which are not eligible for input tax credit as per the quotes indicated in the price schedule by the suppliers/contractor and subsequently at any stage it is found that Credit for such Duties, Taxes and Cesses is admissible as per provision of GST law, then the suppliers/ contractor will be liable to refund the amount equivalent of such Duties, Taxes and Cesses if already paid to them provided the credit can be claimed within the time prescribed under the applicable legislation and BSNL has all documents to claim such credit. The refund is also subject to the bidder performing necessary act for enabling BSNL to claim the credit viz. upload the information on GSTN. However, the purchaser may allow the supplier to submit necessary documents in this regard which may enable the purchaser to avail the input tax credit provided such credit is still available for the amount so paid as per provision of GST law.

**1.7** BSNL reserves the right to ask the bidders to submit documentary proof confirming the correct HSN or SAC classification/ Customs Tariff Head from the CGST/SGST/IGST officer or Customs authority where the HSN or SAC classification/ Customs Tariff Head furnished against the particular tendered item by different bidders, differs from each other or the same is found apparently not furnished in accordance with GST Act/Customs Tariff notifications.

**1.8** If the contractor fails to furnish necessary supporting documents i.e. Tax invoices / Customs invoices etc. in respect of the Duties, Taxes and Cesses which are eligible for input tax credit, the amount pertaining to such Duties, Taxes and Cesses will be deducted from the payment due to the firm.

- 1.9** If the contractor fails to perform necessary compliances which would any manner restrict BSNL to claim input tax credit, then the amount pertaining to such Duties, Taxes and Cesses will be deducted from the payment due to the contractor.
- 1.10** If the contractor does not disclose the correct details on the invoice or on the GSTN viz. GSTIN, Place of Supply, etc. which restricts BSNL to claim input tax credit, then the amount pertaining to such Duties, Taxes and Cesses will be deducted from the payment due to the supplier.
- 1.11** **Tax Indemnity clause:** BSNL has the right to recover Input Tax Credit loss suffered by it due to any mis-declaration on invoice by the supplier.

**SECTION 3 PART- O**  
**ADDITIONAL SPECIFICATIONS FOR SUBSTATION WORKS**

- 1 The equipment offered and the work shall be carried out as per current CPWD specification for electrical works as amended from time to time and Indian electricity rules as amended up to date. The specification /conditions indicated here in under will be applicable to the extent of the details of item including schedule of work.
- 2 The firm shall prepare the general layouts of HT Panel/M.V. panels' i/c capacitor panel, single line diagram & control wiring diagrams, Electrical Interlock diagram, general arrangement layout of substation equipment etc and submit to the Engineer-in-charge for his approval within 15 days after the award of work.
- 3 The layout of the work will be given by the Engineer-in-charge or his duly authorized representative at site of work.
- 4 For applying for Tenders in a state, the firm /contractor should possess an applicable voltage category Electrical License valid for that state where work is to be executed.
- 5 It is the Contractor's responsibility to comply with all rules & regulations the State Government to get Electrical Inspector Clearance before charging the Sub-station.
- 6 It will be responsibility of the contractor to get approval of Sub Station Installation Drawing before start of work, issue of Test Report of the installation and get the installations inspected & obtain clearance from Electrical Inspector for charging the same without any extra cost. However any statutory fees like Application fees, testing fees shall be paid by the BSNL.
- 7 Invoice and factory test reports shall be submitted at the time of delivery of equipment at site.
- 8 M.V. panels shall be manufactured from CPRI/TAC approved firm.
- 9 The work shall be supervised by a qualified Supervisor.
- 10 Rejected materials if any, shall have to be removed from site immediately by the contractor at his cost and risk.
- 11 The contractor shall submit the completion plan as per relevant Clause of the agreement within 30 days of the completion of work. Failing to submit the completion plan, he will be liable to pay a sum equivalent to 2.5% of the value of work subjected to the ceiling of Rs.15000/- as per the relevant clause of agreement.
- 12 The contractor will have to give the following tests at his cost and intimate test results before final bills are paid. Nothing extra will be paid to him on this account.
  1. Meggar test between Phases, Neutral and Earth for all systems.
  2. Earth Resistance test for all earth stations.
  3. Ration test of Transformers
  4. Dielectric strength test of Transformer Oil before commissioning
  5. Functional test of all switchgears and circuit breakers.
  6. Relay test & their settings.
  7. Polarity test.
- 13 Any damage done to the building by the contractor during the execution of work shall have to be made good at his cost and risk. If he does not do it himself within a reasonable time as determine by the Executive Engineer (E) then the same will be got done at his cost departmentally after giving notice to him.
- 14 While making the end connections of wires, no strand shall be cut and the termination of wire shall be done with necessary lugs and ferrules without any extra payment.
- 15 Lugs should be provided while terminating of G I earth wires for earth continuity without any extra payment.

16. The contractor shall furnish the test certificate of manufacturer in triplicate for all equipment and panels. Necessary instruction manuals, operation and maintenance manual in triplicate for Transformer, H.T. panel and major items shall be furnished before completion of work.
17. The overhead sandwich bus trunking system shall be as per the specification attached.
18. The fixing of the bus trunking, cable trays etc. to ceiling / wall etc. shall be done using suitable hangers. Fixing of panel boards on slabs, hangers on ceiling/walls shall be done using suitable expansion fasteners instead of grouting bolts.
19. Wherever electrical termination, connections are made between dissimilar metals like copper and aluminum suitable size bimetal strips, washer shall be used.
20. Earthling shall be done in presence of the Engineer In Charge or his duly authorized Representative.
21. All necessary Tools & Plants shall be arranged by the contractor at his cost and risk.
22. Wherever two plates are joined like transformer body and cable end box etc., those have to be provided with laminated copper clip/tinned flexible copper strip connection at intervals without extra cost.

**SECTION 4 PART- A**

**COMMERCIAL TERMS & CONDITIONS**

**SPECIAL CONDITIONS BROUGHT TO THE NOTICE OF THE TENDERERS**

The contractor shall read carefully the following conditions and shall quote accordingly.

**1. I.S. STANDARDS :**

The Transformer Substation work shall conform to various standards amended up to date wherever applicable.

**2. DRAWINGS TO BE SUBMITTED FOR APPROVAL :**

The contractor shall submit the following drawings for approval before the start of the work :

- (a) General arrangement drawing
- (b) Schematic diagram
- (c) Control wiring diagram

**3. CO-ORDINATION at Site:**

At the site of work more than one agency may be working. Full co-operation shall be extended to other agencies during progress of work. Further, work shall be carried out in such a way so that it may not cause abnormal noise and hindrance to the officers of the department engaged in creation as well to normal routine work.

**4. INSPECTION AT CONTRACTOR'S PREMISES:**

(i) The BSNL's authorized representative shall have full powers to inspect drawings of any portion of the work or examine the materials and workmanship of the equipment at the contractor's works or at any other place from where the material or equipment is obtained. Acceptance of any material or equipment shall in no way relieve the contractor of his responsibility for meeting the requirement of the specifications but shall have to be replaced free of cost by the contractor in case the equipment of work is found defective or of inferior quality.

- (i) The BSNL reserves the right to send/depute its representative for inspection of material/equipment and witness the test at manufacturer's / supplier's premises before dispatch and firm should not demand any extra payment for this.

**5. TEST CERTIFICATES:**

The firm shall submit following test certificates on supply of the material at site.

- Manufacturer test certificates for Transformers, HT Panels, HT switches, Sandwich Bus Trunking and XLPE cable etc.
- SF6 circuit breaker and other switchgears.
- Relays .
- Dept. may test any unit in factory without any extra payment.

**6. CHANGES IN SPECIFICATIONS :**

- (i) BSNL reserves the right to make changes in the specifications of the work if in its opinion the same is found necessary. However such alterations shall be made after mutual discussion and agreement

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between BSNL and the contractor. Any price implication in this regard shall be mutually discussed and agreed upon.

- (ii) Modifications or alterations by the contractor in the design/specifications of any equipment/material will not be permitted by BSNL as a matter of principle. However the same can be agreed by BSNL under the exceptional circumstances where :
- a) The same is necessitated due to non-availability of material/component of certain specification or make.
  - OR
  - b) Such alterations constitute an improvement in the opinion of the contractor and BSNL.
- (iii) Prior written approval of BSNL is necessary before undertaking any alteration/ modification in the Specifications of the equipments.

#### 7. **PACKING, FORWARDING , STORAGE & SAFETY :**

- (i) Before dispatch to site, the equipment/ component/ materials shall be properly packed so as to afford protection against transit damages and damages against storage in open areas either at transporter's premises or at work site. Special care shall be taken in respect of sensitive items like controller, motor etc. When storage in open area is inevitable proper water proof covering shall be provided to protect damages on account of rain water etc. However, damaged items shall be replaced as per the direction of Engineer-in-Charge. All the stores and materials required for the satisfactory completion of the work shall be arranged at site by the contractor from his own sources. Lockable space for storing the material may be provided on request, if available. However, safe custody of the material stored at site will be responsibility of the contractor till the completion/ handing over of the work. BSNL or any of its officer should not be mentioned as consignee for receipt of any material at site.

#### 8. **REJECTION OF DEFECTIVE EQUIPMENT :**

- (a) If the completed installation or any portion thereof, before it is taken over, be found defective or fails to fulfill the intent of the specifications, the contractor shall on receipt of a written notice from the Engineer-in-charge, forthwith make good the defective equipments/ installation.
- (b) If the contractor fail to rectify the defects and or make good the defective equipments/ installation within a stipulated time mentioned in the written notice or replace the equipments/ installation at no extra cost, BSNL may make good, reject and/or replace at the risk and expenses of the contractor, the whole or any portion of the equipments/ installation which is defective or fails to fulfill requirements of the contract.

#### 9. **COMPLETION OF WORK :**

At the time of issuing NIT for a particular work, the time allowed for completion of work consistent with magnitude and urgency of work is specified. The time allowed for carrying out the work as entered in the contract is reckoned after the date on which the orders to commence the work are given to the contractor. To ensure good progress of the work during the execution, the contractor is bound, in all cases, in which the time allowed for any work exceeds one month (except special jobs), to complete 1/8th of the whole of the work before 1/8th of the time allowed under the contract has elapsed, 3/8th of the work before 1/2 of the time has elapsed and 3/4th of the work before 3/4th of such time has elapsed. However, for special jobs, if a time schedule has been submitted by the contractor and the same has been accepted by the Engineer-in-charge, the contractor shall comply with such time schedule

For Substation work date of clearance from electrical inspector shall be taken as completion date of the work. However the Final bill shall be prepared after commissioning of Sub-station.

#### 10. **COMPLETION DRAWINGS :**

. The firm shall supply three sets of drawings/documents within 15 days after physical completion of the work and before electrical inspection as detailed below:

- ❖ Installation drawing giving complete details of the entire equipments i/c foundation
- ❖ Schematic Diagrams of HT panels, indicating clearly sizes of Bus Bars, Switch gears, Circuit Breakers, Metering & protection equipment, along with their control wiring diagrams.
- ❖ Cable entry points with their route diagram.

Contractor

EE(E)

- ❖ Operation and maintenance manual for all major equipments.

#### 11 TESTING AT SITE:

**The firm shall carry out following tests at site and submit record to the Engineer-In-charge.**

- Megger test between phases, neutral and earth.
- Earth resistance test at all earth stations.
- Relay test and their setting.
- Functional test of all switch gears and circuit breakers.
- Ratio test of transformer.

**The firm shall carry out above tests at site and submit record to the Engineer-In-charge.**

#### 12. ELECTRIC POWER AND WATER :

BSNL will provide free of cost electricity & water for erection, commissioning and testing of equipment.

#### 13. PERIOD OF COMPLETION OF WORK :

- i) The time period will be reckoned from the date on which the order of commencement of the work issued to the contractor.
- ii) The normal time period of completion shall be **2 -1/2 months** which will include Supply, Installation, testing & commissioning of Transformer Substation and successful clearance from Electrical Inspector for Charging the substation and handing over.

#### 14. GUARANTEE AND DEFECTS LIABILITY :

- i) The guarantee shall be valid for a period of 12 (twelve) months after provisional taking over/completion of work. The contractor shall guarantee that all equipment shall be free from any defect due to the defective material and / or bad workmanship and also the equipments shall work satisfactorily with performance and efficiencies not less than the guaranteed values. However in case of any manufacturer is providing extra guarantee period the same shall be extended by contractor to BSNL.
- ii) Any parts found defective during the guarantee period shall be replaced by the contractor without any charge whatsoever. The services of the contractor's personnel, if requisitioned during this period for such work, shall be made available free of any cost to the BSNL.
- i) The contractor shall depute his representative to the site within 12 (twelve) hours of intimation of the defect by the department.
- iv) A joint inspection report will be prepared by the representative of BSNL and firm regarding nature of defects and remedial action required and time schedule for the rectification/remedial action shall be finalized.
- ii) In case the contractor fails to depute his representative and/or fails to cause remedial action within reasonable time as decided during joint inspection, the BSNL may proceed to do so at the contractor's risk and expenses and without prejudice to any other right, to recover such expenses.
- vi) The following aspects are, however, not covered under the purview of guarantee.
  - (a) Consequential losses and damages
  - (b) Parts subject to normal wear and tear
  - (c) Deterioration or failure of equipment, controls and control wiring due to corrosive atmosphere

#### 15. BYE-LAWS, INDEMNITY AGAINST LIABILITIES :

- a) The contractor shall comply with all bye-laws and regulations of local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fees and other

Contractor

EE(E)

charges and giving/ receiving all necessary notices and keep the Engineer-in-charge informed about the notices issued and received.

- b) The contractor shall indemnify the BSNL against all claims in respect of patent rights, design, trade mark or name of other protected rights in respect of any plant, machine, work or materials used for or in connection with the work or temporary works and from and against all claims, demands, proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto. The contractor shall defend all actions arising from such claims and shall himself pay all royalties.
- c) License fees, damages, cost and charges of all and every sort that may be legally incurred in respect thereof shall be borne by the contractor.
- d) All liabilities/ penal recoveries on matters arising out of tax/ excise/ levies such as incorrect deductions, discrepancies in the filing of returns, revised assessment by the concerned authorities etc. shall be borne by the contractor.

16. It is contractor's liability to follow all safety procedures in accordance with relevant I.S. amended up to date during execution of work at site.

**17. EMPLOYEES PROVIDENT FUND :**

The contractor shall comply/fulfill the provisions of the EPF and Misc. Provisions Act.-1952 and Employees Provident Fund Scheme-1952 as amended up to date in respect of labours/employees engaged by them for performing this work. Any consequences arising due to non-complying of the provisions as specified above shall be the sole responsibility of the firm.

**18. INCREASE / DECREASE OF TENDER QUANTITY :**

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.

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 six 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.

**19. INSPECTION AT CONTRACTOR'S PREMISES :**

(i) The BSNL's authorized representative shall have full powers to inspect drawings of any portion of the work or examine the materials and workmanship of the equipment at the contractor's works or at any other place from where the material or equipment is obtained. Acceptance of any material or equipment shall in no way relieve the contractor of his responsibility for meeting the requirement of the specifications but shall have to be replaced free of cost by the contractor in case the equipment of work is found defective or of inferior quality.

(ii) The BSNL reserves the right to send/depute its representative for inspection of material/equipment and witness the test at manufacturer's / supplier's premises before dispatch and firm should not demand any extra payment for this.

**20. MATERIAL**

- a. All the systems shall be under warranty period for one year. During this period, all material required for maintenance and upkeep of systems shall be provided by the firm without any extra cost.

**21 COMPENSATION FOR DEFAULTS :**

- a. Any damage to the installation(s)/building due to the carelessness on the part of firm's staff shall be the responsibility of firm and shall be replaced/rectified without any extra cost.
- b. Any accident or damage will be the responsibility of agency and the Department will not entertain any claim, compensation, penalty etc on this account or on account of non-observance of any other requirement of law relevant to his work.
- c. Compensation for delay in removal of defects :-

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- (i) For S/I/T/C works the compensation for delay shall be governed by clause 5 of BSNL EW 8  
(ii) During warranty period, the complaints shall be attended within 24 hours (Maximum) of registering complaints, compensation for delay in attending the fault shall be governed as below :-

(Note – The complaint period will start from the time when call is received by agency at its call centre and duly acknowledged by him in the form of complaint no. The complaints registered after 6 PM will be considered from 8 AM on the next day.

Sr No	Grounds of compensation	Quantum of penalty (After completion of Maximum fault rectifying period as mentioned above)	Remarks
1	Non functioning of system	Rs. 1000/- per day for the 1st three days and Rs. 2000/- per day for subsequently day thereafter	
Note: 1. This is without prejudice to BSNL's right to take action under clause 3 of EW-8.			

## 22. COMPENSATION FOR DELAY FOR COMPLETION OF WORK: -

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 concern.**

## 23. MISCELLANEOUS :

- The workers engaged by firm should maintain proper discipline and good behavior with occupants. The firm shall not depute such workers at the site, whose behavior is found improper.
- The agency will provide the workers with necessary Tools & Plant, Testing and safety equipments.
- Agency has to observe all the labour rules and regulations in force and indemnify BSNL against any claims whatsoever, either from this clause or any other clause in the contract.
- The contractor has to keep all the units, neat and clean to avoid any accident and / or fire hazards.
- Firm should have round the clock contact telephone number. In case of Emergency, contractor and authorized engineer supervisor shall be available at site on short notice from engineer-in-charge and make all efforts to make the situation normal at the earliest.
- Firm is responsible to keep workable spares and consumables for due performance of the contract. For critical spare parts, firm shall have arrangement with dealers for prompt supply.
- Any material used/replaced by the Firm for the work shall have same specifications. Alternate Make shall be allowed, only after prior approval of the Engineer in charge.

## 24. STORES AND SAFETY:-

All stores and materials required for the satisfactory completion of the work shall be arranged at work site by the contractor from his own sources. Safe custody of the material stored at site will be responsibility of the contractor. **Till the installation is complete and handed over to the Engineer-in-Charge, Watch & ward of all material shall be the responsibility of the firm.**

## 25. EXECUTION OF WORK :-

All work will be executed as per CPWD (Internal / External) specification, relevant IE rules, and Manufacturer's recommendation, if specifically not specified in schedule or specification or tender document. The work shall be got executed by trained persons under the supervision of qualified Engineer.

## 26. DATE OF COMPLETION: -

Date of clearance from electrical inspector shall be taken as completion date of the work. However the Final bill shall be prepared after commissioning of Sub-station.

## 27. 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.

## 28. RESOLUTION OF DISPUTES

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**28.1 Disputes and Excepted Matters**

All disputes and differences between the parties hereto, as to the construction or operation of this contract, or the respective rights and liabilities of the parties or any matter in question; or any other account whatsoever, but excluding the accepted matter (detailed below); the rising out of or in connection with the contract, that cannot be resolved amicably but mean the contractor and purchaser/BSNL, shall be here in after called the "Dispute". The aggrieved party shall give a "Notice of Dispute" specifying all the points of Dispute/issue, the amount of quantified claims setting relevant Contractual clause, and, to the extent possible, an estimate of the monetary value of all other claims, along with the supporting document(s) to the other party, and a requesting for invoking the following dispute So resolution mechanism.

28.2 After receipt of a 'Notice of Dispute', as above, the parties shall in good faith, make all reasonable efforts, to arrive at a mutually acceptable resolution to the dispute raised in the "Notice of Dispute" in in formal meeting(s) between authorised representatives of parties.

28.3 Parties agree that any effort by either party for arriving at the mutually acceptable resolution of the disputes is to be kept confidential by both Parties. Parties also do not rely upon any views expressed, admissions or suggestions made, or willingness to enter into a settlement by either party as evidence in any form/arbitration/court proceedings.

20.4 Parties agrees that neither Party shall be entitled to any claim or compensation for any consequential, indirect or special losses/damages including loss of Profit, loss of Production, loss of use, loss of goodwill, loss of reputation, remote damages, loss of business opportunities, Loss of employment opportunities, loss of interest including any pre-reference or pendent-lite interest, idling cost of men and machinery, prolongation costs etc., on account of any dispute/claim raised under the contract, Parties agrees that claim for any such amount shall not be considered and shall be void.

28.5 In case the parties fail to amicably resolve the dispute between them within 60 days of the receipt "Notice of Dispute" sent under clause 25.1.1 the following provisions, as mentioned below, shall follow:

This dispute shall be resolved without recourse to courts through dispute resolution mechanisms detailed subsequently, in this sequence as mentioned below, and the next mechanism shall not be invoked unless the earlier mechanism has been invoked or has failed to resolve it within the deadline mentioned therein.

1. Adjudication
2. Mediation
3. Litigation

**20.6 Excepted Matters**

Matters for which specific provisions has been made in any clause of the Contact, and where the decision of BSNL has been stated to be final and binding shall be deemed as Excepted Matters and shall not be subjected to adjudication, Mediation or arbitration. These shall include, but shall not be limited to the following:

Contractor

EE(E)

1. Any controversies or claims brought by a third party for badly injury, death, property, damage or any indirect or consequential loss arising out of or in any way related to the performance of this contract (“Third Party Claim”), including, but not limited to, a Party’s right to seek contribution or indemnity from the other Party in respect of Third Party Claim.
2. Issues related to pre award tender process or conditions.
3. Issues related to ambiguity in contract terms shall not be taken up after contract has been signed. All such issues should be highlighted before the signing of the contract by the contractor.
4. Any claim, differences or dispute relating to , connected with or arising
  - i. Out of BSNL’s decision to initiate proceedings for suspension or banning, or decision to suspend or to ban business dealing with the Bidder/ contractor;
  - ii. Any claim, difference or dispute relating to, connected with or arising out of BSNL’s decision under the provisions of Integrity Pact executed between BSNL and Bidder/Contractor;
  - iii. Any dispute pertaining to insolvency and bankruptcy, property laws.
5. Provisions incorporated in contract, which are beyond the preview of BSNL or are in pursuance of policies of Government, including but not limited to
  - i. Provisions of restrictions regarding local content and Purchase Preference to Local Suppliers In terms of Make in India policy of the Government.
  - ii. Provisions regarding restrictions on Entities from Countries having land border with India in terms of Government’s policy in this regard.

Purchase preferences Policies regarding MSEs and Startups.

### **28.3 Deleted**

### **28.4 Mediation of Disputes**

1. For cases with the dispute amount more than 10 crore, Mediation shall be conducted through the mediation scheme framed by Department of Telecommunication, Government of India wide OM No.1-1/4/2024-Law (1) dated 22.11.2024, comprising, were considered appropriate, a retired judge, a retired senior officer, and or a technical expert ( :mediation Scheme”)
2. For cases with the dispute amount less than 10 crore, the mediation process will be adopted as per institutional mediation provisions defined under the Mediation Act-2023.
3. The cost of the mediation shall be shared weekly by the parties unless otherwise agreed.
4. If the parties reach an agreement a dispute settlement, they shall draw a written settlement agreement duly signed by the parties and Mediators. When the party the settlement agreement, it shall be final and binding on the parties. The dispute shall be treated as resolved and the date of the such agreement.
5. The parties shall not initiate, during the mediation proceedings, any arbitral or judicial proceedings in respect of a dispute that is the subject matter of the mediation proceedings.
6. **Termination of Mediation:** Disputes shall remain alive if the mediation is determined as follows:
  - a) By written declaration of the Mediator, after consultation with the parties, to the effect that further efforts at mediation are no longer justified, on the date of such declaration; or

- b) By a written declaration of any party to the mediator, before the signing of settlement agreement by both parties, to the effect that mediation proceedings are terminated, on the date of such declaration: or
- c) If the parties fail to reach an agreement on settlement of the dispute, within the stipulated time from appointment of mediator.

On termination of mediation, if the dispute is still alive, the aggregate party shall be free to invoke litigation.

## **29. COURT JURISDICTION**

- 1 Any dispute arising out of the tender/ bid document/ evaluation of bids/ issue of APO shall be subject to the jurisdiction of the competent court at the place from where the NIT/ tender has been issued.
- 2 Where a contractor has not agreed to arbitration, the dispute/ claims arising out of the Contract/ PO entered with him shall be subject to the jurisdiction of the competent Court at the place from where Contract/ PO has been issued. Accordingly, a stipulation shall be made in the contract as under.  
"This Contract/ PO is subject to jurisdiction of Court at Punjab only".

## **30. Force Majeure Clause**

- a) If at any time, during the continuance of this Contract, the performance in whole or in part by either party of any obligation under this Contract be prevented or delayed by reason of any war or hostility, Acts of public enemy, civil commotion, sabotage, explosions, Effects of flood, epidemics, quarantine restrictions, freight embargoes, General strikes, Bandhs, Acts of God Hereinafter referred to as EVENT, neither party shall, by reason of such EVENT, be entitled to terminate this Contract, nor shall any party have any claim to the damages against the other in respect of such non-performance or delay in performance, provided that notice of happening, of any such EVENT is given by either party to the other within 7 (seven) days from the date of occurrence of the EVENT.
- b) If a Force Majeure EVENT occurs, the Contractor shall promptly notify BSNL management in writing of such conditions and the cause thereof. Unless otherwise directed by BSNL management in writing, the Contractor shall continue to perform its obligations under the contract as far as reasonably practicable and shall seek all reasonable alternative means for performance not prevented by the Force Majeure EVENT.
- c) Expected Work under this Contract shall resume as soon as practicable after such EVENT comes to an end or ceases to exist. The decision of the Competent Authority, Calcutta Telephones as to whether the situation has become normal or not, shall be final and conclusive.

- d) If the performance in whole or part of any obligation under this Contract is prevented or delayed by reason of any such EVENT for a period exceeding 60 (sixty) days, either party may, at his/their option, terminate this Contract.

35. **ACTION BY PURCHASER AGAINST BIDDER(S)/VENDOR(S) IN CASE OF DEFAULT**

In case of default by Bidder(s)/ Vendor(s) such as

- a) Does not supply the equipment in time;
- b) Equipment does not perform satisfactory in the field in accordance with the specifications;
- c) Or any other default whose complete list is enclosed in Appendix-1

Purchaser will take action as specified in Appendix-1 of section 4.

## Appendix-1 to Section 4

S. No.	Defaults of the bidder / vendor.	Action to be taken
A	B	C
1(a)	<p>Submitting fake / forged</p> <p>a) Bank Instruments with the bid to meet terms &amp; condition of tender in respect of tender fee and/ or EMD;</p> <p>b) Certificate for claiming exemption in respect of tender fee and/ or EMD; and detection of default at any stage from receipt of bids till award of APO/ issue of PO/WO.</p> <p>Note 1:- However, in this case the performance guarantee if alright will not be forfeited.</p> <p>Note 2:- Payment for already received supplies/ completed work shall be made as per terms &amp; conditions of PO/ WO.</p>	<p>i) Rejection of tender bid of respective Vendor.</p> <p>ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods &amp; Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.</p> <p>iii) Termination/ Short Closure of PO/WO, if issued. This implies non- acceptance of further supplies / work &amp; services except to make the already received material work/ complete work in hand.</p>
1(b)	<p>Submitting fake / forged documents towards meeting eligibility criteria such as experience capability, supply proof, registration with Sales Tax, Income Tax departments etc and as supporting documents towards other terms &amp; conditions with the bid to meet terms &amp; condition of tender:</p> <p>(i) If detection of default is prior to award of APO</p> <p>(ii) If detection of default after issue of APO but before receipt of PG/ SD (DD,BG etc.)</p>	<p>i) Rejection of Bid&amp;</p> <p>ii) Forfeiture of EMD.</p> <p>i) Cancellation of APO,</p> <p>ii) Rejection of Bid &amp;</p> <p>iii) Forfeiture of EMD.</p>
1(b) cont d.	<p>(iii) If detection of default after receipt of PG/ SD (DD,BG etc.) .</p> <p>(iv) If detection of default after issue of PO/ WO</p> <p>Note 3:- However, settle bills for the material received in correct quantity and quality if pending items do not affect working or use of supplied items.</p> <p>Note 4:- No further supplies are to be accepted except that required to make the already supplied items work.</p>	<p>i) Cancellation of APO</p> <p>ii) Rejection of Bid &amp;</p> <p>iii) Forfeiture of PG/SD.</p> <p>However, on realization of PG/ SD amount, EMD, if not already released shall be returned.</p> <p>i) Termination/ Short Closure of PO/WO and Cancellation of APO</p> <p>ii) Rejection of Bid &amp;</p> <p>iii) Forfeiture of PG/ SD. However, on realization of PG/ SD amount, EMD, if not released shall be returned.</p>

2	<p>If vendor or his representative uses violent/ coercive means viz. Physical / Verbal means to threatens BSNL Executive / employees and/ or obstruct him from functioning in discharge of his duties &amp; responsibilities for the following:</p> <p>a) Obstructing functioning of tender opening executives of BSNL in receipt/ opening of tender bids from prospective Bidders, suppliers/ Contractors.</p> <p>b) Obstructing/ Threatening other prospective bidders i.e. suppliers/ Contractors from entering the tender venue and/ or submitting their tender bid freely.</p>	<p>Banning of business for 3 years which implies Barring further dealing with the vendor for procurement of Goods &amp; Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.</p>
3	<p>Non-receipt of acceptance of APO/ AWO and SD/ PG by L-1 bidder within time period specified in APO/ AWO.</p>	<p>Forfeiture of EMD.</p>
4.1	<p>Failure to supply and/ or Commission the equipment and/or execution of the work at all even in extended delivery schedules, if granted against PO/ WO.</p>	<p>i) Termination of PO/ WO.  ii) Under take purchase/ work at the risk &amp; cost of defaulting vendor.  iii) Recover the excess charges if incurred from the PG/ SD and outstanding bills of the defaulting Vendor.</p>
4.2	<p>Failure to supply and/ or Commission the equipment and/or execution of the Work in full even in extended delivery schedules, if granted against PO/ WO.</p>	<p>i) Short Closure of PO/ WO to the quantity already received by and/ or commissioned in BSNL and/ or in pipeline provided the same is usable and/or the Vendor promises to make it usable.  ii) Under take purchase/ work for balance quantity at the risk &amp; cost of defaulting vendor.  iii) Recover the excess charges if incurred from the PG/ SD and outstanding bills of the defaulting Vendor.</p>
5.1	<p>The supplied equipment does not perform satisfactory in the field in accordance with the specifications mentioned in the PO/WO/Contract.</p>	<p>i) If the material is not at all acceptable, then return the non-acceptable material (or its part) &amp; recover its cost, if paid, from the o/s bills/ PG/ SD. OR  ii) If the material is inducted in network &amp; it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee.  Undertake recovery of financial penalty from outstanding dues of vendor including PG/SD.</p>

5.2	Major quality problems (as established by a joint team / committee of User unit(s) and QA Circle) / performance problems and non-rectification of defects (based on reports of field units and QA circle).	<p>i) If the material is not at all acceptable, then return the non-acceptable material (or its part) &amp; recover its cost, if paid, from the o/s bills/ PG/ SD; OR</p> <p>ii) If the material is inducted in network &amp; it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee. Undertake recovery of financial penalty from outstanding dues of vendor including PG/SD; and</p> <p>iii) Withdrawal of TSEC/ IA issued by QA Circle.</p>
6	<p>Submission of claims to BSNL against a contract</p> <p>(a) for amount already paid by BSNL.</p> <p>(b) for Quantity in excess of that supplied by Vendor to BSNL.</p> <p>c) for unit rate and/ or amount higher than that approved by BSNL for that purchase.</p> <p>Note 5:- The claims may be submitted with or without collusion of BSNL Executive/ employees.</p> <p>Note 6:- This penalty will be imposed irrespective of the fact that payment is disbursed by BSNL or not.</p>	<p>i) Recovery of over payment from the outstanding dues of Vendor including EMD/ PG &amp; SD etc. and by invoking 'Set off' clause 21 of Section 5 Part A or by any other legal tenable manner.</p> <p>ii) Banning of Business for 3 years from date of issue of banning order or till the date of recovery of over payment in full, whichever is later.</p>
7	<p>Network Security/ Safety/ Privacy: - If the vendor tampers with the hardware, software/ firmware or in any other way that</p> <p>a) Adversely affects the normal working of BSNL equipment(s) and/ or any other TSP through BSNL.</p>	<p>i) Termination of PO/WO.</p> <p>ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods &amp; Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.</p> <p>iii) Recovery of any loss incurred on this account from the Vendor from its PG/ SD/ O/s bills etc.</p>
7 con- td.	<p>b) Disrupts/ Sabotages functioning of the BSNL network equipment's such as exchanges, BTS, BSC/ MSC, Control equipment including IN etc., transmission equipment's but not limited to these elements and/ or any other TSP through BSNL.</p> <p>c) tampers with the billing related data/ invoicing/ account of the Customer/ User(s) of BSNL and/ or any other TSP(s).</p>	<p>iv) Legal action will be initiated by BSN against the Vendor if required.</p>

	d) hacks the account of BSNL Customer for unauthorized use i.e. to threaten others/spread improper news etc.	
	e) Undertakes any action that affects/ endangers the security of India.	
8	If the vendor is declared bankrupt or insolvent or its financial	i) Termination/ Short Closure of the PO/ WO.
	Position has become unsound and in case of a limited company, if it is wound up or liquidated.	<p>ii) Settle bills for the quantity received in correct quantity and quality if pending items do not affect working or use of supplied items.</p> <p>iii) No further supplies are to be accepted except that required to make the already supplied items work.</p> <p>iv) In case of turnkey projects, If the material is commissioned and is usable without any degradation of performance, then settle bills for the acceptable equipment/ material (or its part).</p> <p>v) In case of turnkey projects, if the material is inducted in network &amp; it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee.</p>
8 con- td.		Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD.
9	In the event of the vendor, its proprietor, Director(s), partner(s) is / are convicted by a Court of Law following prosecution for offences involving moral turpitude in relation to the business dealings.	<p>i) Termination/ Short Closure of the PO/ WO.</p> <p>ii) Settle bills for the material received in correct quantity and quality if pending items do not affect working or use of supplied items.</p> <p>iii) No further supplies are to be accepted except that required to make the already supplied items work.</p> <p>iv) In case of turnkey projects, If the material is commissioned and is usable without any degradation of performance, then settle bills for the acceptable equipment/ material (or its part).</p> <p>v) In case of turnkey projects, If the material is inducted in network &amp; it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee.</p>

		Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD.
	If the vendor does not return/ refuses to return BSNL's dues:	i) Take action to appoint Arbitrator to adjudicate the dispute.
	a) in spite of order of Arbitrator.	i) Termination of contract, if any. ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL from date of issue of banning order or till the date by which vendor clears the BSNL's dues, whichever is later.
10 con- td.		iii) Take legal recourse i.e. filing recovery suite in appropriate court.
	b) in spite of Court Orders.	(i) Termination of contract, if any. (ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL from date of issue of banning order or till the date by which vendor clears the BSNL's dues, whichever is later.
11	If the Central Bureau of Investigation/ Independent External Monitor (IEM) / Income Tax/ Sales Tax/ Excise / Custom Departments recommends such a course	Take Action as per the directions of CBI or concerned department.
12	The following cases may also be considered for Banning of business:	i) Banning of business for 3 years which implies Barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.
	(a) If there is strong justification for believing that the proprietor, manager, MD, Director, partner, employee or representative of the vendor/ supplier has been guilty of malpractices such as bribery, corruption, fraud, substitution of tenders, interpolation, misrepresentation with respect to the contract in question.	
	(b) If the vendor/ supplier fails to execute a contract or fails to execute it satisfactorily beyond the provisions of Para 4.1 & 4.2.	
	(c) If the vendor/ supplier fails to submit required documents/ information, where required.	

(d) Any other ground which in the opinion of BSNL is just and proper to order for banning of business dealing with a vendor/supplier.

Note 7: The above penalties will be imposed provided it does not clash with the provision of the respective tender.

Note 8:-In case of clash between these guidelines & provision of invited tender, the provision in the respective tenders shall prevail over these guidelines.

Note 9: Banning of Business dealing order shall not have any effect on the existing/ ongoing works/ AMC / CAMC which will continue along with settlement of Bills.

86  
SECTION -5

**LABOUR REPORT**

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

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

JTO ( E )

SDE( E )

Contractor

EE(E)

**SECTION-6  
PROFORMAS**

**6(A) - PROFORMA FOR AGREEMENT  
(On non- judicial stamp paper of Rs.100/- )**

**Contract agreement for the work of** -----Dated -----

Between M/s ----- (refer note) in the town of (Address)-----

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

**Whereas**

a. The BSNL is desirous that the execution of (Name of work) ----- at ----  
---- to be performed as mentioned, enumerated or referred to in the tender including press Notice Inviting Tender, General conditions of the contract, Special conditions of the contract, Specifications, Drawing, Plans, Time schedule of completion of jobs, schedule of quantities and rates, agreed variations, other documents, has called for tenders.

b. The contractor has inspected the site and surroundings of the work specified in the tender documents and has specified himself by carefully examinations before submitting his tender as to the nature of the surface , strata , soil , sub soil and grounds , the form and nature of the site and local conditions the quantities , nature and magnitude of the work , the availability of the labour and materials necessary for the execution of work , the means of access of site , the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and things referred to or implied in the tender , documents or having any connection therewith and has considered the nature and extent of all the probable and possible situations , delays , hindrances or interferences to or with the execution and completion of the work to be carried out under the contract , and has examined and considered all other matters , conditions and things and probable and possible contingencies , and generally all matters incidental thereto and ancillary thereof affecting the execution and completion of the work and which might have influenced him in making his tender.

c. The tender documents including the BSNL's press Notice Inviting Tender, General conditions of Contract, special conditions of contract, Schedule of quantities and Rates, General obligations, Specifications, Drawings, Plans, Time schedule for completion of work. Letter of acceptance of tender and any statement of agreed variations with its enclosures copies which are hereto annexed form part of this contract through separately set out herein and are included in the expression contract wherever herein used.

**And whereas**

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

**Now this agreement witness& it is hereby agreed and declared as follows**

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

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

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

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

Signed and delivered for and on behalf of BSNL  
of  
The Contractor

Signature and delivered for and on behalf

(BHARAT SANCHAR NIGAM LIMITED)  
OFFICIAL ADDRESS

(CONTRACTOR)

Date  
Place

Date  
Place

IN PRESENCE OF TWO WITNESSES

SIGNATURE  
NAME

SIGNATURE  
NAME

SIGNATURE  
NAME

SIGNATURE  
NAME

**SECTION 6(B) - MODEL FORM OF BANK GUARANTEE (ON STAMP PAPER OF Rs. 100/-)**

BANK GUARANTEE BOND FOR EMD FOR AIR CONDITIONING, DIESEL ENGINE/ALTERNATOR, AMC E/A Sets, **Operation of EMS**, LIFTS AND SUB STATION WORKS WHEREVER THE AMOUNT OF EMD IS MORE THAN RS. 20,000/-.

Whereas \_\_\_\_\_ (hereinafter called "The Contractor(s)") has submitted its Tender dated \_\_\_\_\_ for \_\_\_\_\_ (Name of work) \_\_\_\_\_ KNOW ALL MEN by these Presents that we \_\_\_\_\_ OF \_\_\_\_\_ having our registered office at \_\_\_\_\_ (hereinafter called "The Bank") are bound unto \_\_\_\_\_ (hereinafter called "The BSNL") in the sum of \_\_\_\_\_ for which payment will and truly to be made of the said BSNL, the Bank binds itself, its successors and assigns by these presents.

THE CONDITIONS of the obligation are:

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

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

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

**Signature of the Bank**

**Signature of the Witness**

**Name of Witness**

**Address of Witness**

**SECTION 6(C) - PERFORMANCE SECURITY GUARANTEE BOND**

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

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

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

4. We(name of the bank)\_\_\_\_\_ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the BSNL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till \_\_\_\_\_(office/Department) BSNL certifies that the terms and conditions of the said Agreement have been fully or properly carried out by the said contractor(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the expiry of TWO/TWO AND HALF/THREE YEARS (as specified in P.O) from the date hereof, we shall be discharged from all liabilities under this guarantee thereafter.

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

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

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

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

For (Indicate the name of bank)

**SECTION 6 (D) - For Letter of Authorization for attending Bid Opening Event.**

**(To be typed preferably on letter head of the company)**

**Subject:** Authorization for attending Bid opening

I/ We Mr. /Ms. .... have submitted our bid for the tender no.....In respect of ..... (Item of work) which is due to open on..... (date) In the Meeting Room, O/o.....We hereby authorize Mr. / Ms. ....& Mr. / Ms.....(alternative) whose signatures are attested below, to attend the bid opening for the tender mentioned above on our behalf.

.....  
Signature of the Representative

.....  
Signature of Bidder/ Officer authorized to sign

Name of the Representative on behalf of the Bidder  
.....

Signature of the alternative Representative  
.....

Name of the alternative Representative

Above Signatures Attested

Note 1: Only one representative will be permitted to attend the Bid opening.

2. Permission for entry to the hall where bids are opened may be refused in case authorization as prescribed above is not received.

**SECTION 6(E)**

**Self-Certification under Preference to "MAKE IN INDIA" Policy (To be typed on Firm's letter head)**

Format for Self-Certification under Preference to "MAKE IN INDIA" Policy

(Refer Clause No. 16 of Special Conditions of Contract)

**CERTIFICATE**

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017, P-45021/2/2017-PP(BE-II) dtd 16/9/2020 as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s\_\_\_\_\_ (supplier name) are local supplier meeting the requirement of minimum Local content 50% as defined in above orders for the goods / services / works offered against Tender No\_\_\_\_\_.

Details of location at which local value addition will be made is as follows:

-----

We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1) (i) (h) of the General Financial Rule for which for which a bidder or its successors can be debarred for up two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and Signature of Authorized Signatory

**SECTION 6(F)**

**BOQ COMPLIANCE CERTIFICATE**

We \_\_\_\_\_ having address  
\_\_\_\_\_ registered and do

hereby certify that we comply with all the BOQ specifications of the above-mentioned GEM  
BID.

**Signature of contractor/authorized representative  
With seal of the firm**

**SECTION 6(G)****UNDERTAKING FROM PANEL MANUFACTURER**

We here by confirm that the Panels type offered by us against your tender No. \_\_\_\_\_ are in our current range of production. We also confirm that offered panels will not be phased out by us in the next 10 years from the date of supply. Necessary repairs/replacements if necessary during this period will be made available by us.

Name & Designation:

Company Seal

## SECTION-6(H)

### UNDERTAKING

Name of work: \_\_\_\_\_

We [Name of the Firm associating] having our registered office at [Address] do hereby submit this undertaking in connection with our association with [Name of the Licensed Electrical Contractor Firm] holding a valid Electrical Contractor License bearing no---- [issued by the [Name of State Electrical Licensing Authority], valid up to [Valid date] and other eligibility documents required from associate vendor i.e. ( Enlistment certificate/ experience certificate etc.)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

We confirm that the said firm possesses the necessary statutory approvals, licenses, and expertise to carry out electrical works as per the applicable rules and regulations of the [State Name] Electrical Licensing Board/Authority.

We [Name of the firm associating] undertake to ensure that all electrical work executed under this association shall be carried out strictly in accordance with the applicable safety norms, technical standards, and statutory requirements & we shall be fully responsible for all obligations, liabilities or statutory compliances arising out of this association.

A copy of the valid electrical contractor license of [Licensed Firm Name] and eligibility documents of associate vendor is enclosed. We confirm that we have verified the validity of credentials of associate vendor.

I/we shall be fully responsible and indemnify BSNL against any in-sufficiency or default, shortcoming, negligence or fails to comply of Rule 45 of the Indian Electricity Rules, 1956 by associate electrical vendor (name of Associate electrical) in execution of work during contract period.

We will submit formal MOU after acceptance of tender to the Engineer-Incharge as per terms and conditions of association mentioned in the NIT.

We confirm the following:

We affirm that the information provided above is true and correct to the best of our knowledge and belief.

We further agree that any false or misleading information may lead to disqualification or termination of our engagement.

Thanking you.  
Yours sincerely,

For [Name of Associating Firm]  
(Signature of Authorized Signatory)

Name:  
Contact Details:  
Seal

Enclosure: Copy of Valid Electrical Contractor License & eligibility documents of associate vendor.

Contractor

EE(E)

**SECTION-6(I)**Affidavit of Associate Vendor having Valid Electrical License

(To be given on Non judicial stamp paper of Rs.100/-)

In respect the work of:-

I/We [Name of the firm associated] having our registered office at [Address] do hereby solemnly affirm and declare as under:

1. I am the authorized representative of M/s We [Name of the Firm associated] having its registered office at [Address]
2. Our firm posses a valid electrical license for the state/UT ----having no.       dated
3. The electrical license is valid upto (date-- ). It shall be renewed time to time as per regulations.
4. I/We hereby give my/our consent to work as Associate Electrical Vendor along with M/s \_\_\_\_\_ (tenderer) for execution of the Electrical component of above said work till the completion of above mentioned work agreement.
5. We confirm that electrical work executed by us shall be in compliance with the applicable laws, regulations, and safety standards as provided in IE rules, local bylaws and other statutory requirements
6. We undertake that I/ we have associated only with M/s (Name of the Firm associating) for above work.
7. We understand that we will not be issued any work experience certificate by BSNL for executing the work under this association and will not ask for it.
8. We understand that BSNL will not be liable to make any payments directly to us for the work carried out by us for M/s---- (tenderer)
9. We indemnify BSNL for any liabilities arising out of this work.

I hereby declare that the above statements are true and correct to the best of my knowledge and belief.

For [Name of Associate vendor]  
(Signature of Authorized Signatory)

Name:

Address:-

Seal

## SECTION-6(J)

### MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU) is made on [Date] between:  
For the work of -----

(Associating Firm)

M/s: \_\_\_\_\_

[Address]: \_\_\_\_\_

(Associated Firm)

M/s \_\_\_\_\_

[Address]: \_\_\_\_\_

[Electrical License No.]: \_\_\_\_\_

Associated firm M/s---, hence forth referred as associate vendor having a valid electrical license in the state of (name of state /UR), shall execute Electrical component of above noted work [on behalf of M/s----- hence forth called as associating firm.

Terms and Conditions:

1. The associate vendor possesses valid electrical license of (name of state/UT) issued by – dated having no. ----, and other statutory certifications. The associated vendor shall keep the license valid till the completion period of above agreement.
2. The associated vendor shall comply with all applicable laws, regulations, and safety standards with respect to EI work entrusted to him by associating firm.

This MOU shall remain in force for a period of contract or extended period if any from the date of signing.

Either party can terminate this MOU with one month written notice under intimation to Engineer-In charge .In such case the associating vendor shall engage other associate vendor as per terms and conditions of the agreement before termination of this association, so that the maintenance work at site does not suffer on account of disassociation.

This MOU shall be governed by and construed in accordance with the relevant laws as applicable.

By signing below, both parties acknowledge that they have read, understood, and agreed to the terms and conditions of this MOU.

Associating Vendor

Signature with date: \_\_\_\_\_

Name: \_\_\_\_\_

Associated Vendor

Signature with date: \_\_\_\_\_

Name: \_\_\_\_\_

**SECTION 7****Schedule of Requirements (SOR)**

**Name of Work:- Supplying, Installation, Testing and Commissioning of 1x1600 KVA Dry Transformer Substation and associated works at TE Bldg. Manimajra.**

S.No.	Description of Items	Qty.	Rate	Unit	Amount
1	<p>Supply, installation, testing and commissioning of following capacity (continuous loading) 11/0.433 KV Delta/Star, step down, 3 Phase, 50 Hz, Dyn 11 vector group, Cast Resin / VPI (vacuum pressure impregnated) Dry Type, copper wound transformer (Electrolytic grade 99.9% pure copper, Core made of first grade Cold Rolled Grain Oriented (CRGO) Core grade MOH or better) AN (air natural) cooled transformer suitable for indoor applications with Offload Tap Changer on HV side in range of +5% to -15% in steps of 2.5%, insulation class F (minimum), suitable for environment conditions class E4, suitable for fire behaviour class F1, climate class-C1, having cable end boxes on HV side suitable for 3x300 Sqmm XLPE cable of 11 KV grade with necessary hardware, clamps, lugs etc. for termination on HV/MV etc. for all transformers, bus trunking arrangement on LV side complete with all accessories and safety provisions as per relevant IS Code ,The transformer shall be provided with standard fittings/accessories as per relevant IS and mentioned below, protection alarm/trip protection, 3 nos. of Polymeric Zinc Oxide surge Arrestors on HV Side. Winding Temperature scanner (Digital) with alarm/Trip contacts with RTD Sensors per LV winding and space for mounting differential protection CT's in LV chamber with neutral brought out separately including supplying and laying of copper conductor multicore control cable from transformer to HT breaker/HT Panel for safety tripping, complete as confirming to IS-2026 Part-11, i/c supplying and grouting of suitable M.S. Channel with all accessories ,complete in all respects as</p>				

	required at site as per CPWD specifications . Design ambient condition :					
	a) air temperature 45 Degree Centigrade ,					
	b) Relative Humidity 90 % Max,					
	c) Seismic Zone as per location of site,					
	d) Altitude as per location/site. The transformer should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location, rating plate as per relevant IS Code etc. All testing shall as per relevant IS Code. Noise level Shall not exceed limits as per NEMA TR-1 with all accessories running measured as per IEC 551/ NEMA Standard.					
	<b>Fitting and Accessories : The following fittings shall be provided:-</b>					
	a) Two earthing terminals with the earthing symbol					
	b) Rating and terminal marking plates;					
	c) Thermometer pocket with cap;					
	d) Lifting lugs for the complete transformer as well as for core and winding assembly;					
	e) Bi-directional flat rollers (for transformers above 200 kVA);					
	f) HV side neutral grounding strip (where one of the HV bushing terminal is connected to earth);					
	g) Bird guard;					
	h) Jacking pads (for transformer above 1 600 kVA);					
	i) Name Rating & Diagram Plate.					
	j) Monogram Plate					
	k) Additional neutral separately brought out on bushing for earthing Level 3.					
1.01	<b>1600 KVA (losses at 50% loading &lt; 4500watt, losses at 100% loading &lt; 13500watt)</b>	1	No			Each

<p>2</p>	<p>Supply, Installation, Testing and Commissioning of 11 KV, 630A, Rated Breaking Capacity 21KA for 3sec, SF6 insulated, Motorized, Outdoor, Non extensible RMU , type tested in line with latest IEC standards. The RMU shall be suitable for operations at a height up to 1000 meters above sea level and <b>at 40 degree ambient temperature</b> without any derating. The switchgear and busbar shall all be contained in a stainless steel enclosure filled with SF6 at 0.3 bar (300 hPa) relative pressure. The RMU tank shall provide full insulation, making the switchgear insensitive to the environment with degrees of protection of <b>IP67</b>. The switchgear operating mechanism shall have an <b>IP2X protection and cable chamber shall have IP3X</b>. Over all IP protection shall be <b>IP54</b>. Accidental overpressure due to an internal arc is limited by the opening of the safety valve, at the bottom of the metal enclosure, away from the operator. An operator situated in front, lateral (A-FLR 21kA – 1sec, downwards exhaust, for tank as well as cable compartment) of the RMU switchboard during an internal fault will not be exposed to the effects of arcing. Internal Arc Type Test Report for IAC AFL R21 kA for 1 sec for both tank &amp; cable box should have been for minimum <b>4 way / 4 Function RMU</b>. Plug in type of extensibility must be provided and coupling busbar should not be exposed to air to avoid oxidation of busbars. Extension of cubicle should only require 450mm to handle and the gap between the coupled RMU’s must be within 10mm. All operations shall be from front of the RMU, including access to cable bushings. Cable bushings along the sides or the rear of the RMU are not acceptable.</p>					
	<p><b>11kV, 4Way Ring Main Units (1nos. LBS as incomer+3nos. VCB as Outgoing+ Metering panel for Incomer LBS Only)</b></p>					
	<p>The above Ring Main Unit shall comprise of the followings:</p>					

A.	Incoming - Load Break Switch (LBS) each comprising of the following:					
1	11 KV, 630A, Rated Breaking Capacity 21KA for 3sec Motorized Load break switch; with built in line side manual earth switch. Earthing should be completed within 2 operations only (i.e 1. Main switch - OFF, 2. Earth switch - ON). Load Break Switch shall have 3 positions, open or disconnected, closed and earthed, and will be constructed in such a way that interlocking prevents unauthorized operations. For earth switch, manual opening and closing will be driven by a fast-acting /snap action mechanism, independent of operator action. Load Break Switch and earth switch shall have a min of 1000 (M1) mechanical operations, and 5 nos closing operations at rated Short Circuit current. LBS ( Line Break Switch ) should have 100 electrical operations at rated current - 1 No					
2	Position indicator through clear front mimic in line with IEC 62271-103 - 1 No					
3	Live cable indicator with indications (Voltage Presence Indicator-VPI) at the front and three inlets provision to check the synchronization of phases. VPI should be of same make as that of RMU - 1 No					
4	Cable box with termination bushing suitable for upto 2 RUN 3Cx150 Sq mm, XLPE cable - 1 No					
5	Fault passage indicator (FPI) with in-built Overcurrent, Short Circuit and earth fault indication- FPI should be of same make as that of RMU. - 1 No					
6	Cable Boots suitable for actual cable size - 1 No					
7	Auxiliary switch : LBS - 2 NO +2 NC, Earth switch - 1 NO + 1 NC					
8	Mechanical operation counter - 1 No					
B.	<b>Outgoings -SF6 Vacuum circuit breaker (VCB) each comprising of the following: 03 Nos</b>					

1	<p>11 KV, 630A, 21KA for 3sec Motorized VCB with spring assisted mechanism and series trip coil; with built in manual line side three position disconnecter cum earth switch. Earthing should be completed within 2 operations only (i.e 1. Main switch - OFF, 2. Earth switch - ON). Vacuum interrupter should be of same make as that of RMU. The circuit breakers shall have 2 positions: open or disconnected and closed. A separate and independent 3 position earthing switch and disconnecter shall be fitted to open and earth the cables in such way that interlocks prevent all unauthorized operations. An independent mechanism shall be fitted for the 3 positions earthing switch and disconnecter. Circuit breaker shall have a min of 2000 mechanical and 2000 electrical operations at rated current and 50 nos of operations at rated short circuit current. Disconnecter and earth switch shall have a min of 1000 (M1) mechanical operations. The earthing switch shall be fitted with its own operating mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action. - 1 No</p>					
2	Position indicator through clear front mimic in line with IEC 62271-103 - 1 No					
3	Self powered relay with O/C , E/F protection. Relay should have a front USB port for laptop interface , LCD display ,10 event records, 5 fault records with time stamp, min 2 setting group and keypad for setting parameters for the relay. Relay should be of same make as that of RMU - 1 No					
4	<b>CT's of Suitable CT ratio for 1600 KVA Transformer for protection as per manufacturer recommendation - 1 No</b>					
5	Live cable indicator with indications (Voltage Presence Indicator) at the front and three inlets provision to check the synchronization of phases.VPI should be of same make as that of RMU - 1 No					

6	Cable box with termination bushing suitable for upto 2 RUN 3Cx150 Sqmm XLPE cable. Including suitable touch proof termination kit - 1 No					
7	Cable Boots suitable for actual cable size - 1 No					
8	Mechanical operation counter - 1 No					
9	Emergency trip push button - 1 No					
<b>C.</b>	<b>Air Insulated Bus Connected Unit comprising the following</b>					
1	Air Insulated enclosure with necessary bus connection via bushing. Voltage Transformer's (VT) from the manufacturer and according to IS 3156 shall be accepted - 1 No					
2	PT's of Suitable PT ratio as per manufacturer recommendation for metering - 1 Set					
3	Multifunctional Meter for Incomer Load Break Switch Only - 1 No					
<b>D.</b>	<b>Accessories</b>					
1	Antire flex operating handle - 1 No					
2	Manometer with remote contact - 1 No					
3	Battery 24V DC and Battery Charger ( As per manufacturer recommendation ) - 1 No	1	Job		Job	
3	Supplying, installation by suspension on ceiling, testing and commissioning of following capacity Sandwich Type Rising Mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply with metal clad enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos aluminium bus bars having current density of 130 A/ sq cm at nominal current rating, necessary joints, elbow joints & expansion joints and bends, fire barrier at each floor, provision of tapping at every metre, adopter box and copper flexible for joints, continuous earthing with 2 Nos aluminium strip of suitable size (one on each side) including, G.I. clamping brackets, suspenders, angle iron bracket, steel fasteners, connecting to earthing system etc. as required					
<b>3.01</b>	<b>2500 A, I<sub>sc</sub>= 50kA for 1 sec</b>	30	Mtr		Mtr	

4	Supplying and laying of <b>3 Core 150 Sqmm</b> Stranded Aluminium Conductor, Conductor Screen with Extruded Semi Conducting Compound, XLPE Insulated, Insulation Screening with Extruded Semi Conducting Compound in Combination with Copper Tape, Cores Laid Up, Inner sheath of PVC, Galvanised Steel Flat Strip Armoured, & Overall PVC Sheathed Cable 11 KV Grade Conforming to IS 7098 (Part-2) 2011 with upto Date Amendments on the existing cable tray/RCC/HUME/Metal pipe/Surface complete etc as required at site	30	Mtr			Mtr
5	Supplying and laying of <b>3 Core 150 Sqmm</b> Stranded Aluminium Conductor, Conductor Screen with Extruded Semi Conducting Compound, XLPE Insulated, Insulation Screening with Extruded Semi Conducting Compound in Combination with Copper Tape, Cores Laid Up, Inner sheath of PVC, Galvanised Steel Flat Strip Armoured, & Overall PVC Sheathed Cable 11 KV Grade Conforming to IS 7098 (Part-2) 2011 with upto Date Amendments in the existing masonry duct complete etc as required at site.	80	Mtr			Mtr
6	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required.					
6.01	150 Sq mm	8	Nos			Each
7	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required.	2	Set			Set
8	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/	2	Set			Set

	coke and salt as required.					
9	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	50	Mtr		Mtr	
10	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	50	Mtr		Mtr	
11	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	75	Mtr		Mtr	
12	Supplying and Laying of 80 mm GI Pipe A-class for laying of 50mmx5 mm copper strip in ground/flooring complete etc as required.( This item does not including excavation of Katcha space or CC Flooring )					
12.01	On Surface	15	Mtr		Mtr	
12.02	In Ground	6	Mtr		Mtr	
<b>13</b>	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
<b>13.01</b>	120 mm dia (OD-120 mm & ID-103 mm nominal)	25	Mtr		Mtr	
14	Supply & installation of CO2 type Fire Extinguisher ISI marked conforming to IS: 15683. Capacity 4.5 Kg. Complete with delivery hose horn, wheel type release valve, locking arrangement, operation manual and bracket. Operating Temperature:- 30°C to +55°C. etc as required.	2	Nos.		Each	
15	Supply & installation of Fire Extinguisher (Stored Pressure type) Capacity 06 Kg duly ISI marked conforming to IS: 15683: 2006, with IS 14609, ISI market ABC powder complete with squeeze grip release valve, discharge pipe, locking arrangement, pressure gauge, operation manual and bracket. Operating Temperature: - 10°C to + 55°C. complete as required.	2	Nos.		Each	
16	Supply & installation of rubber mat 1 mtr.	10	Mtrs		Each	

	Wide and 3 mm thick to withstand upto 33 KV dielectric strength as per IS 15652 : 2006 etc. complete as required.					
17	Supply & installation of 4 Nos 9.5 lts capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on the existing MS angle iron frame with bracket of appropriate size & capacity i/c filling sand etc.	1	Nos.		Each	
18	Supply & installation of First Aid Box (MS) as approved by St. John Ambulance Brigade / Indian Red Cross complete etc. as reqd.	1	Nos.		Each	
19	Supply & fixing safety instruction chart in word duly framed with 5 mm thick glass as required. (Approximate front area 1.20 sq. meter).	1	Nos.		Each	
20	Supply & fixing shock treatment chart duly mounted on a wooden frame with 5 mm thick glass as required. (Approximate front area 1.20 sq. meter).	1	Nos.		Each	
21	Supplying and fixing of angle iron frame fabricated from following size MS angle iron including cutting, welding and painting ( as per the instructions of Engineer-in-charge ) complete etc as required.					
21.01	40mm x 40mm x 5mm	10	Mtrs		Each	
22	Supplying and fixing of single line diagram and layout diagram of the substation duly prepared, laminated on the A-1 size hard board of complete etc required.	2	Jobs		Each	
					Total	

**DNIT approved for Rs.68,47,337/- ( Rs. Sixty-Eight Lakhs Forty-Seven Thousands Three Hundred & Thirty-Seven Only)**

SDE(E-P)  
O/o Sr CE(E),CHD

EE(E-P)  
O/o Sr CE(E),CHD

AO/IFA  
O/o Sr CE(E)

Jt CE(E)  
Chandigarh

Sr. Chief Engineer (E)  
BSNL Electrical Zone  
Chandigarh

Contractor

EE(E)

**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 / Furukawa / Hitachi / Exide/ Prestolite / Standard /
4	HV Switchgear (Vacuum Circuit Breaker/SF6 )	Biecco Lawrie / Crompton / Kirloskar / MEI / Jyoti Ltd / Schneider Electric / ABB / Siemens
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(lcs=lcu)	L&T/ Schneider Electric / Siemens
8	SDF units	L&T/ Schneider Electric / Siemens/ HPL/ Havells
9	Power Contactors	L&T/ Schneider Electric / Siemens/Lakshmi (LECS)
10	Change Over Switch	HPL / Havells / H-H Elcon
11	Intelligent APFC Relay	L&T/EPCOS(Siemens)/ Schneider Electric / Neptune Ducati/Syntron/ABB
12	Bus Bar Trunking/ Sandwiched Bus Duct	Moeller/L&T/Schneider Electric/ABB/Legrand/Zeta
13	Power Capacitors (MPP/APP)	L&T/EPCOS(Siemens)/ABB/Crompton/ Schneider Electric/Neptune Ducati
14	Digital/ KWHr meter	Schneider Electric/ AE/ Digitron / IMP/ Meco / Rishabh / Universal/HPL/L&T/ABB
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

Contractor

EE(E)

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
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
45	High Precision Package AC Units	Schneider (Uniflair)/Stulz/Sidwal

## 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.