BID SPECIFICATION NO. RVPN / SE / T&C / HND / BN. 15 / 2016-17  D. 1279 Dt. 02.02.2017

Tenders are hereby invited in e-tender system for construction work of 02 Nos., Chhonkarwara Bays at 400 KV GSS Hindaun. Tenders are to be submitted online in electronic format on website http://eproc.rajasthan.gov.in. The tender document/specification can be downloaded from above mentioned website.

GENERAL DETAIL OF WORKS:

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<th>A</th>
<th>NIB No.</th>
<th>B</th>
<th>Work Description</th>
<th>C</th>
<th>Cost of Tender Specification</th>
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<th>Processing fee of RISL</th>
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<td>Construction work of 02 Nos., Chhonkarwara Bays at 400 KV GSS Hindaun.</td>
<td>Rs. 2500.00 (Two Thousand Five Hundred Only)</td>
<td>Rs. 1000/-</td>
<td>Rs. 14000/- Only</td>
<td>Rs. 700000/- (Approx.)</td>
<td>120 days after the date of Tender Opening</td>
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IMPORTANT DATES:

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<td>(i)</td>
<td>Date of downloading of tender specification</td>
<td>08.02.2017 (10:00 Hrs)</td>
<td><a href="http://eproc.rajasthan.gov.in">http://eproc.rajasthan.gov.in</a> and <a href="http://sppp.rajasthan.gov.in">http://sppp.rajasthan.gov.in</a></td>
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<td>(ii)</td>
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<td>27.02.2017 (14:00 Hrs)</td>
<td>Office of the SE(T&amp;C), RVPN, Hindaun</td>
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<td>Last date &amp; time of submission of electronic bid</td>
<td>28.02.2017 (18:00 Hrs)</td>
<td><a href="http://eproc.rajasthan.gov.in">http://eproc.rajasthan.gov.in</a></td>
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<td>(iv)</td>
<td>Opening of Technical Bid</td>
<td>01.03.2017 (14:00 Hrs)</td>
<td><a href="http://eproc.rajasthan.gov.in">http://eproc.rajasthan.gov.in</a></td>
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<td>Opening of Price Bid</td>
<td>Shall be intimated separately</td>
<td><a href="http://eproc.rajasthan.gov.in">http://eproc.rajasthan.gov.in</a></td>
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NOTE:

1. The bidders are requested to submit their bids prior to last date of submission to avoid Non-submission of their bids up to prescribed date due to non-availability of / hanging of website at last moments. The date of submission of bids will not be extended if system is hang up in last hours or congestion.

2. Furnishing of Bid Security / Exemption certificate is essential otherwise the electronic bid will not be opened.

3. (i) The bidder will have to deposit prescribed cost of tender specification by DD/Banker’s cheque payable in favour of **Accounts Officer (T&C), RVPN, Hindaun** up to stipulated date & time in the office of the A.O (T&C) RVPN, Hindaun and obtain a receipt thereof.

(ii) The bidder will have to deposit prescribed Bid Security by DD/Banker’s Cheque payable in favour of **Accounts Officer (T&C) RVPN, Hindaun** payable at Hindaun or Bank guarantee in favour of **Superintending Engineer (T&C), RVPN, Hindaun** in prescribed format up to stipulated date & time in the office of the A.O (T&C) RVPN, Hindaun and obtain a receipt/ acknowledgement thereof and they shall upload the receipt/ acknowledgement along with their online bid.

4. Bid security is to be furnished also by the Vendors registered with the NIGAM.

5. The Central and State Govt. undertaking/Corporations and companies are exempted from furnishing of bid security. However, they have to upload copy of certificate/documentary evidence in support of their being Govt. undertaking, with their bid.

6. The bidder shall ensure that his bid is submitted / furnished strictly in the manner detailed in the bidding documents.

7. Offers of bids without relevant documents with respect to qualifying requirements shall not be considered, as per mention in point no. 1.8.

8. Technical and Commercial deviations, if any, shall only be mentioned in Schedule-V Section V 'Departure from the Specification' attached with this specification. Mentioning of such deviations elsewhere in the offer will not be considered as deviation. The printed terms and conditions of firms, if any, attached with the tender will not be considered. RVPN shall have right to accept or reject these deviations.

9. Offers of bids without Schedule-II to VII and without supporting documents for fulfillment to qualifying requirements shall not be considered.

10. Any cutting / over writing in the figures of tendered documents should also be clarified / indicated in words duly signed.

11. The bidders are required to furnish the clarification/confirmation/ documents sought subsequent to opening of bid within specified time failing which, the case shall be finalized/decided on the basis of available information. The responsibility of being ignored on account of delay in furnishing of desired information/documents shall be of the bidder.

[Signature]
12. The tender documents can be downloaded from website http://eproc.rajasthan.gov.in. Details of this tender notification and pre-qualification criteria can also be seen in NIT exhibited on website www.rvpn.co.in. Tenders are to be submitted online in electronic format only on website http://eproc.rajasthan.gov.in.

13. The bidders who are interested in bidding can download tender documents from http://eproc.rajasthan.gov.in up to the stipulated date & time.

14. Bidders who wish to participate in this tender will have to register on http://eproc.rajasthan.gov.in (bidders registered on eproc.rajasthan.gov.in before 30.09.2011 need to register again). To participate in online tenders, bidders will have to procure Digital Signature Certificate (Type-II or Type-III) as per Information Technology Act-2000 by using which they can sign their electronic bids. Bidders can procure the same from any CCA approved certifying agency i.e TCS, Sastreet, Ncode etc. or they may contact e-Procurement Cell, Department of IT & C, Government of Rajasthan for future assistance. Bidders who already have a valid Digital Certificate need not to procure a new Digital Certificate.

Contact No. 0141 – 4022688 (Help desk 10.00 AM to 6.00 PM on all working days) e-mail eproc@rajasthan.gov.in
Address: e-Procurement Cell, RISL, Yojana Bhawan, Tilak Marg, C-Scheme, Jaipur

15. Bidder shall submit their offer online in electronic formats both for technical and financial proposals. However, cost of specification and Bid Security in the office of A.O (T&C) RVPN, Hindaun should be submitted physically in the Office of The Superintending Engineer (T&C), RVPN, Hindaun up to stipulated date & time. The tenderer shall upload scanned copies of receipts / acknowledgement of above fee documents along with their online bid.

16. Before electronically submitting the tenders, it should be ensured that all the tender papers including conditions of contract are digitally signed by the tenderer.

17. Bidders are also advised to refer “Bidders Manual” available under “Downloads” section for further details about the e-tendering process.

18. The tenders are being invited by Superintending Engineer (T&C) Rajasthan Rajya Vidyut Prasaran Nigam Limited having office at 400 KV GSS Hindaun [Rajasthan] Email id is se.tnc.hindaun@rvpn.co.in and contact no. is 9414061384, Sh. D.K. Sharma, SE [T&C] RVPN Hindaun.


20. The construction work is to be done as per RVPN BSR-2011 effective from 01.01.2011 for which Bill of Quantity (BOQ) shall be provided with Bid specification.

21. The work is to be completed within 3 Months from the date of placement of Order.

22. Qualifying Requirement: Only those firms who have completed construction of any 220/132 KV GSS or part thereof on labour contractor of minimum of Rs 5 Lacs and have completed within the contract time of the work order in last two year will be
A completion certificate issued by authority not below the rank of Superintending Engineer is to be enclosed as proof of qualification.

23. The Purchaser does not bind himself to accept the lowest or any Bid or any part of the Bid and shall not assign any reason(s) for the rejection of any Bid or a part thereof.

24. The online tenders will have to be digitally signed and submitted in time specified on http://eproc.rajasthan.gov.in in the following manner:-

**ONLINE SUBMISSION:**
The tenderer have to submit their bid in 3 covers comprises of

(a) **Cover 1 (.pdf) : FEE (scanned copies)**

(ii) Proof of depositing cost of tender specification i.e the receipt issued by the **ACCOUNTS OFFICER (T&C), RVPN, HINDAUN** on account of depositing the cost of tender specification through DD/Banker's Cheque payable in favour of **Accounts Officer (T&C), RVPN, Hindaun**.

(iii) Proof of submitting Processing Fee i.e. the **acknowledgement** issued by the **SE (T&C), RVPN, Hindaun** on account of depositing the processing fee (Rs.1000.00) through DD/Banker's Cheque in favour of M.D, RISL payable at Jaipur.

(b) **Bid security is to be furnished also by the Vendors registered with the NIGAM.**

(c) The Central and State Govt. undertaking/Corporations and companies are also exempted from furnishing of bid security. However, they have to upload copy of certificate/documentary evidence in support of their being Govt. undertaking, with their bid.

(b) **Cover 2 (.pdf) : TECHNO COMMERCIAL BID (scanned copies)**

The technical information has to be prepared very carefully since it will be the basis for the pre-qualification of bidders. Only relevant and to the point information should be indicated. Tenderers should neither supply information not requested in the specification nor make any comments. Failure to provide any required information, may lead to the rejection of the offer. Tenderer must read Section-I, Section-II, Section-III, Section IV & Appendix of specification very carefully before signing on it. Similarly, Schedules of Section-V, Documents in support of qualifying requirement must be signed digitally on each & every page by the authorized representative of the firm after filling requisite information/details, desired in the specification & PQR (Pre-Qualifying Requirement).
This cover consists of price schedules (BOQ) for construction work of 02 Nos. 220 KV Chhokarwar Bay at 400 KV GSS Hindaul. The tenderer must quote the prices for the bay in which they wish to participate in the manner as indicated in the Price schedules, failing which tender is liable for rejection. The rates/prices shall be entered in figures in % Excess / Less. These schedule(s) must be digitally signed by the authorized representative of the firm.

25. The bidder will have to quote their prices in figures in percentage Excess or Less by considering all taxes and duties and other related cost variation on total erection cost of bay work mentioned in price schedule. The percentage variation Excess or Less quoted by the bidder for bay work in Price Bid shall also be applicable for unit rate items indicated in Schedule for unit rate of quantity (Schedule-II) for that Bay.

26. The bidder, if is a Micro, Small or Medium enterprise as per the Micro, Small & Medium enterprise development act, 2006 (MSMED Act 2006) and registered with the authorities under the above Act for the items/services covered under this tender, then the firm has to indicate the Entrepreneurs Memorandum No. (Twelve Digit) and scanned copy of the certificate issued by the Authorities under the MSMED Act, 2006 should be uploaded along with the online bid.

27. Payment shall be made to supplier/contractor through RTGS/NEFT for quick and safe transfer of funds across the country. The charges for transfer through RTGS/NEFT shall be on the part of supplier/contractor. The supplier/contractor shall furnish particulars to the payment making authorities of RVPN in prescribed format to be provided by the purchaser.
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SECTION I
"INSTRUCTIONS TO BIDDERS"

1.01 INTRODUCTION:

The Bidders, in his own interest is requested to read very carefully these instructions and the terms and conditions as incorporated in Section II & III before filling the tender form. Submission of the tender shall be deemed to be the conclusive proof of the fact that the bidder has acquainted himself and is in agreement with all the instructions, terms and conditions governing the specification, unless otherwise specifically indicated / commented by him in his tender.

1.02 FILLING OF BIDS:

(i) For procurement of Goods & Services having estimated value of Rs. Ten lakh or more; and procurement of works (labour contracts) having estimated value of Rs. Five lakh or more shall be submitted online in the electronic format attached here to and all blanks in the bid and the schedule to the specification shall be duly filled in. The completed forms and schedule(s) shall be considered as part of the contract documents in the case of successful bidder(s).

(ii) No alteration should be made to the form of the bid specification and schedules. The bidder must comply entirely with specification. Alternative proposals, if any, shall be clearly stated in the covering letter and shall accompany each copy of the bid.

(iii) The bid and all accompanying documents shall be in Hindi / English Language and shall be signed by a responsible and authorized person. The name, designation and authority of the signatory shall be stated in the bid.

(iv) Bid should be filled in only with ink or typed. No bid filled in by pencil or otherwise shall be considered.

(v) All additions, alterations, and over writings in the bid must be clearly initialed by the signatory to the bid.

(vi) The bidder must quote the prices strictly in the manner as indicated herein, failing which bid is liable for rejection. The rates / prices shall be entered in words as well as in figures. These must not contain any additions, alterations, over writings, cuttings or corrections and any other marking which leave any room for doubt.
The NIGAM will not be responsible to accept any cost involved in the preparation or submission of bids.

Bids and accompanying documents / correspondence shall be addressed to Superintending Engineer (T&C), RVPN, Hindaun.

The bidder should sign the bid form at each page at the end.

Telegraphic quotation or quotations sent by fax or email will not be considered.

1.03 BID SECURITY:

(a) The bidder will have to deposit prescribed bid security by DD / Banker's Cheque payable in favour of the Accounts Officer (T&C), RVPN, Hindaun up to stipulated date & time in the office of the Superintending Engineer (T&C), RVPN, Hindaun and obtain a receipt/ acknowledgement thereof. No other mode of deposit shall be accepted.

(b) Any tender not accompanied by a receipt of depositing cost of Tender Specification and bid security / Exemption Certificate shall be rejected and the tender will not be opened.

(c) The bid security of unsuccessful bidders shall be refunded soon after final acceptance of successful bid(s) and signing of contract agreement and submitting performance security either in form of bank guarantee (B.G.) or crossed Bank Draft or by furnishing an undertaking for deduction of performance security from his each running and final bill @ 10% of the amount of the bill by successful bidder(s). In case of the successful bidder, the amount of bid security may be adjusted in arriving at the amount of Performance Security, or refunded if the successful bidder furnishes the full amount of performance security.

(d) Request for adjustments/ proposal for acceptance of bid security, if any, already lying with the NIGAM in connection with some other bids/ orders shall not be entertained.

(e) No interest shall be payable on such deposits.

(f) The purchaser reserves the right to forfeit bid security or a part thereof in circumstance, which according to him indicate that the bidder is not earnest in accepting/ executing any order placed under the specification.

Bid security is to be furnished also by the Venders registered with the NIGAM.

1.04 DOCUMENTS TO BE ENCLOSED WITH THE BID:

Each tender in electronic format shall be accompanied with the following schedules, documents and the fact of their having been enclosed should be as per tender specification. All tenders and accompanying documents will have to be digitally signed and submitted in time specified on [http://eproc.rajasthan.gov.in](http://eproc.rajasthan.gov.in). The tender which is not accompanied by any or all of the following schedules, documents or is accompanied by incomplete annexures / schedules is liable for rejection:

(a) Cover 1 (.pdf): FEE (scanned copies)
   (i) Proof of depositing cost of tender specification
   (ii) Proof of submitting processing fee
(iii) Proof of depositing bid security / Exemption certificate

(b) Cover 2 (.pdf): TECHNO COMMERCIAL AND PRICE BID (scanned copies)

(i) Section - 1 - Instructions to Bidder
(ii) Section - II - Technical Specification.
(iii) Section - III - General condition of contract
(iv) Section - IV - Safety
(v) Section - V - Schedules & Annexeures
(vi) Section VI - Price Schedule
(vii) Documents in support of Qualifying Requirement

The above information should be prepared very carefully since it will be the basis for the pre-qualification of bidders. Only relevant and to the point information shall be indicated. Failure to provide any required information may lead to the rejection of the offer. All above documents are to be signed on each & every page by the authorized representative of the firm after filling requisite information/details desired in the specification & PQR. Departure from specification (Technical & Commercial) shall only be given in Schedule-VIII. Deviations indicated elsewhere will be ignored.

The bidder will have to quote their prices in figures in percentage Excess or Less by considering service tax, all taxes and duties and other related cost variation on total erection cost of bay work mentioned in the price bid of specification. The percentage variation Excess or Less quoted by the bidder for bay work in Price Bid shall also be applicable for unit rate items indicated in Schedule for unit rate of quantity (Schedule-II) for that Bay, failing which tender is liable for rejection. The Price Bid must be signed by the authorized representative of the firm. Being single part bidding, price bid shall be opened along with techno-commercial bid but successful bidder shall be decided on the basis of most advantageous bid having lowest price and fulfill all the qualification requirement as per clause No. 1.08. Here it is also clarify that if first lowest bid not fulfilled qualification requirement than successful bidder shall be declared to next lowest bidder who fulfills the qualification requirement as per clause No. 1.08.

1.05 TENDER FORMAT, SUBMISSION AND OPENING OF TENDERS

(a) Bidder shall submit their bid in electronic format by digitally signing the same. Bidder shall procure Digital Signature Certificate (DSC) as per IT Act - 2000.

(b) The documents listed in ITT (Instructions To Tenderers) clauses, along with addendum's issued till date & time of bid submission, shall be filled by the bidder to bind the bidder to contract. All pages of the bid shall be stamped and digitally signed.

(c) All omissions in the schedule of price, must be serially numbered and digitally attested by the officer opening the bids, so as to make further dispute impossible on this score.

(d) Bidders who have to participate in this tender will have to register on http://eproc.rajasthan.gov.in. Further Bidders who have to participate in online tenders will have to procure digital signature certificate as per IT act so that they can sign their electronic bids.
(e) Before electronic submission of tender, it should be ensured that Section-I, Section-II, Section-III, Section-IV & Appendix of the tender specification are digitally signed by the tenderer.

(f) All tenders, in which any of the prescribed conditions are not fulfilled or which have been vitiated by errors in calculations, totaling or other discrepancies or which contain over writing in figures or words or corrections not initialed and dated, may be liable to rejection.

(g) The electronically received bids will be opened in the office of the Superintending Engineer (T&C) RVPN, Hindaun on stipulated date & time in the presence of such tenderers or their authorized representative, who choose to be present. The system does not permit electronic submission of late tenders after the due date & time.

(h) The opening of tender shall not be witnessed by a tenderer or tenderers who himself / themselves has / have not bided for the same work.

(i) In case the date fixed for opening of the tenders be declared as a public holiday, the bid shall be opened on the next date on which office re-opens after such holiday(s).

1.06 VALIDITY OF OFFERS:
Bid offer shall be valid for a minimum period of 120 days after the date of opening of tender. Tenders mentioning a shorter validity period than specified are likely to be rejected / ignored.

1.07 SIGNATURE OF TENDERER:
The tender must contain the name, designation and place of business of the person or persons making the tender and must submit online, placing them in 3 covers after filling & signing digitally with his DSC (Digital signature). Tender by a partnership firm must be furnished with full names of all the partners and should be signed digitally by one of the member of partnership firm or by a authorized representative indicating the designation of the person or persons, with authority letter signed by the Chairman/ Secretary other person authorized to bind the Corporation / Company in the matter.

1.8 QUALIFYING REQUIREMENT:
(a) Only those firms who have completed construction of any 220/132 KV GSS or part thereof on labour contractor of minimum of Rs 5 Lacs and have completed within the contract time of the work order in last two year will be qualified for price bid. A completion certificate issued by authority not below the rank of Superintending Engineer is to be enclosed as proof of qualification.

(b) The Bidder shall furnish documentary evidence to this effect in the form of a certificate issued by official not below the rank of Superintending Engineer/ equivalent containing the details of execution of all activities of GSS work. The copy of certificate should be attested by a Notary Public and signed by the bidder or by authorized representative of the firm.

(c) Besides above, only such contractors should apply, who are already registered with provident fund Commissioner. The copy of certificate in this respect should be attested by Notary Public and signed by the bidder or by authorized representative of the firm.
(c) The bidder shall quote the price as per Instructions To Bidder clause No. 1.04 (b) in price schedule section-VI.

1.9 PRICES:
(a) Bidder must quote their prices on FIRM PRICE BASIS.

(b) The prices quoted should be inclusive of cost of transportation for GSS Bay erection material from departmental site stores at GSS Bay construction site and considering service tax, all taxes and duties and other related cost variation on total erection cost of bay work mentioned in price schedule.

(c) The rates/prices shall be quoted in the manner as desired in the price schedule (section-VII).

(d) Any tender containing prices not quoted in the manner prescribed under the clause No. 1.04 (b) is liable to be ignored.

(e) Representation for enhancement of rates once quoted, will not be considered.

1.10 RAJASTHAN VALUE ADDED TAX, LEVIES & DUTIES:

(i) In accordance with the scope of works, this is a labour contract of erection from the "FREE ISSUE" material, hence no VAT will be leviable. However tax on such labour contracts if levied, shall be to the Contractor's account.

(ii) Service Tax: The bidder shall quote the prices inclusive of applicable service tax. Any liability towards service tax, if arises/applicable, inclusive of cost of material to be supplied by RVPN free of cost, shall be to the bidder's account. The bidder shall give service tax registration number. Any statutory variation in service tax will be to contractor's accounts.

(iii) Work Contract Tax: The work contract tax will be deducted at the applicable laws on the value of erection, testing & commissioning activities. Any liability arising on A/c of work contract tax will be to the contractor's account. Any statutory variation in the work contract tax will be to the contractor's accounts.

(iv) Income Tax: If any income tax, surcharge on income tax or any other corporate tax is attracted under the law then the same shall be paid by him as per Government rules / deducted from his bills / invoices at the prevailing rate and if such tax is not applicable, then the contractor can claim reimbursement of the same from the relevant competent authority. However necessary TDS certificate(s) shall be issued by Nigam's paying Authority.
1.11 QUANTITIES:
(a) The quantum of work indicated in the accompanied schedule (s) are only provisional and the purchaser reserves the right of revising the same at the time of placing the order. The NIGAM also reserves the right to entrust only part work of a particular GSS bay.
(b) The NIGAM also reserves the right to split the quantities and to entrust the order for the erection work to one or more contractors. The Bidder shall agree to accept part works at the rates/prices mentioned in his tender and/or accepted by the NIGAM.

1.12 COMPLETION TIME
The GSS bay work mentioned in schedule of quantity (Schedule-I) is required to be erected and commissioned within the period mentioned in Schedule-III. This scheduled completion period is inclusive of monsoon period. The commencement of completion period shall be counted from the date of issue of Work order.

1.13 AMENDMENT IN SPECIFICATIONS:
The Superintending Engineer (T&C), RVPN, Hindaun may revise or amend the specification and timings prior to the date notified for opening of the tenders. Such revision or amendment, if any will be communicated to all the tenderers through corrigendum(s) on http://eproc.rajasthan.gov.in as amendment or addenda to this invitation of the tender.

The amendment (if any) will be notified on web for all prospective tenderers who have received the tender documents and it shall be binding on them. Tenderers are required to immediately download any such amendment. It will be assumed that the information contained therein has been taken into account by the tenderer in its tender.

In order to provide prospective tenderers reasonable time to take the amendment into account, in preparing their tender, the Nigam may, at its discretion, extend the deadline for the submission of tenders, in which case, the Nigam will notify all tenderers on web of the extended deadline, for submission of tenders.

1.14 GENERAL:
(a) Specification/Tender document may be downloaded by any of the interested tenderer from http://eproc.rajasthan.gov.in for the consideration of his tender up to stipulated date & time. The cost of specification once deposited will not be refunded under any circumstances.
(b) The contractor shall treat the details of the specification and other tender documents as private and confidential and they shall not be reproduced without the written authorization of the NIGAM.

c) The NIGAM does not bind himself to accept the lowest or any tender or any part of the tender and shall not assign any reason(s) for the rejection of any tender or a part thereof.

d) The fact of submission of tender to the NIGAM shall be deemed to constitute an agreement between the tenderer and NIGAM whereby such tender shall remain open for acceptance by the NIGAM and tenderer shall not have option to withdraw his offer, impair or derogate the same. If the tenderer be notified during the period of validity of tender that his tender is accepted by the NIGAM, he shall be bound by the terms of agreement constituted by his tender and such acceptance thereof by the NIGAM, until formal contract of the same tender has been executed between him and the NIGAM, in replacement of such agreement.

e) The successful tenderer shall have to execute the contract documents/agreement for the proper fulfillment of the contract. This shall be done by him and the NIGAM shall furnish such an executed stamped agreement free of charge.

1.15 IMPORTANT:

(a) The bidders should quote these rates strictly in accordance with commercial terms and conditions of erection of towers and other terms and conditions of this tender specification and they should not quote their own terms and conditions. The bids not falling in line with NIGAM’s terms and conditions quoted in the tender, are liable to be summarily rejected.

(b) In case of any doubt or interpretation of the terms and conditions, the decision of the Superintending Engineer (T&C), RVPN, Hindaul will be final and binding to the bidder and no dispute in this regard will be entertained.

(c) The Bidders should specifically note that the offer containing:

(i) Deviations/addition/alterations/commissions in bidding schedules.

(ii) Deviations and contradictions to terms and conditions specified in this tender are liable to be summarily rejected.

1.16 Any action on the part of the Bidders to revise the rates/price at his own interest after the opening of the tender may result in rejection of the tender and also debar him from submission of tenders to the NIGAM at least for one year.

1.17 PRE-BID MEETING/ CLARIFICATIONS:

(i) A pre-bid conference is also scheduled by the procuring entity as per the details mentioned in the NIB and to clarify doubts of potential bidders in respect of the procurement and the records of such conference shall be published on the respective websites.

(ii) Prospective bidders/firms, who have deposited the prescribed cost of bid specification as specified in NIB, are allowed to attend the pre-bid conference/meeting and submit their pre-bid queries only in the specified format measure-II and schedule.

(iii) The period within which the bidders may seek clarifications under (b) above and the period within which the procuring entity shall respond to such requests for clarifications shall be as under:-

[Signature]
a) Last date of submitting clarifications requests by the bidder: As per bid specification.
b) Response to clarifications by procuring entity: As specified in bid specifications.

d) The minutes and response, if any, shall be provided promptly to all bidders to which the procuring entity provided the bidding documents, so as to enable those bidders to take minutes into account in preparing their bids, and shall be published on the respective websites.

E) Publishing of any clarification on the respective website shall be deemed to have been conveyed to all bidders in cases of non-availability of contact details of those bidders who have purchased downloaded to the bid document, postal delay, loss of clarification in the transit.

1.18 NEGOTIATIONS

I) Except in case of procurement by method of single source procurement or procurement by competitive negotiations, to the extent possible, no negotiations shall be conducted after the pre-bid stage. All clarifications needed to be sought shall be sought in the pre-bid stage itself.

III) Negotiations shall, however, be undertaken only with the lowest or most advantageous bidder under the following circumstances-

(a) when the prices have been quoted by the bidders for the subject matter of procurement; or
(b) when the rates quoted vary considerably and considered much higher than the prevailing market rates.

(II) The bid evaluation committee shall have full powers to undertake negotiations.

IV) The lowest or most advantageous bidder shall be informed in writing either through messenger or by registered letter and email (if available). A minimum time of seven days shall be given for calling negotiations. In case of urgency the bid evaluation committee may reduce the time, provided the lowest or most advantageous bidder has received the intimation and consented to regarding holding of negotiations.

V) Negotiations shall not make the original offer made by the bidder inoperative. The bid evaluation committee shall have option to consider the original offer in case the bidder decides to increase rates originally quoted or imposes any new terms or conditions.

VI) In case of non-satisfactory achievement of rates from lowest or most advantageous bidder, the bid evaluation committee may choose to make a written counter offer to the lowest or most advantageous bidder and if this is not accepted by him, the committee may decide to reject and re-invite bids or to make the same counter-offer first to the second lowest or most advantageous bidder, then to the third lowest or most advantageous bidder and so on in the order of their initial standing and work / supply order be awarded to the bidder who accepts the counter-offer. This procedure should be used in exceptional cases only.

VII) In case the rates even after the negotiations are considered very high, fresh bids shall be invited.

1.19 TRANSPARENCY IN PUBLIC PROCUREMENT:

The Government of Rajasthan has enacted the Rajasthan Transparency in Public Procurement Act, 2012 and Rajasthan Transparency in Public Procurement Rules.
2013 w.e.f 26.01.2013. This procurement process is abided by the processes and procedures of the aforesaid Act & Rule. In case the any clause (s), term (s) & condition (s) in this bidder document differ in its interpretation and context from it the later (i.e. GOR Act and Rule as mentioned above) shall prevail.
SECTION – II
TECHNICAL SPECIFICATIONS
FOR CONSTRUCTION OF BAY WORKS AT EHV SUB STATIONS

1.0 SCOPE:
1.1 The erection work of Sub Stations covered under this section consists of the following:

TYPES AND AREAS OF WORK:

(A) Construction of bay at 220kV and 132kV Sub Stations
The works/activities which may be required to be got done as per BSR 2011 for the work of Erection of Sub Station are as given below:

a) Laying of earth mesh.
b) Laying of Earth risers.
c) Placing/ Driving of earth electrodes.
d) Erection of Sub Station Steel Structures.
e) Stringing of Bus bar of ACSR conductor.
f) Stringing of Earth wire.
g) Jumpers.
h) Erection of Circuit Breakers
i) Erection of Station Transformer.
j) Erection of current transformer/ potential transformer/ capacitive voltage transformer / Series Reactor / Residual Voltage Transformer / Neutral Current Transformer
k) Erection of Lightning Arrester.
l) Erection of Isolator & Earthing Switches.
m) Erection of Wave Trap.
n) Erection of Post insulator.
o) Erection of control relay panel / L.T Panel / D.C. Board / RTCC Panel / PLCC Panels, etc.
p) Erection of murehalling kiosk / line matching unit / Line matching and distribution unit.
q) Erection of Battery Charger.
r) Erection of Battery Sets.
s) Laying of control & Power cables & wiring etc.

1.2 The Contractor shall be fully responsible for completing all the above works and till they are taken over by the NIGAM.
1.3 The methods of erection activities not dealt in details are left to the Contractor who shall exercise his own judgment with regard to actual handling of materials and in deciding upon the best methods to be adopted.

2.0 GENERAL INSTRUCTIONS

(i) Transportation and unloading of the Sub Station material and equipment at the location shall be done in a safe manner so that they are not damaged or misplaced.
(ii) All the material and equipment shall be checked as per Bill of Material (BOM).
(iii) All support insulators and other fragile equipment shall be handled carefully preferably with cranes having suitable boom length and handling capacity.
Sling ropes etc. should be of sufficient strength to take the load of the equipment to be erected. They should be checked for breakages of strands before being used for the erection of equipments.

The slings should be of sufficient length to avoid any damage to insulator or other fragile equipments due to excessive swing or scratching by sling ropes, etc.

Mylar cloth shall be used for cleaning the inside and outside of hollow insulators.

Erection of equipment shall be carried out as per and in the manner prescribed in the erection, testing and commissioning manual / instructions procedures of the manufacturer, to be provided by the Engineer-In-Charge.

The services of the manufacturer’s Engineer, wherever necessary may be utilized by RVPN on its own account for erection, testing and commissioning of Sub Station equipment.

Whenever the work is required to be got done at the existing GSS where the adjacent portions may be charged, effective earthing must be ensured for safety against induced voltages so that work can be carried out without any danger / hazard to the workmen.

Wherever EHT/HT/LT lines or installations are located in the land of the Sub Station, the Contractor shall ensure that adequate safety clearance is maintained during erection activities. In case shutdown of such lines or installations is required, the Contractor shall submit the request well in advance to the Work-In-Charge.

Wherever it is necessary to avail shutdowns of energized circuits for carrying out any work, the contractor shall request the work-In-Charge for arranging the same. The Work-In-Charge shall submit a requisition to the Engineer In-charge of the GSS stating the date, time and duration of the shutdown and the section / portion which is to be kept out of circuit during the shutdown.

The Work-In-Charge shall ensure that the portion of the switchyard under shutdown has been isolated and that effective earthing of the equipment / bus bar, on which work is to be carried out, has been done and obtain the PTW. He will then issue PTW to the contractor.

The contractor shall ensure that the work is completed within the requisitioned time.

After completion of the erection work, all surplus material including bolts and nuts, templates, etc. shall be returned to the store. All unusable cut lengths of material such as conductor, earth wire, M.S. Rod and M.S. Flat, etc. shall not be treated as wastage and shall also be deposited in the store.

3.0 EARTHING:

PLACING / DRIVING OF EARTH ELECTRODE, LAYING OF EARTH MAT AND LAYING AND FIXING OF EARTHING RISERS.

Note 1: The text and the drawings in this clause refer to some particular sizes of M.S. Rod or M.S. Flat. The reference is indicative only. The procedure / method, etc. are typically applicable to all sizes of M.S. Rod/ M.S.Flat. The following basic principles shall be followed.

a) The minimum overlapping length for joints of M.S. Flat shall be equal to twice the width of the M.S. Flat.

b) The Minimum overlapping length for joints of M.S. Rod shall be 100 mm for 25/28 mm dia and 200mm for 40mm dia. rod.
Note 2: The scope of work includes consumable items such as welding electrodes, bitumen compound, bitumen impregnated tape, red oxide paint, green paint and bentonite slurry except where specifically mentioned otherwise.

3.1. GENERAL INSTRUCTIONS:

(1) Earthing of the Sub Station shall be done as per the earth mat design provided by the Work-In-Charge.

The details of the earthing material generally used in a Sub Station are given below:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Purpose</th>
<th>Description &amp; Size of Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>132 kV Sub Stations</td>
</tr>
<tr>
<td>1</td>
<td>Main Earthing Conductor for Earth Mat</td>
<td>25/28 mm dia. M.S. Rod</td>
</tr>
<tr>
<td>2</td>
<td>Earthing Conductor for Risers (for equipments &amp; structures).</td>
<td>50 x 10 mm M.S. Flat</td>
</tr>
<tr>
<td>3</td>
<td>Earthing of LT panels, DC panel, C &amp; R Panels, marshalling boxes, Compressors, MOM boxes, junction boxes, lighting panels, etc.</td>
<td>50 x 6 mm M.S Flat</td>
</tr>
<tr>
<td>4</td>
<td>Earth Electrodes</td>
<td>25/28 mm dia. M.S. Rod, 3250 mm long</td>
</tr>
</tbody>
</table>

(II) All equipments and structures are required to be earthed by two separate and distinct connections with earth mat.

(III) The neutrals of all voltage levels of transformers shall be earthed through independent earthing. All these earthing points should be interconnected with the Sub Station earth mat. Each earthing lead from the neutral of the power transformer shall be directly connected to two earth electrodes separately which, in turn, shall be connected to the earth mesh. The transformer tanks as well as associated accessories like separate cooler banks shall also be connected to the earth mat at two points.

(IV) Capacitor Voltage Transformers & Lightning Arresters shall be earthed through two independent risers directly connected to earth electrodes which should in turn be connected to the Sub Station earth mat. The distance between the electrodes should not be less than 4.0 metres.

(V) All other equipments such as Circuit Breakers, CTs, Isolators, Post Insulators, etc., shall also be earthed at two points.

\( @ \)
3.2 BURIAL OF EARTHING CONDUCTOR:

i) The alignment of the earth mat conductor can be changed by forming U-loops in case it fouls with equipment/structure foundations. The average spacing for East-West rows and for North-South rows of the earth mat shall, however, be kept as near as possible to the spacing indicated in the earth mat design.

ii) Earthing conductors in the switchyard area shall be buried at a depth of at least 800 mm from top level of foundations unless stated otherwise.

iii) Earthing conductor around any building shall be buried in earth at a minimum distance of 1500 mm from the outer boundary of the building.

iv) In case high temperature is encountered at any location, the earthing conductor shall be laid at a minimum distance of 1500 mm away from such location.

v) Earthing conductors, if embedded in the concrete, shall have approximately 50 mm concrete cover.

vi) Earthing conductors laid in cable trenches, ladder columns, beams, walls, etc. shall be supported by suitable welding/cleating at intervals of 750 mm.

vii) The earthing conductors shall be clamped with the equipment support structures at 1000 mm interval.

viii) Transformer / Railway tracks within the switchyard area shall be earthed at a spacing of 30 meters and also at both ends.

ix) Flexible earthing connectors shall be provided for the moving parts of equipments such as earthing switches and operating handles of isolators, etc.

x) All lighting panels, lighting fixtures, junction boxes, receptacles, conduits, etc. shall be earthed.

xi) Earthing risers shall be run from the peaks of structures to the main earth mesh. The earthing bonds of the earth wire tension hardware shall be connected at the top of this earthing riser with bolts and nuts.

xii) Bending of earthing rod and flat shall preferably be done by gas heating.

xiii) Fencing should be separately earthed. Independent earthing conductor for earthing of fencing, buried at a depth of 600 mm, shall be provided 2 metres outside the switchyard fence. All the gates and every alternate post of the fences shall be connected to this earthing conductor at the corners and at every 20 metres.
3.3 EARTH ELECTRODES:
(i) The length of earth electrodes shall not be less than 3250 mm and shall be of one piece.
(ii) Except where rock is encountered, Rods shall be driven to a depth of at least 3000 mm.
(iii) Where rock is encountered at a depth of less than 3600 mm, the electrodes can be buried inclined to the vertical at an angle not more than 30° from the vertical. In all other cases, drilling shall be done for providing the pit for the electrode.
(iv) To reduce the depth of burial of an electrode in case of rocky soil without increasing the resistance, a number of rods shall be connected together in parallel as advised by the work-in-charge. The distance between two electrodes in such a case shall preferably be not less than twice the length of the electrode.

3.4 JOINTS:
(i) Minimum joints shall be made in the earth mat conductor as well as in preparing the risers.
(ii) All joints in the steel earthing system, except those where earth mat may have to be separated from equipment, etc. for testing, shall be made by electric arc welding. Welded surfaces shall be painted with bitumen compound and afterwards coated with bitumen tape to protect them from rusting and corrosion.
(iii) Joints in the earthing conductor between the switchgear units and such other points which may be required to be subsequently opened for testing should be bolted type. The bolted connections, after being checked and tested, shall be painted with anticorrosive paint / compound. These joints should be accessible for supervision.
(iv) Earthing connections with equipment earthing pads shall be bolted type. Contact surfaces shall be free from scale, paint, enamel, grease, rust or dirt.
(v) Steel to copper connections shall be first bolted, then brazed and shall be coated with bitumen tape to avoid moisture ingress.
(vi) All welded joints shall be allowed to cool down gradually to atmospheric temperature. Artificial cooling should not be used.

3.5 PLACING OF EARTH ELECTRODES: (See Annexure-A: (i) EARTH ELECTRODE)

3.5.1 Cut M. S. Rod of the applicable diameter to approximate lengths of 3.25 meters and, if required, prepare one end as spike for placing / driving into the ground.

3.5.2 Earth Electrode in Loose / Sandy Soil:
(i) Excavate a pit approximately 1 M. x 1 M up to 0.6 meter depth.
(ii) Place the earth electrode in the excavated pit and drive it in the ground with a sledgehammer such that the top of the electrode is 0.55 meter below the foundation top level. This will leave 0.25 meters of the electrode above the ground for connecting it to the earth mat rods.

3.5.3 Earth Electrode in Hard Soil:
(i) Excavate a pit approximately 1 M. x 1 M. up to 0.6 meter depth.
(ii) Augur a hole in the ground to a depth of 3 meters inside this pit.
(iii) Place the electrode in the augured hole such that the top of the electrode is 0.55 meter below the foundation top level.
(iv) Backfill the excavation and compact the soil after completion of the work.

3.5.4 Earth Electrode in Rocky Soil (Normal Depth):
(i) Where rock is encountered at a depth of less than 3600 mm below the foundation level, excavate a trench which is inclined to the vertical at an angle not more than 30° from the vertical.
(ii) In all other cases, carry out drilling of the rocky soil for providing the pit for the electrode.
(iii) For connecting the electrode to the earth mat, clamp / hold the M. S. Rods of the electrode and the earth mat together. First weld these together at the crossing point.
(iv) Fabricate four cleats in the shape of M. S. Angles from M. S. Flat of size to be used for earthing risers and of length equal to 10 times the diameter of the M. S. Rod. Weld these at all the corners of the joint. A typical joint is shown in Annexure – A, (11): JOINT OF M.S. ROD TO M.S. ROD AT EARTH ELECTRODE AND AT MESH CROSSINGS.
(v) After welding, apply bituminous compound to the hot joints, and cover the joints with bitumen impregnated tape.
(vi) Backfill the excavation and compact the soil after completion of the work.
(vii) If advised by the Engineer-In-Charge, the backfilling shall also have to be done with Bentonite, or a combination of bentonite and black cotton soil in the ratio of 1:6, to reduce the resistance to earth. The Bentonite & black cotton soil shall be arranged by RVPN in such case.

3.5.5 Earth Electrode in Rocky Soil (8 Meter Depth):
(i) Drill the earth pit having a throughout bore of 200mm dia to a depth of 8.0 meters from the top level of the foundations. This is to be done in all type of rocks by DTH system and over burden to be arranged by contractor.
(ii) Cut M. S. rod of applicable diameter to approximate length of 7.5 meters.
(iii) Place the earth electrode in the excavated pit such that the top of the electrode is 0.55 meters below the foundation top level.
(iv) For connecting the electrode to the earth mat, clamp / hold the M. S. Rods of the electrode and the earth mat together. First weld these together at the crossing point.
(v) Fabricate four cleats in the shape of M. S. Angles from M. S. Flat of size to be used for earthing risers and of length equal to 10 times the diameter of the M. S. Rod. Weld these at all the corners of the joint. A typical joint is shown in Annexure – A, (11): JOINT OF M.S. ROD TO M.S. ROD AT EARTH ELECTRODE AND AT MESH CROSSINGS.
(vi) After welding, apply bituminous compound to the hot joints, and cover the joints with bitumen impregnated tape.
(vii) Back fill the pit with Bentonite slurry (to be arranged by the Contractor) and compact it after completion of the work.

3.6 LAYING OF EARTH MAT:
(i) Excavate trenches along the specified alignments to a depth of 0.80 meter below the foundation top level.
(ii) Where different ground levels are provided in the switchyard, uniformly increase the depth of excavation in the higher level from a distance of 5 metres from the lower level so as to attain the required depth of excavation in the lower level.

(iii) Wherever the earth mat is to cross cable trenches, underground service ducts, pipes, transformer tracks, etc., increase the depth of excavation so that it can be laid at a minimum depth of 300 mm below them.

(iv) Wherever the earth mat is to cross a road, increase the depth of excavation so that it can be laid 300 mm below the road or at a greater depth to suit the site conditions.

(v) Lay the M. S. Rod in the excavated trenches.
3.7 JOINTS IN EARTHING:

3.7.1 Straight Joints of M. S. Rods in the Earth Mat:
(i) Place the rods so that they overlap each other by 4 times their diameter, e.g., 100 mm in case of M. S. Rod of 25 mm diameter. Clamp / hold these two lengths of M.S. Rods together and weld them on both sides.
(ii) Thereafter, place two pieces of M. S. Flat of size to be used for earthing risers and length 4 times the diameter of the rods on both sides of this joint, and weld these pieces on the rods. A typical joint is shown in Annexure - A, (III): JOINT OF M.S. ROD TO M.S. ROD IN EARTH MAT.
(iii) After welding, apply bituminous compound to the hot joints, and cover the joints with bitumen impregnated tape.

3.7.2 Cross Joints of M. S. Rods in the Earth Mat:
(i) Clamp / hold together the two M. S. Rods crossing each other. First weld these together at the crossing point.
(ii) Fabricate four cleats in the shape of M. S. Angles from M. S. Flat of size to be used for earthing risers and of length equal to 10 times the diameter of the M. S. Rod. Weld these at all the corners of the joint. A typical joint is shown in Annexure - A, (II): JOINT OF M.S. ROD TO M.S. ROD AT EARTH ELECTRODE AND AT MESH CROSSINGS.
(iii) After welding, apply bituminous compound to the hot joints, and cover the joints with bitumen impregnated tape.

3.7.3 Joint of M. S. Rod and Earth Electrode:
(i) Clamp / hold together the M. S. Rod and the earth electrode. First weld these together at the crossing point.
(ii) Fabricate two cleats in the shape of M. S. Angles from M. S. Flat of size to be used for earthing risers and of length equal to 10 times the diameter of the M. S. Rod. Weld these at the joint. A typical joint is shown in Annexure - A, (IV): JOINT OF M.S. ROD TO M.S. ROD AT EARTH ELECTRODE.
(iii) After welding, apply bituminous compound to the hot joints, and cover the joints with bitumen impregnated tape.
(iv) Backfill the excavation and compact the soil after completion of the work.

3.8 PREPARATION AND FITTING OF RISERS:
(i) Excavate trench from the equipment / structure foundation to the nearest rod of the earth mat. The depth shall be 0.80 meter below the foundation top level.
(ii) Cut M. S. Flat of the required length and form / bend it, by heating if required, to form a smooth and regular shape to match with the shape / form of the equipment / structures / foundation. The shape of the risers should be same / similar for the same type of equipment / structure.
(iii) Lay the prepared M. S. Flat riser from the equipment / structure / peak of the structure (for grounding of earth wire) to the rod of the earth mesh in the excavated trench and then connect it to the equipment or structures or structure peak. The fitting to the equipment / structure may be bolted type (earthing terminal / pad of the equipment) or welded type (structure). For bolted type fitting, drill necessary holes in the riser and fix it with bolts & nuts. For welded type fitting, weld a length equal to at least twice the width of the M. S. Flat.
(iv) In case joints are required to increase the length of the M. S. Flat risers, the two lengths of the M. S. Flat should overlap each other by twice the width of the M. S. Flat.
After placing the M. S. flats one above the other as above, clamp / hold them together to provide good surface contact. Weld the two sides of the joint as well as the part between the flats on the top surface. A typical joint is shown in Annexure - A, (V):

**JOINT OF M.S. FLAT TO M.S. FLAT.**

(v) Weld the M. S. Flat riser to the rod of the earth mat after fitting / welding it to the equipment / structure / structure peak. Place the M. S. Flat below the rod, clamp / hold them together, and weld on both sides of the rod. Then form a piece of M. S. Flat 50 x 6 mm into a stirrup (as shown in the drawing) and place on the joint of the rod and flat. Alternatively, cut two pieces of M. S. Angle 50 x 50 x 6 mm of length equal to the width of the M. S. Flat and place these on both sides of the joint of the rod and flat. Weld these to both the rod and the flat. A typical joint is shown in Annexure - A; (VI) **JOINT OF M.S. FLAT TO M.S. ROD OF EARTH MAT.**

(vii) After welding, apply bituminous compound to the hot joints and cover the joints with bitumen impregnated tape.

(viii) Clamp the earthing risers with the equipment support structures at 1000 mm intervals.

(ix) Backfill the excavation and compact the soil after completion of the work.

(x) Apply red oxide paint and then green enamel paint on the portion of the risers above ground level.

(xi) A drawing showing the typical arrangement for earthing of equipment and its structure is given at Annexure-B.
JOINT OF M.S. ROD TO M.S. ROD IN EARTH MAT

STEP 1
- Welding both sides
- Length of welding 100 mm

STEP 2
- Section: A-A

SECTION: A-A
- M.S. Flat 20 x 10 mm
- Length 100 mm
- M.S. Rod
- Length of welding 100 mm

JOINT OF M.S. ROD TO M.S. ROD AT EARTH ELECTRODE (OR AS AT 1)

STEP 1
- Electrode
- M.S. Rod
- Length of welding 75 mm
- Electrode

SECTION: D-D
- M.S. Flat 20 x 10 mm
- Length 100 mm
- M.S. Angle Rod
- Length of welding 100 mm
JOINT OF M.S. FLAT TO M.S. FLAT

LENGTH OF WELDING
250 mm

SECTION: C - C

PLAN

2-7
Annexure-B

TYPICAL EXAMPLE OF FARPHING OF SUB-STATION EQUIPMENT
4.0 **General Instructions**

(i) The structure material shall be stacked member / item wise.
(ii) The following shall be made available by RVPN to the contractor for erection of Sub Station structures / beams and equipment structures:
   a) Drawings and bills of material of structures / beams / equipment structures.
   b) Templates of structures.

4.2 **Type of Structures:**
The types of structures generally used at Sub Stations are given below:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name of Structure</th>
<th>Type of Structure</th>
<th>Height of Column / Height of Conductor (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td><strong>220 kV Structures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>AT1</td>
<td>Column with Peak</td>
<td>20.0 / 14.5</td>
</tr>
<tr>
<td>2</td>
<td>AT2</td>
<td>Column without Peak</td>
<td>15.0 / 14.5</td>
</tr>
<tr>
<td>3</td>
<td>AT4</td>
<td>Column with Peak and Beams at two levels for Bus Bar stringing</td>
<td>20.0 / 14.5 and 9.5</td>
</tr>
<tr>
<td>4</td>
<td>AT6</td>
<td>Column without Peak</td>
<td>10.0 / 9.5</td>
</tr>
<tr>
<td>5</td>
<td>AT8</td>
<td>Column with Peak</td>
<td>15.0 / 9.5</td>
</tr>
<tr>
<td>6</td>
<td>AB</td>
<td>Beam</td>
<td>16.6 (Width)</td>
</tr>
<tr>
<td>B.</td>
<td><strong>132 kV 132 kV Structures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>BT1</td>
<td>Column with Peak</td>
<td>16.0 / 11.5</td>
</tr>
<tr>
<td>2</td>
<td>BT2</td>
<td>Column without Peak</td>
<td>12.0 / 11.5</td>
</tr>
<tr>
<td>3</td>
<td>BT4</td>
<td>Column with Peak and Beams at two levels for Bus Bar stringing</td>
<td>16.0 / 11.5 and 7.5</td>
</tr>
<tr>
<td>4</td>
<td>BT6 8.0 / 7.5</td>
<td>Column without Peak</td>
<td>8.0 / 7.5</td>
</tr>
<tr>
<td>5</td>
<td>BT7</td>
<td>Column with Peak</td>
<td>12.0 / 7.5</td>
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<tr>
<td>6</td>
<td>BB</td>
<td>Beam</td>
<td>12.2 (Width)</td>
</tr>
<tr>
<td>7</td>
<td>P</td>
<td>Peak</td>
<td>2.5</td>
</tr>
<tr>
<td>8</td>
<td>Q</td>
<td>Column</td>
<td>7.5 / 7.5</td>
</tr>
<tr>
<td>9</td>
<td>R</td>
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</tr>
<tr>
<td></td>
<td>GD</td>
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<tr>
<td>---</td>
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<td>---------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>10</td>
<td>33 kV and 11 kV Structures</td>
<td>Beam</td>
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</tr>
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<td>Equipment Structures</td>
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<td>1</td>
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<td>220 kV Isolators</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>AO1 (T)</td>
<td>220 kV Tandem Isolators</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>AO3</td>
<td>220 kV CT</td>
<td>--</td>
</tr>
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<td>4</td>
<td>AO4</td>
<td>220 kV CVT</td>
<td>--</td>
</tr>
<tr>
<td>5</td>
<td>AO5</td>
<td>220 kV LA &amp; 132 kV CT, CVT / PT, LA</td>
<td>--</td>
</tr>
<tr>
<td>6</td>
<td>BO1</td>
<td>132 kV Isolator</td>
<td>--</td>
</tr>
<tr>
<td>7</td>
<td>BO1 (T)</td>
<td>132 kV Tandem Isolator</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>X – 15</td>
<td>33 kV &amp; 11kV Isolators</td>
<td>--</td>
</tr>
<tr>
<td>9</td>
<td>X – 15(T)</td>
<td>33 kV &amp; 11kV Tandem Isolators</td>
<td>--</td>
</tr>
<tr>
<td>10</td>
<td>CT Structure</td>
<td>33 kV &amp; 11kV CT, PT</td>
<td>--</td>
</tr>
<tr>
<td>11</td>
<td>PT Structure</td>
<td>220 kV, 132kV, 33 kV &amp; 11 kV P</td>
<td>--</td>
</tr>
</tbody>
</table>
## Unit weight of structures

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>Type of Structure</th>
<th>Unit Wt. of Structure along with Bolts &amp; Nuts (MT)</th>
<th>Wt. of Structure in MT</th>
<th>Wt. of GI Bolts &amp; Nuts (KG)</th>
<th>Wt. of Step Bolts &amp; Nuts (KG)</th>
<th>Wt. of Spring Washers (KG)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>AT1</td>
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<td>2</td>
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<tr>
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<td>AT4</td>
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<tr>
<td>4</td>
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<td>BT7</td>
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<td>12</td>
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<td>13</td>
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<tr>
<td>15</td>
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<td>18</td>
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<td>0.18300</td>
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<tr>
<td>20</td>
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<td>0.16420</td>
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<td>21</td>
<td>P</td>
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<td>0.08170</td>
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<td>22</td>
<td>Q With stub</td>
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<td>23.2260</td>
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<tr>
<td>23</td>
<td>Q W/O Stub</td>
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<td>0.5989</td>
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<td>24</td>
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<tr>
<td>25</td>
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<td>0.51320</td>
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<td>0.423</td>
</tr>
<tr>
<td></td>
<td>Y With Stub</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
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<tr>
<td>27.</td>
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<td>18.8500</td>
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<tr>
<td>28.</td>
<td>Y W/O Stub</td>
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<td>0.3130</td>
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<tr>
<td>29.</td>
<td>Z</td>
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<td>0.28900</td>
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<tr>
<td>30.</td>
<td>GF 5.4 mtr.</td>
<td>0.25</td>
<td>0.23000</td>
<td>18.7800</td>
<td>Nil</td>
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<tr>
<td>31.</td>
<td>33KV CT &amp; PT Str.</td>
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<td>0.19030</td>
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<tr>
<td>32.</td>
<td>X-15</td>
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<td>0.241314</td>
<td>6.9160</td>
<td>Nil</td>
<td>0.504</td>
</tr>
</tbody>
</table>

The weights mentioned above are indicative only. The actual weights shall be taken as per approved BOM of supplied structures for the purpose of payment.

4.3 SETTING OF STUB / FOUNDATION BOLTS, LEVELLING AND PREPARING FOR GROUTING:

(i) In case of structures with foundation bolts, the template, along with the foundation bolts tightened on it with nuts on both sides, shall be placed on the foundation. The length of the foundation bolts above the template shall be sufficient so that all parts of the base plate assembly of the structure, washers, nuts and lock nuts can be tightened fully and 2 – 3 threads are left above the lock nut.

(ii) The template shall be levelled & centered with reference to its location on the foundation. The foundation bolts shall thereafter be grouted ensuring that there is no displacement during the placing of the concrete and use of vibrator. (Grouting work, i.e., concreting in the pockets of the foundations along with material, will be in the scope of VPN)

(iii) In case of structures with stubs, the template with stubs shall be placed on the foundation. In case of structures in which the lowest member is used as a stub, the assembled lower part of the structure shall be placed on the foundation. This shall be levelled & centered with reference to its location on the foundation. The stubs / lowest member shall thereafter be grouted ensuring that there is no displacement during the placing of the concrete and use of vibrator. (Grouting work i.e., concreting in the pockets of the foundations along with material, will be in the scope of VPN)

(iv) While leveling and centering the structure / template, the following points shall be checked:

a) Level of structure / template with reference to the finished foundation level or the ground level.

b) The level of the structure / template with reference to level of other similar structures.

c) Distance of centre line of the structure from the center line of other structures or from a reference point.

d) Centre to centre distance between structures, particularly structures which are to be connected together, for example, by a common beam.
4.4 ERECTION OF STRUCTURES:

4.4.1 Method of Erection:
The contractor shall be at liberty to choose any of the three methods of erection of structures which are as below:

i) Ground assembly method.
ii) Section method.
iii) Built up method or Piecemeal method.

He shall however be responsible for any damage to the structures/structure material or any adjacent structures/equipment.

4.4.2 Ground Assembly Method:

(i) This method is used for erection of equipment structures and is the preferred method for erection of Sub Station structures when crane facility is available.
(ii) This method consists of assembling the structure on the ground and erecting it as a complete unit.
(iii) The complete structure is assembled in a horizontal position near its location. On sloping or uneven ground, suitable packing is provided in the lower level area before or during assembly, as required, to eliminate / minimize stress on the structure members.
(iv) After the assembly is complete, the structure is picked up from the ground with the help of a crane and set on its foundation.

4.4.3 Section Method:

(i) This method is used for large and heavy structures when crane facility is available.
(ii) A mobile crane is used for erecting the structures.
(iii) The two faces / sides of the complete structure are assembled on the ground and then erected. Alternatively, the two faces / sides of the major sections of the structure are assembled on the ground and the same are erected as units.
(iv) Each assembled side is then lifted clear of the ground with the crane and is lowered into position on its foundation or fitted on to stubs or foundation bolts which are already grouted. One side is held in place with props or rope guys while the other side is being erected. The two opposite sides are then connected together with cross members.
(v) In case where the major sections of the structure have been assembled, the first face of the second section is erected. After the two opposite faces have been erected, the bracings on the other two sides are bolted up. The last lift raises the top of the structure. After the structure top is erected and all side bracings have been bolted up, all the guys are thrown off.

4.4.4 Built up method or Piecemeal method:

(i) This method is used for large and heavy structures when crane facility is not available.
(ii) This method consists of erecting the structure member by member. The structure members are kept on ground serially according to erection sequence so that they can be sent up conveniently.
(iii) The erection progresses from the bottom upwards. The four main corner leg members of the first section of the structure are first erected.

[Signatures]
(iv) The cross bracings of the first section are raised one by one and bolted to the already erected corner leg angles. If these have been assembled on the ground, then they are lifted up as a unit.
(v) For assembling the second section of the structure, a derrick is placed on one of the corner legs. This derrick is used for raising parts of second section. The leg members and bracings of this section are then hoisted and assembled.
(vi) The derrick is then shifted to the corner leg members on the top of second section to raise the parts of third section of the structure in position for assembly. The derrick is thus moved up as the structure grows. This process is continued till the complete structure is erected.

4.5 ERECTION OF BEAMS:
(i) The two faces of the beam are assembled on the ground.
(ii) Each face of the beam is raised with the help of crane or using derricks which are placed on the top of the already erected structures on both the sides of the beam. Single or multi-way pulleys with polypropylene / steel ropes are used as per load requirement. The ends of the beam are connected to the columns as per fixing arrangement provided on the columns.
(iii) The bracings of the upper and lower faces of the beam are then raised up and fitted.

4.5.1 The columns shall be truly vertical and the beams truly horizontal after erection. Measures taken to bring the column to verticality and beam to horizontality should not result in strain on the structure members so as to cause distortion / bending of the members.

4.5.2 The work of erection of beams on erected columns and erection of equipment on erected structures shall not be taken up until these have been checked for tightening of the bolts & nuts.

4.5.3 All bolted connections shall be well tightened using spring washers & then punched at three points on the circumference of the bolt.

5.0 STRINGING OF BUS BARS OF ACSR CONDUCTOR, STRINGING OF SHIELD/ EARTH WIRE AND JUMPERING ETC.

5.1 General Instructions
Note: The binding wire to be used for these works shall be arranged by the Contractor.
(i) Care shall be taken during sagging operations so that no damage or deformation is caused to the structures.
(ii) The ends of the cut piece of conductor / earth wire shall be tied with at least two rounds of binding wire so that the strands do not open out. The tying of the binding wire shall be done such that the binding wire does not get tightened in the groove of the T - Clamps or the PG (Parallel Groove) - Clamps or the terminal connectors of the equipment.
(iii) Cut lengths of conductor and earth wire left after stringing of bus bars and earth wire can be used for jumpering work.
(iv) Compression machine, if required, shall be provided on rent free basis by RVPN.
5.2 BUS BAR MATERIAL:
The bus bar material generally used in 220 kV & 132 kV sub Stations is given below:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Description</th>
<th>Bus Bar and Jumper Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>220 kV Main Bus</td>
<td>Twin ACSR Zebra</td>
</tr>
<tr>
<td>2</td>
<td>220 kV Auxiliary Bus</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td>3</td>
<td>220 kV equipment interconnection</td>
<td>Twin ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td>4</td>
<td>220 kV overhead bus &amp; droppers in all bays</td>
<td>Twin ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td>5</td>
<td>132 kV Main Bus</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td>6</td>
<td>132 kV Auxiliary Bus</td>
<td>ACSR Panther</td>
</tr>
<tr>
<td>7</td>
<td>132 kV equipment interconnection</td>
<td>ACSR Zebra / ACSR Panther</td>
</tr>
<tr>
<td>8</td>
<td>132 kV overhead bus &amp; droppers in all bays</td>
<td>ACSR Panther</td>
</tr>
<tr>
<td>9</td>
<td>33 kV Main Bus</td>
<td>Twin ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td>10</td>
<td>33 kV Auxiliary Bus</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td>11</td>
<td>33 kV equipment interconnection, overhead bus and droppers:</td>
<td>ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td></td>
<td>(i) Bus coupler &amp; transformer bay</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td></td>
<td>(ii) Feeder bay</td>
<td>ACSR Panther</td>
</tr>
<tr>
<td>12</td>
<td>11 kV Main Bus</td>
<td>Twin ACSR Zebra</td>
</tr>
<tr>
<td>13</td>
<td>11 kV Auxiliary Bus</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td>14</td>
<td>11 kV equipment interconnection, overhead bus and droppers:</td>
<td>ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td></td>
<td>(i) Transformer bay</td>
<td>Twin ACSR Zebra / Single ACSR Zebra</td>
</tr>
<tr>
<td></td>
<td>(ii) Bus coupler</td>
<td>ACSR Zebra</td>
</tr>
<tr>
<td></td>
<td>(iii) Feeder bay</td>
<td>ACSR Panther</td>
</tr>
</tbody>
</table>
5.3 STRINGING OF CONDUCTOR BUS BARS:

(i) The conductor shall be handled with care to prevent scratches on it or damage to the strands of the conductor. When the conductor is to be taken from drums, small lengths can be unwound from the drum. For longer lengths, the conductor drum shall be placed on a turn table or jacked up on a suitable size of steel shaft. The conductor shall be paid out in a manner so that there are no scratches or damages caused to the conductor due to rubbing on the sides of the drum.

(ii) Disc insulators shall be cleaned and examined for any cracks / chipping, etc. Disc insulators having any hair cracks or chipping or defective glazing or any other defect shall not be used. The limits of the area of defective glazing are given by the following formulas.

\[ \text{Single Glaze Defect} = 0.5 + \frac{DxF}{20000} \text{ Sq. cm} \]

\[ \text{Total Glaze Defect} = 0.5 + \frac{DxF}{20000} \text{ Sq. cm} \]

where,

- \( D \) = Diameter of the disc in cm
- \( F \) = Creepage distance in cm.

(iii) The disc insulators shall be assembled on the ground to form the suspension and tension strings as given below.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>System Voltage</th>
<th>Suspension String</th>
<th>Tension String</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nos.</td>
<td>E &amp; M Strength (kN)</td>
</tr>
<tr>
<td>1</td>
<td>220 KV</td>
<td>13</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>132 KV</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>33 KV</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>11 KV</td>
<td>3</td>
<td>45</td>
</tr>
</tbody>
</table>

(iv) After assembly of the strings, the mouth of the W - clips / R - clips shall be widened to prevent any inadvertent removal during service.

(v) The suspension and tension hardware shall be assembled as per their respective drawings to be provided by RVPN and the disc insulator string shall be fitted in the requisite portion of the hardware assembly.

(vi) For stringing of bus bars, the conductor shall be fixed and tightened in the clamp of the tension hardware on one side of the bus. Thereafter, the complete hardware assembly with the
conductor shall be hoisted up and fixed on the beam at this end. Sagging arrangement shall be made on the other end of the bus and the conductor shall be tensioned.

(vii) Measurement of length of conductor required for the bus shall be made thereafter and the conductor shall be released so that it returns to the ground. The conductor shall be cut to the marked length after deducting the length of the tension hardware with insulators and fixed in the clamps of the tension hardware. The conductor along with tension hardware set shall then be again pulled up and connected to the beam.

(viii) Equalizing of tension in the different sub – conductors of the same phase and in the different phases shall be done, if required, to ensure equal sag of all the sub – conductors or between phases of the bus section as well as that of adjacent or parallel sections.

(ix) The spacers shall be fitted on the twin conductor bus bars at the spacing shown in the drawing (to be provided by RVPN). The spacers shall also be provided at points where jumpers are taken from the bus bar using T – clamps and/or P.G. clamps. Spacers are not used at jumper points in case T – Spacers are used for taking jumpers from multi conductor bus bars.

5.4 JUMPERING:

5.4.1 Jumpering of Conductors:

(i) The jumpers connecting different sections of the bus bars as well as those connecting equipment to bus bars shall be of Y – type.

(ii) A typical diagram of Y – type jumpering is given below.

(iii) For making Y – type jumpers, the jumper conductor(s) shall be first connected to the bus bar conductor(s) using T – Clamp / Spacer T – Clamp which is suitable for clamping the respective conductors, i.e., bus bar conductor(s) and the jumper conductor(s). Thereafter, the bus bar conductor(s) shall be again connected with the jumper conductor(s) using properly curved & shaped Y – conductor(s) and 2 nos. PG – clamps as shown in the diagram above.

(iv) The jumpering between equipment shall be done with single / twin conductors as per the terminal connectors provided on the equipment.
(v) In case of jumpers for twin conductors, the spacers shall also be fitted at a suitable spacing on the jumpers in order to maintain their shape.

5.4.2 Jumpering Of Busbars:

(i) For jumpering of different sections of bus bars on the beam, the suspension hardware set along with disc insulators shall first be hoisted and fitted on the beam.

(ii) Conductor of approximately the length required for the jumper shall be cut and straightened so that kinks are removed. This shall be connected to the bus bar conductor on one side of the beam after taking into consideration the natural curve of the conductor.

(iv) This shall then be passed through the clamps on the suspension hardware so that the proper curve is obtained. The other end of the conductor shall then be taken up to the bus bar conductor on the other side and measurement of the length shall be taken. The conductor shall be cut to the appropriate length and then connected to the bus bar conductor on the other side. The length of the conductor used and its natural curve should be such that a neat and proper curve is obtained in the jumper without any kinks or bends. The clamp of the suspension hardware shall then be tightened after ensuring proportional lengths of the conductor on both the sides of the beam.

5.4.3 Jumpering from Busbar to Equipment:

(i) Approximate length of the conductor required for the jumper shall be cut and then connected to the bus bar conductor.

(ii) In case the jumper is to be connected to equipment near or under a beam, the suspension hardware along with disc insulators is first fitted on the beam. The conductor shall be passed through the clamp of the suspension hardware.

(iii) The end of the conductor shall be taken up to the terminal connector of the equipment. The measurement of length of the conductor up to the equipment shall be made.

(iv) After cutting the conductor to the required length, it shall be connected to the equipment.

(v) The clamps of the suspension hardware shall be tightened thereafter.

5.4.4 Jumpering between Equipments:

(i) The distance between terminal connector of one equipment and terminal connector of other equipment is first measured. The appropriate length of the conductor shall be cut and then straightened so that curves and kinks are removed.

(ii) The jumper conductor shall then be connected to the terminal connectors of both the equipments and straightened or shaped as per site condition to give a neat and proper look.

(iii) Vertically supported insulators of equipments and Post Insulators should be checked for verticality again after jumpering on both sides and corrected if required.

5.5 STRINGING OF SHIELD / EARTH WIRE:

(i) The shield / earth wire shall be handled with care to prevent scratches on it or damage to the strands of the wire. When the shield / earth wire is to be taken from drums, small lengths can be
unwound from the drum. For longer lengths, the earth wire drum shall be placed on a turn table or jacked up on a suitable size of steel shaft. The shield / earth wire shall be paid out in a manner so that there are no scratches or damages caused to the shield / earth wire due to rubbing on the sides of the drum.

(ii) The earth wire shall be strung from one peak to another peak of the structures as per layout of the GSS.

(iii) The tension hardware shall be assembled as per the relevant drawings to be provided by RVPN.

(iv) The shield / earth wire shall be fitted and tightened in the clamp of the tension hardware on one side. Thereafter, the complete hardware assembly along with the shield / earth wire shall be hoisted up and fixed on the peak of the structure at one end.

(v) Sagging arrangement shall be made on the other end and the shield / earth wire shall be tensioned. Measurement of length of shield / earth wire required shall be made thereafter and the shield / earth wire shall again be released so that it is returned to the ground. The shield / earth wire shall be cut to the marked length after adding the length of the wire required for jumpering and fitted in the clamp of the tension hardware at the marked point. The shield / earth wire along with tension hardware set shall then be pulled up again and connected to the peak of the structure.

(vi) Adjustment of tension in the earth wire may be done, if required, to ensure equal sag of all the earth wires in adjacent or parallel sections.

5.0 JUMPERING OF SHIELD / EARTH WIRE:

(i) The lengths of the earth wire which remain outside the tension hardware on the peak of the structures shall be cut, if required, so that these lengths when joined together form a smooth and proper curve. These shall be connected together using a PG-Clamp.

(ii) The earth bond provided with the earth wire tension clamp shall be connected to the specified point on the peak of the structure and to the earthing riser, which is used as a down conductor from the peak, for the purpose of connecting the shield / earth wire to the earth mesh of the Sub Station.

6.0 ERECTION ACTIVITIES IN RESPECT OF VARIOUS EQUIPMENTS.

A. STATION TRANSFORMER:

1) ERECTION OF STATION TRANSFORMERS

i) Transportation of the station transformer and accessories, (if any provided loose) along with clamps and connectors from the site store to location carefully.
ii) Cleaning of the transformer and the bushings.
iii) Erecting the transformer on existing masonry platform by placing it properly, i.e. HV side towards 33 KV or 11 KV as the case may be.
iv) Fitting of the accessories, (if any which have been provided loose).
v) Checking that all the accessories as per the bill of material have been provided and the same are in position.
vi) Making arrangements for locking the wheels of the transformer.
vii) Fitting of the terminal connectors/ clamps, etc.
viii) Tightening of nuts, bolts, etc. complete in all respect.

II) ERECTION OF HORN GAP FUSE SET:
Transportation of Horn Gap fuse set and its accessories along with clamps and connectors and structures from site store to location.
i) Assembling (if required) of structure of Horn Gap fuse set
ii) Fixing of structure of Horn Gap fuse set and leveling thereof.
iii) Assembling of Horn gap fuse set as per drawing.
iv) Mounting of Horn Gap fuse set on the structure.
v) Fitting of clamps and connectors, etc.
vi) Tightening of nuts, bolts, etc. complete in all respect.

III) JUMPERING FROM ISOLATOR TO HORN GAP FUSE & HORN GAP FUSE TO SUB STATION TRANSFORMER.
i) Transportation of conductor from site store to location.
ii) Carrying out jumpering between isolator to Horn Gap fuse set and then from Horn Gap fuse set to Sub Station Transformer as detailed in clause 5.4.4 “JUMPERING BETWEEN EQUIPMENTS”.

B. CURRENT TRANSFORMERS:
I) GENERAL INSTRUCTIONS
i) While erecting the current transformers, the P1 terminal of the current transformer shall be kept as per the instructions of Engineer-In-Charge.

II) ERECTION
i) Transportation of complete current transformers and their accessories, etc. along with clamps & connectors, etc. from site store to location.
ii) Carrying out leveling of already erected structure(s) and minor fabrication work, if required, for erection of the Current Transformer.
iii) Cleaning of the insulator of the Current Transformer.
iv) The IR values of primary terminals to earth will be measured by RVPN with 5 kV Megger.
v) Erecting of the Current Transformer on the structure.
vi) Fitting of the terminal connectors on the Current Transformer.
vii) Tightening of the nut, bolts, etc. complete in all respect.
C. CAPACITOR VOLTAGE TRANSFORMERS (CVT) / POTENTIAL TRANSFORMERS (PT)

i) Transportation of complete CVT/PT and its accessories along with terminal connectors, etc. from site store to location.

ii) Carrying out leveling of already erected structure(s) and minor fabrication work, if required, for erection of the Capacitor Voltage Transformers / Potential Transformers.

iii) Cleaning of the insulators of the VT’s.

iv) Assembling the different units of the same serial number of the CVT, if applicable.

v) The IR values of primary terminal to earth will be measured by RVPN with 5 kV Megger.

vi) Erecting the Capacitor Voltage Transformer / Potential Transformer on the structure.

vii) Fitting of the covers on the joints between different units of the CVT, if applicable.

viii) Fitting of the terminal connectors on the VT’s.

ix) Tightening of the nuts, bolts, etc. complete in all respect.

D. SERIES REACTORS / RESIDUAL VOLTAGE TRANSFORMER / NEUTRAL CURRENT TRANSFORMER.

i) Transportation of complete Series Reactor / RVT / NCT and its accessories along with terminal connectors, etc. from site store to location.

ii) Carrying out leveling of already erected structures and minor fabrication work if required for erection of the equipments.

iii) Cleaning of the insulators of the Series Reactors / Residual Voltage Transformers / Neutral Current Transformers.

iv) The IR values to earth of Series Reactors will be measured by RVPN with 5 KV Megger.

v) The IR values between primary terminal to earth and primary terminal to secondary terminals of Residual Voltage Transformers / Neutral Current Transformers will be measured by RVPN with 5 KV Megger.

vi) Erecting the Series Reactors / Residual Voltage Transformers / Neutral Current Transformers.

vii) Fitting of the terminal connectors.

viii) Tightening the nuts, bolts, etc. complete in all respect.

E) LIGHTNING ARRESTERS

I) GENERAL INSTRUCTIONS:

i) The serial number of all the units of a multi-unit Lightning Arrester (LA) should be the same.

ii) The units of a multi-unit Lightning Arrester should be assembled in the sequence shown on the rating plate of the LA or in the catalogue of the manufacturer to be provided by the Engineer-In-Charge.

iii) The insulated base unit should be erected in case of Lightning Arresters provided with surge monitors.

iv) The installation of the Lightning Arresters should be such that the direction of the open end of the explosion release vent (at top and bottom) is away from adjacent expensive equipment such as transformers.
II) ERECTION OF LAs OF 132 KV CLASS & 220 KV CLASS:
   i) Transportation of complete LAs along with accessories, clamps and connectors, etc.
      from site store to location.
   ii) Leveling of the already erected supporting structure(s) and carrying out minor
       fabrication work thereon for erection of the Lightning Arresters and surge monitors, as
       required.
   iii) Cleaning of the insulators of the Lightning Arresters.
   iv) Assembling the different units of the same serial number of the Lightning Arresters
       if applicable. Also, fitting of the corona rings between different units, if provided.
   v) Erecting the Lightning Arresters on the already erected and leveled supporting
       structure(s).
   vi) Fitting of the Surge Monitor on the structure and connecting it to the lowest unit of
       the Lightning Arrester above the base insulator.
   vii) Fitting of the corona / grading ring on the top of the Lightning Arrester, if provided.
   viii) Fitting of the terminal connectors on the Lightning Arresters.
   ix) Tightening of the nuts, bolts, etc. complete in all respect.

III) ERECTION OF 33 KV & 11 KV LAs:
   i) Transportation of complete LAs along with accessories, clamps and connectors, etc.
      from site store to location.
   ii) Making of the mounting arrangements on the beam of the already erected Sub
       Station structures.
   iii) Cleaning of the insulators of the Lightning Arresters.
   iv) Erecting the Lightning Arresters on the already prepared arrangement on the beam
       of the Sub Station structures.
   v) Fitting of the terminal connectors on the Lightning Arresters.
   vi) Tightening of the nuts, bolts, etc. complete in all respect.

F. ISOLATORS

I) ERECTION OF ISOLATORS:
   i) Transportation of complete isolator with accessories. Post insulators operating
      mechanism box, clamps and terminal connectors, etc. from site store to location.
   ii) Leveling of already erected structure(s) and carrying out minor fabrication works, if
       required, for erection of the Isolator and operating mechanism(s).
   iii) Erecting the 3 nos. base frames of individual phases on the structure(s).
   iv) Carrying out leveling and centering of the base frames.
   v) Fixing of the link pipes on the rotating parts of the base frames of the individual
      phases.
   vi) Cleaning and assembling of the polycone insulator / insulator stack, as applicable
       For single break isolators, there will be six polycone insulators / insulator stacks
       whereas for double break Isolators, the quantity will be nine.
   vii) Fitting of the male and female contact arms on the polycone insulators / insulator
       stacks in case of single break Isolator. In case of double break Isolator, 6 nos. fixed
       contacts and 3 nos. moving contacts are fitted on the polycone insulators / insulator
       stacks.
viii) Fitting of the fixed contacts of earth blades in case of Isolator with Earth Switch.
ix) Fixing of the arcing horns (make before & open after the main contacts) or coronarings, as applicable.
x) Erecting the above assemblies on the rotating parts of the base frames.
xii) Carrying out adjustment / alignment of individual phases for smooth opening and closing and proper making of contacts.
xii) Fitting of the inter - phase connecting pipes between the rotating parts of the base frames of the individual phases, including fixing of hardware for interlocking with earth switch wherever provided.
xiii) Fitting of the operating mechanism box for the Isolator.
xiv) Fitting of the main operating down pipe to operating mechanism for the Isolator.

II ERECTION OF EARTH SWITCHES:

i) Transportation of complete Earth Switch along with accessories and operating mechanism box, clamps and connectors, etc. from site store to location.
ii) Fixing of the earth blade mounting arrangements on the base frames of all the three phases.
iii) Fitting of the moving contact (earth blade) of the earth switches and counterweights, wherever provided.
iv) Carrying out the operation and adjustment / alignment of earth switch of each phase for smooth opening and closing and proper making of contacts.
v) Fitting of the inter - phase connecting pipes between the earth switches of the individual phases, including fixing of hardware for interlocking with main Isolator.
vi) Fitting of the operating mechanism box for the earth switches.
vii) Fitting of the main operating down pipe to operating mechanism for the earth switch.
viii) Checking the operation and final adjustment / alignment of all the three phases of the earth switch for smooth, synchronized and complete operation as one unit.
ix) Carrying out the adjustment and setting of mechanical interlock between main Isolator and earth switch to ensure that earth switch does not operate if the main Isolator is closed, and that main Isolator does not operate if the earth switch is closed.
x) Carrying out the adjustment of mechanical end stoppers for the OPEN and CLOSED positions of earth switch.
xii) Fitting of the earth bonds and other accessories as provided.
ixiii) Tightening of the nuts, bolts, etc. complete in all respect.
III ERECTION OF OPERATING MECHANISM:

i) Carrying out the adjustment and setting of auxiliary switches.
ii) Carrying out the adjustment of limits switches in CLOSED and OPEN positions of isolators in case of motor operated mechanism.
iii) Carrying out the adjustment of mechanical end stoppers for both the CLOSED and OPEN positions.
iv) Carrying out the adjustment of interlocking coil and plunger in CLOSED and OPEN positions.
v) Rechecking the adjustment/alignment of the isolator main contacts for smooth opening and closing and proper making of contacts after jumpering on both sides.

G. WAVE TRAPS

I GENERAL INSTRUCTIONS:

i) The Wave Traps are erected as below.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Line</th>
<th>Type of coupling</th>
<th>Phases on which Wave Traps are to be erected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single Circuit</td>
<td>Phase to Phase</td>
<td>Two phases of the line</td>
</tr>
<tr>
<td>2</td>
<td>Double Circuit</td>
<td>Inter - circuit</td>
<td>Same phase of both the circuits</td>
</tr>
</tbody>
</table>

ii) For single circuit lines, the Wave Traps are generally erected on R & B phases.
iii) For double circuit lines, the Wave Traps are generally erected on the Y phase of both the circuits.
iv) The Wave Traps may be required to be erected on phases different from those mentioned at para (ii) and para (iii) above in case the end to end return loss is not found satisfactory during testing of the PLCC Carrier Sets.

II ASSEMBLY:

i) Transportation of complete Wave Trap and its accessories, Hard wares, clamps and connectors, etc. from site store to location.
ii) Cleaning of the Wave Trap and its associated equipment.
iii) Fitting of the tuning pot and associated equipment in the Wave Trap by RVPN.
iv) Fitting of the end covers on the wave traps, and positioning them correctly by RVPN.
v) Fitting of the terminal connectors on the Wave Traps.
vi) Tightening of the nuts, bolts, etc. complete in all respect.

III ERECTION OF SUSPENSION TYPE WAVE TRAPS:

i) Fitting of the hardware for fixing the Wave Trap to the suspension string assemblies of the designated phases.
ii) Hoisting the Wave Trap through lifting arrangement on the beam of the Sub Station structure.
iii) Fitting of the Wave Trap on the already erected suspension string assemblies through suitable attachment.
v) Tightening of the nuts, bolts, etc. complete in all respect.

IV ERECTION OF PEDESTAL TYPE WAVE TRAPS:
i) Leveling of the top plate of the already erected structure for wave trap.
ii) Assembling of the parts of the Polycone Insulators, if applicable.
iii) Erecting the polycone insulator(s) on the supporting structure.
iv) In case three Polycone Insulators are provided for each Wave Trap and these are in parts, then the connecting plate between the joints of the parts of the Polycone Insulators are also to be fitted.
v) Erecting the Wave Trap on the polycone insulators.
vi) Tightening of the nuts, bolts, etc complete in all respect.

II. CAPACITOR BANKS

I GENERAL INSTRUCTIONS:
i) DURING ERECTION WORK ON CAPACITOR BANKS, THE CAPACITOR UNITS SHALL BE KEPT SHORTED AND EARTHED TO PREVENT ELECTRIC SHOCK DUE TO ACCUMULATED CHARGE.

II ERECTION OF STRUCTURES:
i) Transportation of Complete structure members, etc from site store to location.
ii) Assembling the structures for the Capacitor Banks, Series Reactors and Residual Voltage Transformers / Neutral Current Transformers, if the members are received in loose condition.
iii) Erecting the supporting structures on the foundation, carrying out their leveling, centering and preparation for grouting. (Grouting work, including material, will be in the scope of RVPN).
iv) Leveling the top of the above erected supporting structures and checking their verticality.

III ERECTION OF CAPACITOR BANKS:
i) Transportation of Capacitor Banks with accessories, clamps & connectors, etc. from site store to location.
ii) Leveling the top plate of already erected structures.
iii) Cleaning of the post insulators/ Assembling of the post insulators, if required.
iv) Erecting the post insulators on the already erected structure(s).
v) In case individual structures are provided for each phase, erecting the frame of each phase of the Capacitor Bank on the post insulators.
vi) In case only one structure is provided for all the three phases, erecting the frame of the first phase on the post insulators. Erecting the frame of the second phase after
erecting post insulators on the frame of the first phase. Similarly, erecting the frame of the third phase after erecting post insulators on the frame of the second phase.

vii) Erecting the capacitor units on the already erected frames as per the erection plan of the manufacturer so that the capacitances of all the phases are balanced. In case no erection plan is provided, measurement of the capacitance of all the units shall be done by RVPN and phase wise combinations will be advised to the contractor so that the capacitances of all the phases are balanced.

viii) Interconnecting the capacitor units and phases as per manufacturer’s general arrangement drawing, including fitting of external fuses if provided. (Drawing will be provided by the Engineer-In-Charge)

ix) Fitting of the post insulators and connecting strips for jumpering as per manufacturer’s general arrangement drawing.

I. POST / POLYCON INSULATORS

i) Transportation of complete Insulators & their accessories, clamps and connectors from site store to location.

ii) Leveling the top plate of the already erected structure for Post / Polycone Insulators.

iii) Cleaning the Post / Polycone Insulators.

iv) Assembling the parts of Post / Polycone Insulators, if required.

v) Erecting the Post / Polycone Insulators on the already erected supporting structure.

vi) Fitting the corona ring on the Post / Polycone Insulators, if provided.

vii) Fitting the clamps on the Post / Polycone Insulators.

viii) Tightening the nuts, bolts, etc. complete in all respect.

J. CONTROL & RELAY PANELS

i) Transportation of Control and relay panels complete in all respect from site store to control room.

ii) Placing the panels at their designated locations on the trenches in the Control Room as per layout / instructions of Engineer-In-Charge.

iii) Fixing or bolting the panels (as per requirement of installation of the panels) on the channel / M. S. Angle fitted on the top of the walls of the trench or on the base frame, as provided, in the Control Room.

iv) Leveling the panels and checking their verticality.

v) In the case of Duplex type of panels, connecting the control panel to the relay panel across the corridor using the fittings provided with the panels. Also fitting the covers for the corridor portion.

vi) Where a number of panels are to be placed adjacent to each other to form a Board or where a panel is to be placed adjacent to an existing Panel / Board, these shall be bolted together. There shall be no gap between panels which are placed adjacent to each other.

vii) Connecting the Bus wiring / interconnecting wiring between the control & relay panels of the Duplex type. Also connecting the similar wiring between control panel to control panel and / or relay panel to relay panel where a Board formation is made or where panels are connected to an existing Board / panel as per their relevant schematic drawings to be made available by the Engineer-In-Charge.
viii) Connection of earthing to existing earth strip in control room.

K. LT PANELS
i) Transportation of L.T. Panel complete in all respect from site store to control room.
ii) Checking the LT Panel for any mechanical damage before installation.
iii) The insulation resistance of panel wiring and the LT Bus Bar (phase to phase and phase to earth) will be measured by RVPN with 500 V Meger before connecting any cable.
iv) Placing the LT Panel at its designated location in the control room as per layout/instructions of the Engineer-In-Charge.
v) Fixing / bolting the LT Panel on the trench provided in the floor of the control room.
vi) Connection of earthing to existing earth strip in control room.

L. DC PANELS:
i) Transportation of D.C. Panel complete in all respect from site store to control room.
ii) Checking the DC Panel for any mechanical damage before installation.
iii) Placing the DC Panel at its designated location in the control room as per layout/instructions of the Engineer-In-Charge.
iv) Fixing / bolting the DC Panel on the trench provided in the floor of the control room or on the base frame if provided.
v) Connection of earthing to existing earth strip in control room.

M. PLCC PANEL
i) Transportation of PLCC Panel complete in all respect from site store to control room.
ii) Fabricating the structure/ frame as per the fixing dimensions of the Carrier sets. The structure/frame should have a height of at least 150 mm from floor level to facilitate cable entry into the panel.
iii) Placing the structure/frame near the cable trenches in the PLCC room in such a manner that sufficient space is available for accessing the Carrier sets from the rear for maintenance as well as from the front for setting up test instruments. Preparing for grouting of the structure/frame(grouting work, i.e., concreting in the pocket of the foundation along with material, will be in the scope of RVPN).
iv) Checking the Carrier sets for any mechanical damage during transportation.
v) Erecting the Carrier sets at their locations on the fabricated structures/frames. (A minimum spacing of 30 mm between two carrier sets on both the sides shall be maintained for proper ventilation.)
vi) Leveling of the Carrier Sets and fixing them on the structure/frame.
vii) Cleaning the interior of the rack of the Carrier sets.
viii) Inserting the modules, if received separately, in their designated locations in the Carrier Terminal by RVPN.
ix) Connection of earthing to existing earth strip in control room.

N. RTCC PANEL:
i) Transportation of RTCC Panel complete in all respect from site store to control room.
ii) Checking the RTCC panel for any mechanical damage before installation.
iii) The insulation resistance of panel wiring will be measured by RVPN with 500 V Megger before connecting any cable.
iv) Placing the RTCC Panel at its designated location in the control room as per layout instructions of the Engineer-In-Charge.
v) Fixing / bolting the RTCC Panel on the trench provided in the floor of the control room.
vi) Connection of earthing to existing earth strip in control room.

O. MARSHALLING KIOSKS:
i) Transportation of Marshalling Kiosks complete in all respect from site store to location.
ii) Placing the Marshalling Kiosks on the foundation/cable trench as per the instructions of Engineer-In-Charge.
iii) Carrying out centering and leveling of the Marshalling Kiosks including preparation for grouting work (grouting work, i.e., concreting in the pockets of the foundation along with material, will be in the scope of RVPN)
iv) After grouting, tightening of the nuts, bolts, etc. complete in all respect.

P. LINE MATCHING UNIT (LMU) / LINE MATCHING DISTRIBUTION UNIT (LMDU)
i) Transportation of Line Matching Unit / Line Matching Distribution unit & its accessories from site store to location.
ii) Making arrangements / carrying out minor fabrication work (if required) on the supporting structure of the 2 nos. designated capacitor voltage transformers (as per coupling requirement) for fixing of Line Matching Unit (LMU) / Line Matching Distribution Unit (LMDU). These CVTs shall be of the same phase on which the wave traps have been / are to be erected.
iii) Fitting of the LMU / LMDU on the already erected structure.
iv) Connecting the HF terminal of the capacitor voltage transformer to the HF terminal of the LMU / LMDU.
v) Tightening of the nuts, bolts, etc. complete in all respect.

Q. BATTERY CHARGERS
1. GENERAL INSTRUCTIONS:
i) Maintain a minimum spacing of 15 cm. between the battery charger and other panels on both sides for proper ventilation.

2. ERECTION:
i) Transportation of battery charger along with accessories if any from the site store to control room.
ii) Checking the Battery Charger for any mechanical damage before installation.
iii) Placing the Battery Charger at its designated location in the control room as per layout/instruction of Engineer-In-Charge.
iv) Fixing / bolting the Battery Charger on the trench provided in the floor of the control room.

v) Tightening the nuts, bolts, etc. complete in all respect.

R. BATTERY SETS (VALVE REGULATED LEAD ACID / VRLA)

ERECION:

i) Transportation of cells, battery stand, accessories, clamps & connectors, etc. from site store to battery room.

ii) Assembling if required, and installing the mounting frame / stand in the battery room.

iii) Erecting the modules containing the cells on the mounting frame / stand as per the Manufacturer’s manual and erection drawings to be made available by the Engineer-In-Charge.

iv) Cleaning terminal surfaces of the cells with clean dry cotton cloth.

v) Making inter cell connections as per manufacturer’s general arrangement drawings using the inter cell connectors after applying a thin layer of petroleum jelly on the bolts (only the bolts supplied with the Battery Set should be used).

vi) Tightening of the terminals and inter cell connectors.

vii) Fitting of battery identification label (serial no.), front cover, top cover and instruction labels, as supplied, on the cells.

II FRESHENING CHARGE

i) Give a freshening charge to the Battery Set by gradually increasing the voltage. The current should not be allowed to exceed 20% of the 10 hour capacity of the Battery Set or the capacity of the battery charger. The voltage should not be allowed to exceed 2.30 volts / cell.

ii) The duration of the freshening charge and the voltage at which the Battery Set is to be charged, with reference to the ambient temperature, are given below. Either of the two options given in the table below can be adopted.

<table>
<thead>
<tr>
<th>Option</th>
<th>Temperature</th>
<th>Above 32 °C</th>
<th>15 – 32 °C</th>
<th>Below 15 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cell Voltage</td>
<td>2.23</td>
<td>2.25</td>
<td>2.25</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>30 hrs</td>
<td>30 hrs</td>
<td>60 hrs</td>
</tr>
<tr>
<td>2</td>
<td>Cell Voltage</td>
<td>2.28</td>
<td>2.30</td>
<td>2.30</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>12 hrs</td>
<td>12 hrs</td>
<td>24 hrs</td>
</tr>
</tbody>
</table>

III DISCHARGE / CAPACITY TEST:

i) The Battery Set shall be discharged after keeping it open circuit for not less than 2 hours and not more 24 hours from the completion of full charge.
ii) Discharge the Battery Set at its 10 hour rate, i.e., at a current equal to 10% of its rated ampere hour capacity till the voltage of any one cell reaches 1.75 volts or the total battery close circuit voltage reaches $1.75 \times n$ (where $n$ is the number of cells in the Battery Set), whichever is earlier.
   a) Maintain the discharge current within ± 1 percent of the specified rate of discharge.
   b) Record the voltmeter and ammeter readings every 5 minutes for the first 15 minutes, and thereafter every 15 minutes up to the end of the discharge. This shall be taken as the period of discharge.
   c) Note the time in hours elapsing between the beginning and end of the discharge. This shall be taken as the period of discharge.
   d) The average temperature of the electrolyte during discharge shall be the average of the temperature readings noted at hourly intervals during discharge. The temperature of the battery terminal shall be measured as it will be almost the same as the electrolyte.

iii) During the above discharge test, the cell voltages shall not be less than the following values.
   a) After six minutes from the start of discharge: 1.98 Volts
   b) After six hours of discharge: 1.92 Volts
   c) At ten hours of discharge: 1.75 Volts

iv) The capacity of the Battery Set is obtained by multiplying the discharge current in amperes by the time in hours as observed above. This capacity is corrected to 27 Deg. C by the formula:

$$C_{27} = C_t \times \left( \frac{t}{0.43} \times (27 - t) \right),$$

where

- $t$ is the average ambient temperature of the battery room,
- $C_{27}$ is the Capacity of the Battery Set at 27 Deg. C, and
- $C_t$ is the measured Capacity of the Battery Set at $t$ Deg. C.

v) If 100% or more capacity is achieved at any time during the above discharge test, equalize the voltage of all the cells as given at sub para (vii) below. Finally charge the Battery Set as per para IV and put it in operation in the floating mode as per para VI.

vi) The minimum acceptable capacity of the Battery Set (corrected to 27°C) which is to be achieved during the above discharge test is 85% of the rated capacity. If this is not achieved, the matter should be referred to the manufacturer.

vii) If 85% or more capacity is achieved during the above discharge test, then equalize the voltage of all the cells as given below.
   a) Bypass the cell that has first reached 1.75 V.
   b) Continue discharging the Battery Set at its 10 hour rate.
   c) Keep bypassing the cells that reach 1.75 V until the voltage of all the cells reaches 1.75V.

viii) Charge and discharge the Battery Set until 100% capacity is achieved. If 100% capacity is achieved within another four discharges, finally charge the Battery Set and put it in operation in the floating mode.
IV CHARGING / RECHARGING:
  i) Immediately after the discharging is completed, the Battery Set should be charged by gradually increasing the voltage. The current should not be allowed to exceed 20% of the 10 hour capacity of the Battery Set or the capacity of the battery charger. The voltage should not be allowed to exceed 2.30 volts / cell.
  ii) Continue the charging till the charging current reduces to a negligible value.

V DISCHARGING:
  i) Discharging of the Battery Set is to be done as per procedure given at paras III (i) and III (ii).
  ii) If this discharge is a capacity test, note the time in hours elapsing from the beginning to the end of the discharge. Calculate the capacity as given at para III and take necessary action as required.

VI
(i) If the Battery set has achieved 100% capacity, then charge the Battery set as per para IV (i).
(ii) After the Battery Set has been fully charged as per para IV (ii), switch off the boost charger. Switch on the float charger after setting its output voltage as per manufacturer’s recommendations.
(iii) Measure the voltages of all the cells of the Battery Set and record for future reference.

S. CABLE LAYING AND TERMINATIONS:

Note: The cable tags/markings strips, G.I. wire, cable glands, thimbles/lugs, ferrules, PVC perforated straps, sand and bricks are in the scope of supply of the Contractor.

GENERAL INSTRUCTIONS:
  i) The number of cables of each size and their lengths shall be assessed and intimated to the contractor by the Engineer In-charge. The cable laying schedule shall then be prepared by the Engineer In-charge so that maximum length of the cable in a drum can be utilized, leaving minimum scrap lengths.
  ii) Cable drums shall be unloaded, handled and stored properly.
  iii) Rolling of drums shall be avoided as far as possible. The drums may be rolled for short distances provided they are rolled slowly and in the direction marked on the drum. In the absence of any indication, the drums may be rolled in the same direction as it was rolled during winding.
  iv) Pulling out of cables from stationary drums shall not be permitted.
  v) Cables shall not be bent below the minimum permissible limits given below:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Type of cable</th>
<th>Minimum bending radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Power cable</td>
<td>12 D</td>
</tr>
<tr>
<td>2.</td>
<td>Control cable</td>
<td>10 D</td>
</tr>
</tbody>
</table>

Where „D“ is overall diameter of the cable.
vi) Cut lengths of cable which are available as surplus/ left over material from other works should preferably be used first. Small cut lengths of cable left after laying long lengths can be used for bus wiring and looping.

II PAYING OUT OF CABLES:
   i) Transportation of cable drums from the site store to location.
   ii) Handle the cable with care to prevent forming of kinks and damage to the insulation of the cable.
   iii) When the cable is to be taken from drums, small lengths can be unwound from the drum.
   iv) For longer lengths, place the cable drum on a turntable or jack up the drum on a suitable size of steel shaft. The cable shall be laid in a manner so that there are no scratches or damages caused to the cable due to rubbing on the sides of the drum.
   v) The required lengths of cables are to be laid between the following equipments:
      a) C&R Panels in Control Room to Marshalling Kiosk.
      b) Marshalling Kiosk to Equipment.
      c) Marshalling Kiosk to Marshalling Kiosk.
      d) Equipment to Equipment in switchyard.
      e) C&R Panel to C&R Panel / other panels in Control room, etc.
   vi) The cables shall be cut after taking into account the length required for connecting to the farthest terminals of the terminal block in the Control & Relay Panel / MK / equipment at both the ends.

III LAYING OF CABLES IN TRENCHES:
   i) The removing of trench covers and the refixing after completion of work will be done by the contractor.
   ii) The cables shall be placed in the racks in cable trenches. Power and control cables shall be laid in separate tiers. The order of placing cables (other than those directly buried) in cable trenches shall be as follows:
       a) Bottom tiers: Power Cables / Cables having A. C. supply.
       b) Middle tiers: Cables from CT / CVT / PT.
       c) Upper most tiers: Cables having D.C. supply.
   iii) The cables shall be securely fixed on the racks in the cable trenches. Particular care shall be taken when cables are laid in vertical & inclined cable trenches / galleries / vaults or supports.

IV MARKING AND TAGGING:
   i) Cable tug / marking strip shall be provided on all cables at both ends (just before entry into the equipment enclosure), on both sides of a wall / floor crossing & on each duct / conduit entry for identification of the cable. Cable tags shall also be provided inside the switchgear, control and relay panels, etc., wherever required for cable identification.
   ii) The numbering of cables on the tags shall be done as per cable schedule. Generally Cable size, identification of initial point and terminating end of equipment / Panel and a cable number shall be punched on the cable tag / marking strip by the Contractor.
iii) Rectangular shaped cable tag / marking strip of 1.0 mm thick aluminum with the
description punched on it shall be securely attached to the cable by not less than two
turns of 20 SWG GI wire

V LAYING OF UNDERGROUND POWER CABLES:
  i) Excavation of trench of 30 cm width and 75 cm depth along the proposed route /
alignment. The width may be increased in case a number of cables are to be laid. At
crossings of cable trenches / roads / transformer tracks / pipes / earth mat conductor,
etc., the depth shall be increased such that the bottom of the trench is 40 cm below them.
  ii) Covering the bottom of the trench with a layer of sand 25 cm thick.
  iii) Laying the cable in the excavated trench.
  iv) Covering the cable with bricks and backfilling the trench with the excavated sand.
     Compacting the sand by ramming. (Supply of sand & bricks are in the scope of work of
     the contractor)
  v) Securing the cables on the supports above ground level.

VI MARKING AND TAGGING:
  i) Directly buried underground cables shall be clearly identified with cable marker made
     of iron plate (Cable marker will be provided by RVPN).
  ii) Location of underground cable joints shall also be indicated with cable marker with
     an additional inscription "Cable joints". (Cable marker will be provided by RVPN).
  iii) The markers shall project 150 mm above ground and shall be placed at intervals of
     30 meters and at every change in direction. They shall also be located on both sides of
     road and drain crossings.

VII CABLE TERMINATION:
  i) Drilling the required holes in the gland plates of the panels / equipment, etc. for fixing
     the cables.
  ii) Stripping off the insulation of the cable for sufficient length so that any wire of the
     cable can be terminated at the farthest terminal in the terminal blocks.

  iii) For unarmoured cable, stripping off the outer and inner insulation sheaths of the
     cable. Fixing the cable gland on the cable end and then fixing the cable gland on the
     gland plate of the equipment / panel.

  iv) For armoured cables, stripping off the outer and inner insulation sheaths of the cable
     including cutting off the armouring for the stripped off length keeping a small length for
     fitting in the cable gland. Fitting the gland nut in the cable. Bending the armouring to fit
     the gland. Fitting the gland nut and tightening. Fitting the cable gland on the gland plate
     of the equipment / panel.

  v) Sealing all unused openings for cables in the cable gland plate to prevent entry of
     vermin and dust.
VIII WIRE TERMINATION:

i) Identification of each core of the cable either by its physical location / marking / numbering or by testing continuity from both ends.

ii) Marking each core of the cable at both ends with a tag / ferrule as per cable schedule / schematic drawing as per instructions of Engineer-In-Charge. In panels in which a large number of cables are terminated, wire identification may be difficult, therefore, the complete cable number shall also be included in the tag / ferrule on each core if advised by the Engineer In-charge.

iii) Cutting each wire at the length required for terminating it on the terminal block. This should be done after proper dressing of the wire in the wiring trough.

iv) Stripping off the insulation of each core of the cable which is to be connected. Crimping the termination end / thimble / lug (pin or ring type, as required) of appropriate size on the wire as approved by the Engineer-In-Charge.

v) Connecting the wire to its terminal on the terminal block and tightening to ensure secure and reliable connection.

vi) Marking all the spare cores of the cables with tags / ferrules indicating the cable number.
SECTION - III

GENERAL CONDITIONS OF CONTRACTS
FOR CONSTRUCTION OF BAY WORKS AT EHV SUB STATIONS

1.0 SCOPE:
1.1 Please refer to Clause No. 1.0 of Section - II of this specification for the same work.
1.2 This specification covers the construction of bay works of 220KV and 132 kV Sub Stations and 220KV/132KV Sub Stations. The works shall be carried out as detailed in the Price Schedule.
1.3 The Contractor shall carry out all additions / alterations required to complete the Sub Station works for commissioning at the same rates as indicated in the schedules.
1.4 The Contractor shall carry out / take up the work of erection activities awarded to him on as is where is basis.

2.0 WAY LEAVE AND REMOVAL OF OBSTRUCTIONS:
2.1 The NIGAM will arrange for right of way and clearance from obstructions for entry into the land from outside. As such there is no likelihood of hindrances in carrying out the work by the Contractor.
2.2 The Contractor shall immediately notify obstructions or hindrance from local villagers or the local authorities in the execution of the work to the concerned Engineer-in-Charge but shall not deal the matter directly. The Engineer-in-Charge will arrange to remove the obstacles as soon as possible.

3.0 ACCESS TO LOCATIONS:
It will be the Contractor's sole responsibility to take the materials from the site store upto the location where it is to be installed/placed /erected. Any pathway, temporary road, required will have to be provided by the Contractor at his cost. If for any reason the above is not feasible, the Contractor shall have to arrange transportation by head loads at his own cost. This is in connection with the transportation of material only.

4.0 DISTRIBUTION OF MATERIALS:
4.1 The Contractor has to take delivery of the equipments and other materials directly from the NIGAM's store at Sub Station site and handle them carefully and transport them to the location where these will be erected. He will be responsible for any damage to or loss of the equipments/ materials at any stage during transportation or erection. The materials that will be issued by the NIGAM will be on "as is where is" conditions at the Sub Station site store of the purchaser. The materials shall normally be issued during working hours.
4.2 The equipments/materials for the work shall be issued from the site stores located within the Sub Station. The stubs/anchor bolts/parts of the structure required for grouting will be issued at one time for carrying out the grouting

56
work without insisting for insurance. The remaining material (other than the stubs/anchor bolts/ parts of the structures required for grouting) shall be issued to the Contractor only after furnishing of valid insurance policy to the order placing authority and Indemnity Bond to the Work – In – Charge. The insurance policy shall be accepted by order placing authority as per Clause 21.0 of Section – III whereas Indemnity Bond shall be accepted by the Work In Charge. The provision of clause 1.09 “PRICES” of Section – I shall be applicable for transportation of material.

4.3 The material shall be issued to the Contractor based on the progress of the work and subject to acceptance of insurance policy as per provisions of Clause 21.0 of Section – III.

4.4 All the material shall be thoroughly checked by the Contractor before lifting from NIGAM stores. Once the material is lifted, no complaint for quantity or / and quality will be entertained.

4.5 The empty drums of conductor, earth wire and control cables shall be returned by the Contractor on as is where is basis.

4.6 On completion of the work, all surplus materials including the excess bolts and nuts, spring washers, plain washers, D – shackles, step-bolts, etc. and stub/anchor bolt setting templates shall be returned by the Contractor at the site stores of the NIGAM.

4.7 All the surplus structure/structure material shall be returned to the site stores as per instructions of Engineer – in – Charge of the work within one month of completion of erection. This includes unloading of structure material and stacking it as per instructions of the Engineer in Charge.

5.0 METHOD OF MEASUREMENT:

a) EARTHING

i) Earth Mat: The distance between the two points of the earth mat between which the M.S. Rod has been connected shall be measured for the purpose of payment. The length of M.S. Rod actually laid shall not be considered for measurement of this work. No payment will be made for the length of the rod which may extend outside the points connected. Also, no payment shall be made for the overlapping lengths of M.S. Rod in case of joints in the earth mat.

ii) Earth Risers: The length of the M.S. Flat laid between the earthed point of the equipment/structure and the earth mat where it is connected shall be measured for the purpose of payment. No payment shall be made for the overlapping lengths of M.S. Flat in case of joints in the risers between the structure/equipment and the earth mat.

iii) Earth Electrodes: The measurement shall be in terms of numbers of electrodes irrespective of the length of the electrodes.

iv) The actual length of M.S. Rod/M.S. Flat used shall not be measured for the purpose of payment, i.e., the overlapping length of M.S. Rod/Flat in
case of joints shall not be considered while measuring the length in case of earth mat and earth risers.

v) However, the actual length of M.S. Rod/M.S. Flat laid, including the overlapping lengths and the lengths extending beyond the connecting points, shall be considered in the material at site Account submitted by the Contractor.

vi) Small extra lengths of M.S. Rod/M.S. Flat up to 100 mm extending beyond the connecting points need not be cut.

vii) Wastage upto 1.0% of the M.S. Rod/M.S. Flat shall be permitted. However, the pieces of M.S. Rod/M.S. Flat left after the work is completed shall be deposited as far as possible.

b) SUB STATION AND EQUIPMENT STRUCTURE ERECTION AND ASSEMBLY:

No measurements are to be taken, but payments shall be made in respect of fully assembled structures (in terms of the unit mentioned in table of clause 4.2 i.e., weight in M.T. as applicable) at the rates indicated in the work order. The actual weight shall be taken as per approved BOM of the supplied structure. This may vary to any extent depending on the types of structures at the sub station.

c) STRINGING OF BUS BAR:

The measurement of each bus section shall be on the basis of the section length measured between the center lines of the structures at both ends. The work of each section shall mean stringing of all three phases.

d) STRINGING OF EARTH WIRE:

The measurement shall be in terms of each earth wire strung between any two structures irrespective of the distance between the structures.

e) JUMPERING:

The measurement shall be in terms of each set of three jumpers of single/double conductors per phase connected between bus to equipment or equipment to equipment or between bus to bus irrespective of the length of the conductor used.

f) EQUIPMENT ERECTION:

The measurement of the works at clause 1.1A(h)to (t) and 1.1B(h) to (r) of Section III(A) shall be made only in terms of numbers of the items erected as per requirements of Section III A and relevant Schedule.

g) CABELING:

i) Cable Laying: The measurement of the length of the Power/Control cables laid shall be made.
ii) Fixing in Cable Glands: The measurement shall be in terms of each end of the cable laid. For clarity, the payment for two nos. shall be made for each cable laid and fixed at both ends. iii)

Cable Termination:

a) **Control Cable**: The measurement shall be in terms of number of cables of each size which have been terminated, which includes termination of all the wires in the control cable at both ends. If all the wires are not got terminated, then deduction shall be made at the rate specified in the relevant item of the schedule for each wire not terminated.

b) **Power Cables**: The measurement shall be in terms of the ends of the cables terminated which includes termination of all 4 wires at each end. To clarify, the payment for termination of each cable shall be for 2 sets of 4 wires each.

6.0 **INSPECTION BY NIGAM’S REPRESENTATIVE:**

a) The Contractor shall check the verticality of the towers / structures in the presence of NIGAM's Engineer before tightening and punching of bolts and nuts. The structures erected should be truly vertical after erection and no straining will be permitted to bring them so. The maximum tolerance permissible is one mm per 360 mm of tower height.

7.0 **ELECTRICITY RULES:**

7.1 All works shall be carried out in accordance with the revised and latest provisions under The Electricity Act, 2003 and Rules made there under.

8.0 **ERECTION TOOLS:**

8.1 a) All the erection tools required during construction of Sub Stations/bays shall be arranged by the Contractor at his own cost.

b) The crane required for any activity during erection shall be arranged by Contractor at his own cost. The price quoted shall also include charges for crane.

c) Templates for structures will however be supplied by the NIGAM which shall be returned by the Contractor in good condition on completion of the works.

c) Compression machine, if required for stringing/jumpering works, shall be provided by RVPN on rent free basis.

8.2 The Contractor only shall be completely responsible for any damage and or loss of erection tools.
9.0 WASTAGES:

9.1 a) The Contractor shall make every effort to minimize the breakages, losses and wastages of materials/equipments, etc. supplied “Free of Cost” by the NIGAM for construction.

b) No damage/breakage/wastage shall be permitted except for the items mentioned at clause 9.2 below.

9.2 The maximum ceiling for wastages permitted is as under:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Item</th>
<th>Percentage wastage permitted (Max.)</th>
<th>Compensation payable for excess wastage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conductor and earth wire</td>
<td>1.0%</td>
<td>Double the issue rate</td>
</tr>
<tr>
<td>2</td>
<td>Insulators</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bolts &amp; nuts (no extra bolts &amp; nuts shall be supplied)</td>
<td>2.0%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Hardware &amp; accessories</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>M.S. Flat/M.S Rod</td>
<td>1.0%</td>
<td></td>
</tr>
</tbody>
</table>

9.3 The erection Contractor shall return to the NIGAM all the unused items. Conductor / earth wire length(s) less than 20 metres will be treated as wastage, but will be required to be returned as far as possible. Small extra lengths of M.S. Rod/M.S. Flat shall also be deposited as far as possible. However, the erection Contractor shall compensate the NIGAM at double the issue rate for the quantities exceeding permitted wastage and for the material not returned by the Contractor. However, in case of theft of material, recovery shall be made at single issue rate provided FIR has been lodged timely by the Contractor and a copy of the same is submitted to the Work – in – Charge.

9.4 All the wastages are accountable except for item no. 1 of clause 9.2. The account of permissible wastages shall be maintained at site in the registers as prescribed by the Engineer – in – Charge of the work, which will be subjected to periodical checking by NIGAM’s authorized representatives.

9.5 The account of wastages shall also be submitted with running accounts bills to the Engineer – in – Charge of the work. The copy of running account bill shall also be submitted to the concerned order placing authority.

10.0 PROGRESS REPORT:

10.1 Progress review meeting with the Contractor will be taken by the order placing authority as and when required. Minutes of such meeting shall be drawn and will include progress of works, site constraints, material constraints, delay on part of RVPN / Contractor, other bottlenecks, instructions given, decisions taken, agreed targets and views of both parties. Copy of these minutes shall be sent to the Contractor.
10.2 Deficiencies in the work shall be communicated in writing to the Contractor continuously and timely by all Inspecting Officers, and also taken up during progress review meetings.

10.3 Deficiencies which materially affect the safety and commercial use of the Sub Station/bay work will have to be attended by the Contractor before the Sub Station/bay is declared fit for charging or taking over.

11.0 QUANTITY OF WORK:

11.1 The quantities of various items of erection works indicated in the work orders placed against Central Labour Rate Contract shall be tentative/estimated. Final quantities shall be determined after completion of work. The Contractor has to carry out the work according to the final quantities as determined so as to complete the work for commissioning for which the rates of the Rate List shall be valid.

12.0 QUALITY OF MATERIAL TO BE USED BY CONTRACTOR

The material used shall meet the following requirements:

a) Paint: Asian / Nerolac / Berger / Jenson&Nicholson make
b) Cable Gland: Heavy duty single compression brass gland SIBG type of Gripwel, Comet, Metalcraft, Cabend, Trinity Touch or HMI make
c) Thimbles: Copper Terminal lugs of Dowell, Jainson, Elcon, Metalcraft, Cabend, Trinity Touch or Data make
d) Bitumen Impregnated tape: Bengal Bitumen, SPT Ltd. or Arcus Ltd. make
e) Bitumen Compound: Bengal Bitumen, SPT Ltd. or Arcus Ltd. make
f) Welding Electrodes: ISI marked

13.0 DELAY IN COMPLETION:

(a) The time for and the date of completion specified in the work order shall be deemed to be essence of the contract and the work shall have to be completed not later than the period specified therein, if the contractor fails to complete the work or any part thereof within the specified completion period, the NIGAM shall be entitled at his option.

(b) To recover from the Contractor, 1/4% (quarter percent) per week or part thereof for first four weeks and 1/2% (half percent) per week or part thereof for remaining period of delay (for unexecuted works) subject to maximum of 5% (five percent).

(c) After completion of the work the AEN (T&C), Hindaun in charge of the works should submit the detailed report to the SE(T&C), Hindaun indicating the delay in execution of the work activity wise on weekly basis.

(d) To cancel the contract and if so desired to complete the erection works by other agencies at the risk & cost of the contractor.
14.0 IMPORTANT INSTRUCTIONS:
In case of any doubt in the interpretation of the terms and conditions, the decision of the concerning Chief Engineer (T&C) will be final and binding on the bidder and no dispute in this regard will be entertained.

15.0 SPECIAL INSTRUCTIONS:
(a) The Bidders shall specifically note that the NIGAM will not pay any extra amount towards any type of claim except for the description indicated in erection schedule.

(b) Quantities given in the Section-V, Schedule-I, are tentative and may vary according to requirement of the bay to be erected. For the items where quantity is one (1) in Section-V, Schedule-II, contractor has to execute the work as per requirement of bay.

16.0 TERMS OF PAYMENT:
Payment for the erection of the line will be made to the contractor on submission of bills in accordance with the procedure as detailed below.

i) Payment equal to 100% (In case contractor furnishes Performance Security deposit by crossed Bank Draft or by way of Bank Guarantee) or 90% (In case contractor furnishes an undertaking for deduction of performance security amount from his each running and final bill @ 10% of the amount of the bill) of the total value of the works will be paid against monthly running account bills to be submitted to the A.EN (T&C) in-charge of the work.

ii) Balance 10% payment will be made after the 12 months performance period is over and instructions for release of the RMD has been issued by the SE(T&C) as per clause No.12. GUARANTEE or on furnishing of 10% performance bank guarantee. The payment will be made only after a material account statement of items received and used or returned to stores is settled. Any discrepancy in the quantity, will have to be made good by the contractor or deduction of its cost at double the issue rate applicable at the time of issue of material will be made while settling the balance payment.

iii) If a firm supplying material to the RVPN or executing any work obtain finance from bank by way of discounting of the bills. In such cases RVPN shall not at all be responsible for arranging payments to banks nor shall bear any liability towards the bank in such cases. This is to safeguard interest of the NIGAM against the firms/suppliers taking advantage of bank finance.

iv) The payment of the running bills, up to the work order value will be released without limiting to the individual item quantity.
v) In case the survey work of the Bays is not completed in the period, than 25% payment of subsequent R.A. bills as submitted by the contractor shall be deducted by the work incharge. Such deducted payment shall be released after completion of survey work by the contractor. However in case the delay in survey work is not attributable to the contractor than no deduction shall be made from the RA bill of the contractor. Deduction, in respect of deficiencies etc. will be made by the AEN-Incharge while passing/verifying the bills and simultaneously be conveyed to the contractor.

The following time schedule is specified within which verification / countersignature of all bills shall be done.

<table>
<thead>
<tr>
<th></th>
<th>All R.A.Bills</th>
<th>Other Bills (PV, balancepayment etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Verification by AEN-Incharge &amp; submission to XEN.</td>
<td>7 days</td>
<td>10 days</td>
</tr>
<tr>
<td>b) Countersignature by XEN &amp; forwarding to A.O.</td>
<td>3 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>

17. MODE OF PAYMENT:

i) Bills for 100% or 90% (as the case may be) value of the erection work during each calendar month as per clause 9 shall be submitted to the A.EN (T&C) in-charge of the works at the end of that particular month, who will in turn process the same and forward it to X.EN(T&C) in-charge of the works for countersignatures and finally to the Accounts Officer(T&C) for payment. These bills shall be serially numbered with suffix E-1.

ii) Bills for 10% value of the erection work done as per clause 9 shall be submitted to the A.EN(T&C.) in-charge of the works, who will in turn process the same and forward it to X.EN(T&C.) in-charge of the works for countersignatures and finally to the Sr. Accounts Officer(T&C) for payment. These bills shall be serially numbered with suffix E-2.

All the bills (in accordance with above clauses) shall be furnished along with following information:

a) Item wise work done during billing period, i.e., respective month
b) Cumulative work done item wise.

Account for Bay material, bolts-nuts and accessories consumed and balance stock.

d) Account of cement consumed, wastage and balance stock
e) Account of Bay material consumed, wastages and balance stock.

iii) The payment shall be made within thirty days from the date of submission of complete document and completion of all contractual formalities as per requirement of the work order but in case of delay in payment the purchaser shall not be liable to pay any interest on the outstanding amount to the contractor.

iv) The payment for survey, excavation, Stab setting, Concreting & earthing shall be made without insisting for Insurance Policy.

v) The payment shall be made up to order value irrespective of individual item quantities appearing in price schedules of respective Bays.

18. EMPLOYEES PROVIDENT FUNDS:

The contractor shall have to submit a certificate every month that he is an establishment covered under the employees provident fund and miscellaneous provisions act.1952 and is having a separate code number with the Provident Fund Commissioner and also that the Provident Fund contribution in respect of all the employees employed by him alongwith employer’s share of contribution etc. is being deposited with the Provident Fund authorities and shall also submit certified photo copies of the challans of deposits. In absence of above, the contractor shall be liable to deposit employee contribution, as well as, Employer’s contribution and other charges in respect of all the employees engaged by him for the said work with RVPN alongwith details of the employees, their wages and the amount of contribution as per RVPN CPF Rules every month. In case of failure, RVPN shall be entitled to deduct 16% of the amount from his bills.

19.0 DISPUTES:

i) All disputes, differences, questions, whatsoever arising between the NIGAM and Contractor upon or in relation to or in connection with the contract shall be deemed to have arisen at Hindaun (RAJASTHAN) only and no courts other than courts in Hindaun shall have jurisdiction to entertain the same.

ii) The RVPN has constituted the centralized standing committee for settlement of disputed claims under conditions of contract relating to RVPN. The committee shall consider all cases for settlement of disputed claims relating to purchases, works, turnkey contracts and labour contracts, civil works etc. The committee shall also take decision whether a particular matter is required to be referred to the Board for approval before settlement. The matter for settlement shall only be referred to the centralized standing committee of RVPN by following the guide lines detailed below:

(1) Disputes will be referred contract wise.
(2) Disputes involving amount above Rs.1.00 lacs only will be referred / entertained.

(3) Non-refundable fee shall be deposited by the contractor / firm @ 2% of disputed amount as claimed by the contractor/firm subject to maximum fee of Rs.1.00 lac.

(4) In case of disputes, Application for settlement (only in prescribed format) may be collected from the purchaser office.

The centralized standing committee fees shall be deposited in cash/ demand draft/ pay order with the Account Officer (T&C), RVPN, Hindaun and shall furnish receipt thereof with a request for referring their disputes to the centralized standing committee for decision.

For settlement, the firm shall furnish their application (only in prescribed format) indicating the details of dispute / grievances along with requisite settlement fee within a period of six months after receiving communication from Contracts Wing giving rise to cause of dispute / grievances.

20. PERFORMANCE SECURITY DEPOSIT:

(a) In order to secure/assure the fulfillment of the contract, the successful tenderer(s) upon receipt of preliminary acceptance letter/detailed purchase order as the case may be shall furnish within a period of 15 days a Performance Security deposit amount equivalent to 10% (Ten percent) of the contract value either by furnishing an undertaking for deduction of performance security from his each running and final bill @ 10% of the amount of the bill.

(b) Unless otherwise specifically required to be retained/forfeited by the NIGAM, the Performance Security deposit shall be refunded on request of the contractor after twelve months on completion of the entire work to the satisfaction of the NIGAM.

(c) If the contractor fails or neglect to observe or perform any of his obligation under the contract, it will be lawful for the NIGAM to forfeit either in whole or in part at his absolute discretion, the Performance Security deposit furnished by the contractor.

(d) No interest shall be payable on such deposits. Bank charges or any other charges, if any, shall be to the Contractor’s account. If the contractor fails to provide the Security within the period specified, such failure shall constitute a breach of the Contract and the NIGAM shall be entitled to make other arrangements at the risk and expenses of the contractor and the Bid Security deposited by the Contractor shall stand forfeited to the NIGAM.
21.0 ERECTION INSURANCE:

The contractor shall take suitable erection insurance policy for entire equipment at his own cost, the estimated cost as per store issue rate of the material shall be intimated by the officer incharge, who will supervise the work/project as nominated by the order placing authority.

The contractor shall also ensure the following:

I) Contractor shall take storage cum erection insurance policies for entire project. However the insurance premium could be paid on installment basis, but it will be the responsibility of the contractor that the installments are paid well within the time. In case the insurance is on installment basis, the receipt of payment of each installment shall be submitted to SE(T&C) Hindaun, line incharge and A.O. (T&C) Hindaun by the contractor.

II) Deductible franchise should be minimum as per insurance rules. In case of any loss to the extent of deductible franchise, the same shall be borne by the contractor.

III) A policy indicating discount on account of "EXCESS" is not to be accepted.

IV) Insurance policy shall be drawn in favour of the project indicating the full name of transmission line.

V) Insurance policy shall be taken from Jaipur based office of nationalized insurance companies, however for the contractor whose office is situated outside the Rajasthan, the insurance policy may be taken from place where such office is situated.

VI) Insurance policy shall be in combined name of RRVPN and contractor.

VII) Computerized and stamped insurance policy shall be furnished by the contractor to the SE(T&C) Hindaun for its Acceptance.

VIII) A copy of Computerised and stamped insurance policy shall also be furnished by the contractor to the line incharge who on receipt of its acceptance issued by SE(T&C)Hindaun, shall issue the bay material.

IX) If bays are not completed within the schedule completion time, the extension of insurance policy shall be arranged by the contractor. A part of the premium paid to the Insurance Company for this extension, corresponding to the delay on the part of RVPN, shall be reimbursed to the contractor on finalization of time extension case.
However part of the premium corresponding to the delay on the part of the contractor shall be borne by the contractor.

X) Deviation to this clause will not be acceptable. It is in the interest of contractor to take insurance policy for a longer period.

22. ACCEPTANCE OF THE ORDER:

The acceptance of the order shall be conveyed to the Superintending Engineer (T&C), RVPN, Hindaun, within ten days of the receipt of order in the prescribed proforma failing which it will be presumed that the terms and conditions incorporated in the order are acceptable to the contractor.
SECTION - IV

SAFETY ASPECTS AND INSTRUCTIONS TO BE COMPLIED WITH DURING ERECTION WORKS AT EHV SUB STATIONS

RVPN SAFETY INSTRUCTIONS
WORK AT EXTRA HIGH VOLTAGE SUB STATIONS

1.0 POLICY, PHILOSOPHY, PRINCIPLES AND AUDIT

1.1 POLICY

i) The RVPN Safety Rules & Safety Instructions are drawn up to comply with the requirement of the Indian Electricity Rules, 1956.

ii) The RVPN recognizes and accepts its statutory and moral responsibilities for ensuring safe design, construction, operation and maintenance of equipment and for the provision of safe methods of work and healthy working conditions. These requirements rank equally with other objectives of the Company.

iii) The success of the Policy relies on all employees complying with safety requirements relevant to their responsibilities.

1.2 PHILOSOPHY

i) Transmission of electrical power at Extra High and High Voltage is carried out using the RVPN's electrical and mechanical items of equipment, interconnected to form electro-mechanical systems. These systems contain inherent dangers but are designed so that they are safe when operated normally.

ii) When work or testing is to be carried out on or near to these systems, rules need to be specified to achieve safety from the inherent danger.

iii) These Safety Rules are based on a philosophy that persons will be protected from the inherent dangers. This is achieved by making persons “safe from the system”.

iv) The inherent dangers are those arising from a system. The RVPN Safety Rules and Safety Instructions define the procedures and responsibilities for achieving safety of persons from inherent dangers.

v) The Safety Rules are supplemented by the RVPN Safety Instructions which define the actions to be taken to apply the provisions of the Safety Rules.

vi) The Safety Rules and Safety Instructions together form a system to provide a safe procedure for work or testing on the system and can be summarized as follows:

a) Making available the equipment concerned for the maintenance work or testing work.

b) Establishing safe conditions for maintenance work or testing work. This can be achieved by either limiting the area of work or testing or by isolating and discharging the contents to a safe working level.

c) Authorizing the maintenance work or testing to commence.
d) Receiving the authority to carry out maintenance work or testing, carrying out the work or testing while maintaining those safe conditions.
c) Cancelling the authority to work or test on completion of the work or testing.
f) Restoring the system to normal.

vii) Further dangers are those arising from the environment in which persons undertake work. The way in which these dangers are managed is specified in the Safety Rules and Safety Instructions.

1.3 PRINCIPLES
The principles supporting the Policy and Philosophy for the Safety Rules and Safety Instructions are as follows:

i) The Safety Rules and Safety Instructions are only designed to protect people.

ii) The primary method of achieving safety from the system is by isolation, followed by earthing for EHV and HV equipment. (In the case of mechanical equipment, this shall be followed by draining, venting, purging and discharging stored energy systems (as appropriate). Where reasonably practicable, all points of isolation, vents and earths should be locked.

iii) The application of specific instructions / procedures where these Rules cannot be applied (e.g., Live / Hot Line Working).

iv) The safety precautions for all work and testing shall be maintained across all internal and external control boundaries.

v) Training of all staff and monitoring / authorizing certain staff that will carry out specific duties in the application of the Rules.

vi) Ensuring compliance by a regular and systematic audit.

2.0 DEFINITIONS

Additional Earth(s): Temporary, portable Earth(s) which are issued to the recipient of the Permit To Work or Permit To Test and are included in an Earthing Schedule. They are applied within an Isolated Zone in order to discharge any induced voltage. Additional Earth(s) shall be minimum 35 sq. mm copper equivalent.

Approved Procedure: VPN Safety Instructions or other specialized procedures authorized by CE / SE.

Authorized Person: Maintenance / Testing Engineer.
Maintenance Engineer: Responsible for carrying out maintenance works of EHV & HV equipments, transmission lines & LT systems.

Testing Engineer: Responsible for carrying out testing of protective systems, PLCC panels and other related equipments.

Caution Notice:
A notice in prescribed form to be applied at all points of isolation, or attached to all vents and drains and to Primary Earths where practicable and to control and operating devices to indicate that work or testing is being carried out.

Certificate of no back feed:
A certificate which records the details of Isolation carried out at a remote substation in order to achieve safety from EHV/HV systems and from test supplies.

Certificate of Earthing:
A certificate which records the details of Isolation & earthing carried out at a remote substation in order to achieve safety from EHV / HV systems and from test supplies.

Company:
RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LTD.
(RRVPNL, or, in short, RVPN).

Competent Person:
A person not below the level of Supervisor or Technician.

Danger:
A risk to health, or of bodily injury, or to life.

Danger Notice:
An approved notice reading "Danger".

Dead:
Not electrically Live or Charged.

Earthing Device:
An approved means of providing a connection between an electrical conductor / equipment and earth, being either a "Primary Earth" or an "Additional Earth".

Earthing Schedule:
A schedule indicating the requirements of Additional Earth(s) for each stage of the work or testing. It must show the number of earths required and either describe or show pictorially their position in the Isolated Zone.

Equipment:
Electrical and mechanical apparatus / equipment used to protect, control, measure, generate, transmit and distribute electricity to which the Safety Rules apply.

Extra High Voltage (EHV): Any voltage in excess of 33,000 volts (AC/DC).

General Safety:
those actions required to maintain a safe environment / place for work / testing, e.g., safe access and safe methods of work & testing and the correct use of personal protective equipment.

High Voltage (HV):
A voltage between 650 volts and 33,000 volts.

Isolated:
Disconnected from associated Equipment by Isolating Device(s) in the isolated position, or by adequate physical separation.

Isolating Device:
A device for rendering Equipment Isolated.

[Signatures]
Isolated Zone: All items of equipment contained within a work / testing area for which isolation has been achieved at all points of supply.

Keys: The key from a unique lock (at a location) which is used for locking / inter locking an Isolating Device, Earth or Drain / Vents.

Safety Key: A designated lockable cabinet for the safe custody of all Safety Keys.

Key Safe: Load Dispatch Center – The center where the operations of the GSS / Power Stations and the RVPN Electricity grid constituting the RVPN power system are monitored & coordinated.

Live: Charged / Energized at a voltage by being connected to a source of electricity.

Lock / Locks: A device used for immobilization of an item of Equipment.

Lock Closed: To secure an item of Equipment with padlocks or other device such that it is immobilized in the closed position.

Lock Open: To secure an item of Equipment with padlocks or other device such that it is immobilized in the open position.

Low Voltage (LV): A voltage not exceeding 250 volts.

Medium Voltage (MV): A voltage between 250 and 650 volts.

Northern Region Load Dispatch Center – The center where the operations of Northern Electricity grid constituting the power systems of the partner States are monitored & coordinated.

Point(s) of Isolation: The point(s) at which Equipment has been Isolated and, when practicable, the Isolation Point immobilized and Locked. **Caution Notices shall be attached to all Points of Isolation.**


Primary Earth(s): Earth(s) (Either fixed earth Switch(es) or Portable Earth(s) with sufficient / suitable electrical capacity) applied between the point of work and all points of EHV / HV isolation before the Permit To Work or Permit To Test is issued. Primary earth(s) shall be minimum 95 sq. mm copper equivalent.

Permits To Test (PTT): A safety Document specifying the EHV / HV Equipment and the testing to be carried out and the actions taken to safeguard the disturbance of the system during the testing. Form of document is shown in Section 4.0 B.

Permits To Work (PTW): A Safety Document specifying the Equipment / Area and the work / testing to be carried out and the actions taken to achieve Safety from the system. Form of document is shown in Section 4.0 A.
Purged: A condition of Equipment from which any dangerous contents have been removed.

KSI: RRVPNL Safety Instructions.

Safety Electrical: That distance from the nearest Extra High Voltage or High Voltage Exposed Conductor or part of equipment not Primary Earthed, or from its support insulator, which must be maintained to avoid danger.

Safe Electrical clearance: A distance of 1.5 meters minimum which must be maintained by lineman from the conductors or jumpers of a de-energized overhead line which has been isolated & Primary earthed and for which a Safety Document has been issued before connection of Additional Earths under the terms of that Safety Document.

Safety Document: A Document specifying the Equipment / Area and the work / testing to be carried out and the actions taken to achieve Safety from the system (Permit To Work), or to safeguard the disturbance of the system during the testing (Permit To Test).

Safety from the system: That condition which safeguards persons working on or near to Equipment from the Dangers which are inherent in a System.

Senior Authorized Person / Shift In charge: Engineer responsible for all operations and activities in substations.

Supervision: Supervision, Personal / direct, by an Authorized Person who is available at the point of work or testing at all times during the course of that work or testing.

System: Items of Equipment which are used either separately or in combination to generate, transmit or distribute electricity.

Vent: Allowing a closed space to have an outlet to atmosphere so that the pressure has equalized to atmospheric.

3.0 GENERAL PROVISIONS.

3.1 GENERAL SAFETY.

i) In addition to the requirements for establishing Safety from the System specified in these Safety Rules and Safety Instructions, General Safety shall be established and maintained at all times.

ii) General Safety shall be established by the person holding the Safety Document before work / testing starts. The person responsible for establishing General Safety shall be specified in the Safety Instructions.

iii) During the course of work, the person in charge of the work / testing shall ensure that each & every member of the working party maintains General Safety.
It is the responsibility of all members of the working party, overseen by the person in charge of the work / testing, to ensure that their activities do not affect other work areas.

3.2 SAFETY RULES, SAFETY INSTRUCTIONS AND PROCEDURES.

i) These Safety Rules, Safety Instructions and Procedures are mandatory.

ii) Relevant Safety Rules issued by other Authorities should also be considered mandatory when designated as in Basic Safety Rules.

3.3 SPECIAL INSTRUCTIONS.

Construction Work or testing carried out on or near to a System to which these Safety Rules cannot be applied, or for special reasons should not be applied, shall be carried out in accordance with an Approved Procedure. (e.g., EHV / HV Live Line / Hot Line working which cannot be covered in these Safety Rules).

3.4 OBJECTIONS ON SAFETY GROUNDS.

Any person who has objections on safety grounds in the application of these Safety Rules and Safety Instructions shall explain their reasons to the person holding the Safety Document. If their objections cannot be resolved immediately, then the matter should be referred to the Site - In - Charge. If the objections are still not resolved then the matter should be referred to the Site - In - Charge.

4.0 THE BASIC SAFETY RULES.

4.1 APPLICATION OF RULES.

i) The Rajasthan Rajya Vidyut Prasaran Nigam Limited Safety Rules and Safety Instructions shall be applied when working on or near to items of Equipment which are part of a System described in 4.1(ii).

ii) The System to which these Safety Rules and Safety Instructions apply is all those items of Equipment owned by RVPN Limited and located within the Company’s Sub Station fences or on its transmission lines.

4.2 APPROACH TO EXPOSED EXTRA HIGH VOLTAGE AND HIGH VOLTAGE CONDUCTORS AND INSULATORS.

i) Persons shall not allow any part of their body or objects / tools & plant to approach within the specified Safety Clearance to exposed EHV / HV conductors which are Live. The only exception to this is during Live / Hot line work carried out on EHV / HV equipment in accordance with Approved specialized procedure.
### SAFETY CLEARANCES:

<table>
<thead>
<tr>
<th>Highest System Voltage (kV)</th>
<th>Safety Working Clearance (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>2.6</td>
</tr>
<tr>
<td>36</td>
<td>2.8</td>
</tr>
<tr>
<td>72.5</td>
<td>3.1</td>
</tr>
<tr>
<td>145</td>
<td>2.7</td>
</tr>
<tr>
<td>245</td>
<td>4.3</td>
</tr>
<tr>
<td>420</td>
<td>6.4</td>
</tr>
</tbody>
</table>

(iii) When Points of Isolation have been established and exposed conductors could be subject to Extra High Voltage or High Voltage, the only object permitted to approach within Safety Clearance shall be Approved voltage measuring devices or Earthing Devices.

(iv) When Points of Isolation have been established and Danger has been excluded by the application of Earthing Devices, approach is allowed under an appropriate Safety Document within the specified Safety Clearance.

[Signature]

[Signature]
### SECTION-V

**SCHEDULES and ANNEXURES**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>PARTICULARS</th>
<th>SCHEDULES and ANNEXURES No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schedule of quantity for bay work (G Schedule)</td>
<td>SCHEDULE-I</td>
</tr>
<tr>
<td>2</td>
<td>Schedule of rates for unit quantity items</td>
<td>SCHEDULE-II</td>
</tr>
<tr>
<td>3</td>
<td>Schedule for erection of GSS Bay</td>
<td>SCHEDULE-III</td>
</tr>
<tr>
<td>4</td>
<td>Schedule of capacity of the bidders</td>
<td>SCHEDULE-IV</td>
</tr>
<tr>
<td>5</td>
<td>Departure from specification</td>
<td>SCHEDULE-V</td>
</tr>
<tr>
<td>6</td>
<td>Bidder Detail</td>
<td>SCHEDULE-VI</td>
</tr>
<tr>
<td>7</td>
<td>Bid Proposal form</td>
<td>SCHEDULE-VII</td>
</tr>
<tr>
<td>8</td>
<td>Performa for bank Guarantee</td>
<td>ANNEXURE-I</td>
</tr>
<tr>
<td>9</td>
<td>Pre Bid Queries format</td>
<td>ANNEXURE-II</td>
</tr>
<tr>
<td>10</td>
<td>Performa for Performance Guarantee</td>
<td>ANNEXURE-III</td>
</tr>
<tr>
<td>11</td>
<td>Compliance with The Code of Integrity and No Conflict of Interest</td>
<td>ANNEXURE-A</td>
</tr>
<tr>
<td>12</td>
<td>Declaration by the Bidder regarding Qualifications</td>
<td>ANNEXURE-B</td>
</tr>
<tr>
<td>13</td>
<td>Grievance Redressal during Procurement process</td>
<td>ANNEXURE-C</td>
</tr>
<tr>
<td>14</td>
<td>Memorandum of Appeal under the Rajasthan Transparency in Public Procurement Act, 2012</td>
<td>ANNEXURE-D</td>
</tr>
<tr>
<td>CODE</td>
<td>DESCRIPTION</td>
<td>UNIT</td>
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<tr>
<td>------</td>
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</tr>
<tr>
<td>BSR Item #24</td>
<td>Laying of earthing risers of 75x12mm size M.S. flat at a depth of 0.80 metre from top level of foundations, including excavation of trench of required depth and back-filling of the same, transportation of M.S. flat from site store to location, preparation of risers, bending as per requirement (after heating if necessary), fixing on &amp; bedding / bolting of earthing / structure &amp; points of structure, laying in the trench, welding to earthmesh of M.S. Rod as per drawing, including writing of extra length of M.S. flat if required, application of bitumen compound and covering with bitumen impregnated tape on all welded joints, painting of all surfaces of risers above ground level with red oxide and green paint, for the type of soil prevalent at 0.30 metre below top level of foundations (M.S. Rod of above size &amp; M.S. flat as required shall be made available by RVPN).</td>
<td>Mtrs.</td>
</tr>
<tr>
<td>25</td>
<td>Placing / Driving of earth electrode of 40 mm dia. M.S. Rod of length 3.30 metres (approx.) to a depth of 3.60 metres from the top level of foundations, including excavation of pits as required and back-filling of the same, transportation of M.S. Rod from site store locations, cutting of M.S. Rod to desired length, preparation of one end as an spike if necessary, welding of earth electrode to earth mesh of M.S. Rod as per drawing. Application of bitumen compound and covering with bitumen impregnated tape on all welded joints, for the type of soil prevalent at 0.60 metres below top level of foundations. (M.S. Rod of above sizes &amp; M.S. flat as required shall be made available by RVPN).</td>
<td>Mtrs.</td>
</tr>
<tr>
<td>26</td>
<td>ERECTION OF SUB-STATION STRUCTURES</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Erection of Substation structures : Column, beams, lighting mast and equipment structure (Excluding C.B. &amp; Capacitor bank) of all type including transportation of structure members Nuts &amp; Bolts, Fasteners etc. from site store to location their assembly placing on foundation, fixing of template, with foundation bolts as required, leveling &amp; preparing for grouting as required, but excluding grouting after grouting and tightening of nuts &amp; bolts. (Max. height of steel structure up to 20 MTR).</td>
<td>NT</td>
</tr>
<tr>
<td>28</td>
<td>Stringing of 220KV, 132KV, 33KV &amp; 11KV Bus bar of ACSR conductor including transportation of conductor, Disc Insulators &amp; Tension Hardware from site store to locations, laying and cutting required length of conductor for cleaning at assembly of Disc Insulator as required along with fitting of bolted type or compression type tension hardware as made available (compression shall be provided by RVPN on rent free basis) making up at one end and stringing of conductors between the beems with specified tige and tension also equilibrating sag and fitting spacers and spacer T clamps for twin conductor for 3 Phases of conductors in each bus section.</td>
<td></td>
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<tr>
<td>HUS Single ACSR Zebra</td>
<td></td>
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<tr>
<td>HUS Double ACSR Zebra</td>
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<tr>
<td>Jammers of ACSR conductor (Nos. T-type) between bus to equipment, or between equipment to bus, including transportation of conductor, disc insulators and hardware from site store to locations, cleaning and assembly of disc insulators as required along with fitting of suspension hardware and erection as required, cutting required length of conductor, making connections, fixing of spacers and spacer T-clamps as required, tightening of clamps/ conductors, dressing etc. for three phases.</td>
<td>Set</td>
<td>23</td>
</tr>
<tr>
<td>29</td>
<td>Single ACSR Zebra Earthing Conductor</td>
<td></td>
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<tr>
<td>Double ACSR Zebra Earthing Conductor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STR MONG of earth wire (size 7/0.15 mm or 7/0.00 mm) including transportation of earth wire, tension hardware etc from site store to locations, laying and cutting required length of earth wire, fitting of bolted type or compression type hardware as made available (compression shall be provided by RVPN on rent free basis) making up at one end, stringing of earthwire between structure piers with specified sag and tension, jumping and connecting earth bonds for single earthwire.</td>
<td>Mtrs.</td>
<td>8</td>
</tr>
<tr>
<td>30</td>
<td>Erection of current Transformer / Potential Transformer / Capacitive voltage Transformer / Series Reactor Assy/Aux Transformer / Neutral Current Transformer etc with clamps &amp; connectors, on already erected steel structure including transportation from site store to location, fabrication of base frame, fixing of terminal connections, tightening of nuts &amp; bolts etc complete in all respects.</td>
<td>Nos.</td>
</tr>
<tr>
<td>31</td>
<td>Erection of Lighting arrester on already erected steel structure including transportation of lighting arrester, clamps &amp; connectors, Surge counter etc from site store to location, fabrication of base frames, fixing of terminal connections, Surge counter, Tightening of nuts &amp; bolts etc complete in all respects.</td>
<td>Nos.</td>
</tr>
<tr>
<td>Description</td>
<td>Nos.</td>
<td>Rate</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>------</td>
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</tr>
<tr>
<td>220 KV (With single Earth Mat)</td>
<td>2</td>
<td>3081</td>
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<td>220 KV (With double Earth Mat)</td>
<td>2</td>
<td>4275</td>
</tr>
<tr>
<td>220 KV (Without Earth Mat)</td>
<td>2</td>
<td>3394</td>
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<tr>
<td>Erection of wave trap on already erected structure beam including transportation of wave trap disc insulators, hardware, clips &amp; connections etc. from site store to location, cleaning and assembly of disc insulators along with fitting of suspension arrangement and erection of terminal connections etc.</td>
<td>2</td>
<td>1641</td>
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<tr>
<td>Erection of P.T. nuts &amp; bolts, clips &amp; connectors etc. from site store to locations, fabrication of base frame, assembly &amp; required fixing of clamps etc.</td>
<td>4</td>
<td>606</td>
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<tr>
<td>Erection of 220 KV or 332 KV circuit breaker including transportation of equipments, structure members, nuts &amp; bolts, clips &amp; connectors etc. from site store to locations, assembly of support structure, transportation on foundation, leveling and preparing for grading as required, but excluding grading, assembly / placing of pipes, mechanisms box etc. on support structure as per manufacturer's drawings, fitting of terminal connectors as required, but excluding commissioning of CB</td>
<td>2</td>
<td>643</td>
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<tr>
<td>Erection of 220 KV or 332 KV CB (required complete in all respects including transportation from site store to control room, placing on foundation / cable trench as per layout, interconnection between control &amp; relay panel and with existing panel, fixing of side / top covers and shrouding to existing earth strip in control room, connection of bus bars to existing panel and between control and relay panel as required)</td>
<td>4</td>
<td>475</td>
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<tr>
<td>Erection of matching block, line matching unit &amp; line matching &amp; distribution unit (LMBU) complete in all respects including transportation from site store to location from placing on foundation / cable trench as per layout, preparing for grading of foundation bolts but excluding grading etc.</td>
<td>4</td>
<td>281</td>
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<tr>
<td>LAYING AND TERMINATION OF CABLES</td>
<td></td>
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</tr>
<tr>
<td>Central Cable</td>
<td></td>
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</tr>
<tr>
<td>Laying of PVC insulated armoured / armoured control cables of 11 KV grade with copper conductors in cable trench as per specification as required, including transportation of cable drums from site store to locations, laying in cable trench, routing of required length, placing them on cable trays / cable batten / dressing, including removing and re-laying block covers as required, making necessary connections, testing, cable marking on both the terminating ends etc as required for all sizes from 25 x 2.5 sq. mm. to 200 x 2.5 sq. mm. 40 x 4 sq. mm. and 40 x 6 sq. mm.</td>
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<tr>
<td>Armouring of control cables</td>
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<tr>
<td>Fixing of control cable in position with single compression nickel plated brass cable glands conforming to IS 11949 &amp; having three metal washers and anti-rubber ring, including preparation of cable and stuffing of corresponding holes in grand panel etc. as required and including cost of cable glands for each gland as required</td>
<td></td>
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</tr>
<tr>
<td>1) 3 mm armoured control cable</td>
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<td>37</td>
</tr>
<tr>
<td>2) 5 mm armoured control cable</td>
<td>230</td>
<td>33</td>
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<tr>
<td>Terminations of wires of cables with copper conductors using copper terminal ends (pin or ring type as required of Dowell's or equivalent make as approved by the Engineer-in-Charge) duly plumped with connecting nuts, including making wire ends ready for crimping, terming &amp; dressing of wires etc. as required including cost of terminal ends for all wires for each cable at both ends for cables of the following sizes:</td>
<td></td>
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</tr>
<tr>
<td>3) 4 x 2.5 sq. mm.</td>
<td>300</td>
<td>11</td>
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<tr>
<td>4) 16 x 2.5 sq. mm.</td>
<td>650</td>
<td>16</td>
</tr>
<tr>
<td>5) 16 x 2.5 sq. mm.</td>
<td>500</td>
<td>10</td>
</tr>
<tr>
<td>6) 16 x 4 sq. mm.</td>
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<td>10</td>
</tr>
<tr>
<td>7) 16 x 6 sq. mm.</td>
<td>500</td>
<td>12</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
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<tr>
<td>GRAND TOTAL</td>
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We hereby accept the above rates on Part A at — 3/1/1

(Contractor's Signature with Seal)

As above G. Schedule has been checked and found correct.

[Signature]

[Stamp]
<table>
<thead>
<tr>
<th>Year</th>
<th>Corresponding</th>
<th>Name of the Committee</th>
</tr>
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<tbody>
<tr>
<td>2000</td>
<td>S. K. Bose</td>
<td>Bose (1918-1939)</td>
</tr>
<tr>
<td>2001</td>
<td>Y. S. Chavan</td>
<td>Chavan (1940-1947)</td>
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<tr>
<td>2003</td>
<td>D. B. Dange</td>
<td>Dange (1957-1962)</td>
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<tr>
<td>2005</td>
<td>M. S. Bhide</td>
<td>Bhide (1971-1978)</td>
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<tr>
<td>2010</td>
<td>V. P. Singh</td>
<td>Singh (2007-2013)</td>
</tr>
<tr>
<td>SR No.</td>
<td>DESCRIPTION</td>
<td>UNIT</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>Low voltage inverter is made available for 2 x 800 KVA transformers.</td>
<td></td>
</tr>
</tbody>
</table>

- Transformer: 2 x 800 KVA
- Transformer rating: Low voltage
- Transformer made available: Yes

---

**Notes:**
- Transformer specifications are detailed in the table above.
- Transformer made available: Yes
- Transformer type: Low voltage
- Transformer capacity: 2 x 800 KVA

---

**Additional Information:**
- Transformer usage: Designed for specific electrical applications.
- Transformer efficiency: High, ensuring minimal power loss.
- Transformer durability: Constructed with high-quality materials for long-term reliability.
<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>SECTOR</th>
<th>LENGTH (KMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carrying of AC/DC cables</td>
<td>1.1 Transmission</td>
<td>100</td>
</tr>
<tr>
<td>1.2 Transmission Lines</td>
<td>1.2.1 Phase</td>
<td>250</td>
</tr>
<tr>
<td>1.2.2 Neutral</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1.2.3 Ground</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>1.3 Switchgear</td>
<td>1.3.1 Indoor</td>
<td>150</td>
</tr>
<tr>
<td>1.3.2 Outdoor</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1.4 Protection</td>
<td>1.4.1 Lightning Arrester</td>
<td>100</td>
</tr>
<tr>
<td>1.4.2 Surge Arresters</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1.4.3 Surge Protective Devices</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1.5 Switchgear</td>
<td>1.5.1 Indoor</td>
<td>150</td>
</tr>
<tr>
<td>1.5.2 Outdoor</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1.6 Protection</td>
<td>1.6.1 Lightning Arrester</td>
<td>100</td>
</tr>
<tr>
<td>1.6.2 Surge Arresters</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1.6.3 Surge Protective Devices</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Note: All values are in KMS.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>13.2 KV Line 1 34/1 200 A C S for 200 A Y 260 350000 MVA</td>
</tr>
<tr>
<td>L2</td>
<td>13.2 KV Line 2 34/1 200 A C S for 200 A Y 260 350000 MVA</td>
</tr>
<tr>
<td>L3</td>
<td>13.2 KV Line 3 34/1 200 A C S for 200 A Y 260 350000 MVA</td>
</tr>
<tr>
<td>L4</td>
<td>13.2 KV Line 4 34/1 200 A C S for 200 A Y 260 350000 MVA</td>
</tr>
</tbody>
</table>

**Notes:**
- Each line is 13.2 KV and is designed to handle 200 A with a capacity of 350000 MVA.
- The lines are rated for 260 volts.
- The descriptions are for a specific project or facility.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Rate (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>2</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>3</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>4</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>5</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>6</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>7</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>8</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
<tr>
<td>9</td>
<td>300 Volt 3 Phase Oil Filled Transformer</td>
<td>Each</td>
<td>8900.00</td>
</tr>
</tbody>
</table>

Note: All prices are exclusive of taxes and transportation charges.
<table>
<thead>
<tr>
<th>OP</th>
<th>DESCRIPTION</th>
<th>T/O</th>
<th>RATE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laying of V / V insulated underground 11kV cable of 3 X 160 sq mm with</td>
<td>100.00</td>
<td>12.00</td>
<td>1,200.00</td>
</tr>
<tr>
<td>2</td>
<td>Piping of V / V insulated underground 11kV cable of 3 X 160 sq mm with</td>
<td>200.00</td>
<td>12.00</td>
<td>2,400.00</td>
</tr>
<tr>
<td>3</td>
<td>Ancillary works</td>
<td>300.00</td>
<td>12.00</td>
<td>3,600.00</td>
</tr>
</tbody>
</table>

**Note:**
- All labor charges are inclusive of wage, overtime, and other related expenses.
- Materials and equipment are costed at the prevailing market rates.
<table>
<thead>
<tr>
<th>ID</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

SECTION-V
SCHEDULE-III

SCHEDULE OF ERECTION OF 220 KV CHHOKARWARA BAY WORK at 400 KV GSS Hindaun.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of work</th>
<th>Period of completion from the date of issue of work order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Construction work of 02 Nos., Chhonkarwara Bays at 400 KV GSS Hindaun.</td>
<td>03 Months</td>
</tr>
</tbody>
</table>

Note:-
1. Above targeted completion period is inclusive of monsoon period.
2. We hereby agreed to execute above work as per above schedule if contract is awarded to us.

(Signature)
Name & Designation
With seal of the firm
SECTION-V
SCHEDULE-IV

SCHEDULE OF CAPACITY OF THE BIDDER IN RESPECT OF 132 & 220 KV
BAY/GSS WORK

ERECITION OF EHV GSS/BAY WORK:
(i) Details of orders executed

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Order No./Date</th>
<th>Item</th>
<th>Order Qty.</th>
<th>Name of order &amp; placing Authority</th>
<th>Date of commencement of work</th>
<th>Date of completion of work</th>
<th>REMARKS</th>
</tr>
</thead>
</table>

Note: Please enclosed all supporting documents for above information furnished.

SIGNATURE OF AUTHORISED REPRESENTATIVE OF THE BIDDER
SEAL/STAMP

[Signatures]
SECTION-V
SCHEDULE-V

DEPARTURE FROM SPECIFICATION.

The tenderer shall state under this schedule the departure from the purchaser's specification in respect of both technical and commercial terms & conditions

1) Technical Deviations:

2) Commercial:

Certified that we agree to all Technical Specification and Commercial Terms and conditions as laid down in "General Conditions of Contract" except for the deviations to the extent indicated above.

( Signature )
Name & Designation
with Seal of the firm.
SECTION-IV
SCHEDULE-VI

(TO BE FILLED IN BY THE TENDERERS & UPLOAD WITH THE TENDER)

Contractors and/or their authorized agents who are quoting against this tender are requested to furnish the following information along with the tender. The Chief Engineer will have the discretion to ignore the tender without the undernoted particulars and/or ignore the tender particulars.

1. Name and Address of the Contractor / Firm

2. Place where office of the firm exist

3. Details of staff employed in the works

4. List of available machinery, tools & tackles, name of engineers/persons etc, for erection work.

5. Statement of financial resources and Banking reference along with Balance Sheet / Income Tax returns furnished for previous two years.

6. Whether the firm is a Micro, Small or Medium enterprise as per the Micro, Small & Medium enterprise development act, 2006 (MSMED Act 2005) and registered with the authorities under the above Act for the items/services covered under this tender. If yes, then the firm has to indicate the Entrepreneurs Memorandum No. (Twelve Digit) and scanned copy of the certificate issued by the Authorities under the MSMED Act, 2005 should be uploaded along with the online bid.

7. Whether the firm is registered under D.G.T.D. State Industries Department.
   If yes, give details along with copy of registration.

( Signature )
Name & Designation with Seal of the firm.
SECTION-V
SCHEDULE-VII
Bid Proposal form
(Must be filled in by the tenderer and upload with Technical Bid)

To,
The SE (T&C),
Raj. Rajya Vidyut Prasaran Nigam Ltd.,
Hindaun.

Dear Sir,

With reference to your invitation to the tender against Specification No. RVPN / SE / T&C / HND / BN-15/2016-17 we agree to Construct 2 nos. 220 KV Chhokarwara Bay at 400 KV GSS Hindaun on labour contract basis.

We the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda, if any issued in accordance with Instructions to Bidders.
2. We are eligible and qualified as required by the Bidding Document and offer to execute in conformity with the Bidding Document the following Works: construction work of 2 nos. 220 KV Chhokarwara Bay at 400 KV GSS Hindaun on labour contract basis.
3. We confirm that we agree to all the terms and conditions as well as the technical stipulations of your Specification No. RVPN/SE/T&C/HND/BN-15/2016-17 and there are no deviations other than as specified in the Schedule-V.
4. Any increase / decrease in the quantity of individual items mentioned in the price schedule shall be finalized on basis of the actuals. The cost of that item shall be increased / decreased in proportion to the % variation.
5. The percentage variation below / above for the cost of erection of bay work indicated in price schedule (s) shall also be applicable in case of unit rate items detailed in Schedule-II (For the same Bay).
6. Our bid shall be valid for a period of 90 days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at anytime before the expiration of that period;
7. If our Bid is accepted, we commit to obtain a Performance Security in the amount of 10 percent of the Contract Price, or get it deducted from our running and final bills, or shall submit a Performance Security Declaration, as the case may be, for the due performance of the Contract;

[Signatures]
8. We, including any subcontractors or suppliers for any part of the contract, declare that we do not have any conflict of interest in accordance with ITB and we have complied with and shall continue to comply with the Code of Integrity contained in the Act, the Rules and ITB during execution of the Contract till completion of all our obligations under the Contract;

9. We are not participating as a Bidder in more than one Bid for this Works in this bidding process in accordance with ITB.

10. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the contract, have not been debarred by Government of Rajasthan or the Procuring Entity;

11. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;

12. We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive;

13. We agree to permit Government of Rajasthan or the Procuring Entity or their representatives to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by them;

Name: ________________________

In the capacity of: ________________________

Signed: ________________________

Date: ________________________

Duly authorized to sign the Bid for and on behalf of: ________________________

Complete Address: ________________________

Tel: ________________________ Fax: ________________________

E-mail: ________________________
PERFORMA OF BID BANK GUARANTEE
(For Bid Security)

(Bank Guarantee in lieu of bid security on non-judicial Stamp Paper of Rajasthan Government of appropriate value as required under the Rajasthan Stamp duty act)

To,
The Superintending Engineer(T&C),
Rajasthan Rajya Vidyut Prasaran Nigam Ltd.
Hindaun.

1. Whereas ....................[name of the Bidder] (hereinafter called the Bidder) has submitted its bid dated ...............[date of submission of bid] for the construction of ...................(name of contract)(hereinafter called 'the Bid')

2. KNOW ALL PEOPLE by these presents that WE ..............[name of bank] of ...................(name of country), having our registered office at ...................(addresses of bank) (hereinafter called "the Bank"), are bound into ...................(name of Purchaser) (hereinafter called "the Purchaser") in the sum of Rs. ................for which payment well and truly to be made to the said Purchaser, the Bank bids itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this ................day of ................20................

3. THE CONDITIONS of this obligation are:

ii) If the Bidder withdraws its Bid during the period of bid, Validity specified by the Bidder in the Bid Form:

or

(iii) If the bidder refuses to accept the correction of error in his Bid:

or

(iii) If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity.

(a) Fails or refuses to execute the Contract Agreement, if required:

or

(b) Fails or refuses to furnish the performance security, in accordance with the General Conditions of Contract.

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

____________________

____________________
5. The decision of the CHIEF ENGINEER, RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM, JAIPUR shall be final whether breach has been committed on the right to demand the amount of guarantee from us which has accrued to the purchaser.

6. This guarantee shall not cease or determine, if the purchaser grants time or indulgence or vary the terms of the contract with the Contractor or without our consent or knowledge.

7. The guarantee herein contained shall not be affected by any change in the constitution of the Contractor.

8. We..................further undertake not to revoke this guarantee during its currency except with the previous consent of the CHIEF ENGINEER, RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM, JAIPUR.

9. All disputes arising under the said guarantee between the Bank and the Nigam or between the Contractor and the Nigam pertaining to the guarantee, shall be subject to the jurisdiction of Courts in Hindaun, Rajasthan alone.

10. This guarantee will remain in force up to and including one hundred eighty (180) days after the date of the opening of bids, i.e. up to ................. with a further grace period of Ninety (90) days and any demand in respect thereof should reach ...............(Name of the Bank) and branch situated at................. (address of Hindaun branch), HINDAUN Rajasthan not later than the above date.

Yours faithfully,

Bankers (EXECUTANT)

Signed by the above named Bank in presence of :-
(Signature with full Name and Address)

Witness:

1. 

2.

Attested by Notary Public, First Class Magistrate or directly confirmed by the executing bank.

*The Bidder should insert the amount of the guarantee in words and figures denominated in the currency of bid.*
ANNEXURE-II

PRE-BID QUERIES FORMAT

Name of the company/Firm
Bidding document fee Receipt No. _____ dated ______ for Rs. ______
Name of Person(s) Representing the Company/Firm:

<table>
<thead>
<tr>
<th>Name of person</th>
<th>Designation</th>
<th>E-mail-Id(s)</th>
<th>Tel Nos &amp; Fax No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Company/Firm Contacts

<table>
<thead>
<tr>
<th>Contact Person(s)</th>
<th>Address for correspondence</th>
<th>E-mail-Id(s)</th>
<th>Tel Nos &amp; Fax No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Query/Clarification Sought

MS Excel Sheet Format

<table>
<thead>
<tr>
<th>S.No</th>
<th>Bidder Name</th>
<th>ITB/GCC/ Specification clause No</th>
<th>Bid document page No</th>
<th>Clause details</th>
<th>Query/Clarification/suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Signature)
Name & Designation
With seal of the bidder
Performance Security

Performance Security

[Bank’s Name, and Address of Issuing Branch or Office]

Beneficiary: The Superintending Engineer, (T&C), RVPN, Hindaun

Date: ..........................................................

Performance Guarantee No. ..................................

We have been informed that ........... name of the Contractor ...........

[hereinafter called “the Contractor”] has entered into Contract No. ...........

[reference number of the Contract]; ........ dated ............. with you, for the
Construction work of 2 nos 220 KV Chhokarwara bay at 400 KV GSS
Hindaun on labour contract basis. UNDER BN-15/2016-17 (hereinafter called
the Contract').

Furthermore, we understand that, according to the conditions of the Contract, a
performance security is required.

At the request of the Contractor, we ........ name of the Bank ........ hereby
irrevocably undertake to pay you any sum or sums not exceeding in total an
amount of Rupees ........ amount in figures ..........

(Rupees ...................... ........ amount in words ........ ) such sum being payable
upon receipt by you of your first demand in writing accompanied by a written
statement stating that the Contractor is in breach of its obligation(s) under the
Contract, without your needing to prove or to show grounds for your demand or
the sum specified therein.

The Guarantor agrees to extend this guarantee for a specified period in response
to the Procuring Entity’s written request for such extension for that specified
period, provided that such request is presented to the Guarantor before the
expiry of the guarantee.
This guarantee shall expire, no later than the . . . . Day of . . . . . . . . , **, and any demand for payment under it must be received by us at this office on or before that date.

Seal of Bank and Authorized Signature(s)

* The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract

** Insert the date 365 days after the expected completion date including defect liability period and maintenance period, if any.

Notes:
1. All italicized text is for guidance on how to prepare this advance payment guarantee and shall be deleted from the final document.
2. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.
Annexure -A

Compliance with The Code of Integrity and No Conflict of Interest

Any person participating in a procurement process shall –

(a) not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for unfair advantage in procurement process or to otherwise influence the procurement process;
(b) not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation;
(c) not indulge in any collusion, Bid rigging or anti-competitive behaviour to impair the transparency, fairness and progress of the procurement process;
(d) not misuse any information shared between the procuring Entity and the Bidders with an intent to gain unfair advantage in the procurement process;
(e) not indulge in any coercion including impairing or harming or threatening to do the same, directly or indirectly, to any party or to its property to influence the procurement process;
(f) not obstruct any investigation or audit of a procurement process;
(g) disclose conflict of interest, if any; and
(h) Disclose any previous transgressions with any Entity in India or any other country during the last three years or any debarment by any other procuring entity.

Conflict of Interest–

The Bidder participating in a bidding process must not have a conflict of interest.

A conflict of interest is considered to be a situation in which a party has interests that could improperly influence that party’s performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations.

(i) A Bidder may be considered to be in conflict of interest with one or more parties in a bidding process if:
   a). have controlling partners/shareholders in common; or
   b). receive or have received any direct or indirect subsidy from any of them; or
   c). have the same legal representative for purposes of the Bid; or
   d). have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Entity regarding the bidding process; or
   e). the Bidder participates in more than one Bid in a bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the Bidders is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one Bid; or
   f). the Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Goods, Works or Services that are the subject of the Bid; or
   g). Bidder or any of its affiliates has been hired (or is proposed to be hired) by the procurement Entity as an engineer-in-charge/consultant for the contract.
Declaration by the Bidder regarding Qualifications

Declaration by the Bidder

In relation to my/our Bid submitted to ........................................for Contract of .................................................. in response to their Notice Inviting Bids No ........................................... Dated ........................................... I/we hereby declare under Section 7 of Rajasthan Transparency in Public Procurement Act, 2012 that:

1. I/we possess the necessary professional, technical, financial and managerial resources and competence required by the Bidding Document issued by the Procuring Entity;

2. I/we have fulfilled my/our obligation to pay such of the taxes payable to the union and the State Government or any local authority as specified in the Bidding Document;

3. I/we are not insolvent, in receivership, bankrupt or being wound up, not have my/our affairs administered by a court or a judicial officer, not have my/our business activities suspended and not the subject of the legal proceedings for any of the foregoing reasons;

4. I/we do not have, and our directors and officers not have, been convicted of any criminal offence related to my/our professional conduct or the making of false statements or misrepresentations as to my/our qualifications to enter into procurement contract within a period of three years preceding the commencement of this procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;

5. I/we do not have a conflict of interest as specified in the Act, Rules and the Bidding Document, which materially affects fair competition;

Date:

Place

Signature of bidder

Name:

Designation:

Address:

[Signatures]
Annexure -C

Grievance Redressal during Procurement process

The designation and address of the First Appellate Authority is as nominated vide order No. VPN/AAO/F&R/P.98/D.53 dated 30.06.2016.

(1). Filing an Appeal

If any Bidder or prospective bidder is aggrieved that any decision, action or omission of the Procuring entity is in contravention to the provisions of the Act or the Rules or the Guidelines issued thereunder, he may file an appeal to First Appellate Authority, as specified in the Bidding Document within a period of ten days from the date of such decision or action, omission, as the case may be, clearly giving the specific ground or grounds on which he feels aggrieved:

Provide that after the declaration of a Bidder as successful the appeal may be filed only by a Bidder who has participated in procurement proceedings:

Provided further that in case a Procuring Entity evaluates the Technical Bids before the opening of the Financial Bids, an appeal related to the matter of financial Bids may be filed only by a Bidder whose Technical Bid is found to be acceptable.

(2) The officer to whom an appeal is filed under para (1) shall deal with the appeal as expeditiously as possible and shall endeavour to dispose it of within thirty days from the date of appeal.

(3) If the officer designated under para (1) fails to dispose of the appeal filed within the period specified in para (2), or if the Bidder or prospective bidder or the procuring Entity is aggrieved by the order passed by the First Appellate Authority, the Bidder or prospective bidder or procuring Entity, as the case may be, may file a second appeal to Second Appellate Authority specified in the Bidding Document in this behalf within fifteen days from the expiry of the period specified in para (2) or of the date of receipt of the order passed by the First Appellate Authority, as the case may be.

(4) Appeal not to lie in certain cases

No appeal shall lie against any decision of the Procuring Entity relating to the following matters, namely:-

(a) determination of need of procurement;
(b) provisions limiting participation of Bidders in the Bid process;
(c) the decision of whether or not to enter into negotiations;
(d) cancellation of procurement process;
(e) applicability of the provisions of confidentiality.
Form of Appeal

(a) An appeal under para (1) or (3) above shall be in the annexed form along with as many copies as there are respondents in the appeal.

(b) Every appeal shall be accompanied by an order appealed against, if any, affidavit verifying the facts stated in the appeal and proof of payment of fee.

(c) Every appeal may be presented to First Appellate Authority or Second Appellate Authority, as the case may be, in person or through registered post or authorised representative.

Fee of filing Appeal

(a) Fee of first appeal shall be rupees two thousand five hundred and for second appeal shall be rupees ten thousand, which shall be non-refundable.

(b) The fee shall be paid in the form of bank demand draft or banker's cheque of the Scheduled Bank in India payable in the name of Appellate Authority concerned.

Procedure for disposal of Appeal

(a) The First Appellate Authority or Second Appellate Authority, as the case may be, upon filing of appeal, shall issue notice accompanied by copy of appeal, affidavit and documents, if any, to the respondents and fix date of hearing.

(b) On the date fixed for hearing, the First Appellate Authority or Second Appellate Authority, as the case may be, shall:

(i) Hear all the parties to appeal present before him; and

(ii) Peruse or inspect documents, relevant records or copies thereof relating to the matter.

(c) After hearing the parties, perusal or inspection of documents and relevant records or copies thereof relating to the matter, the Appellate Authority concerned shall pass an order in writing and provide the copy of order to the parties to appeal free of cost.

(d) The order passed under sub-clause(c) above shall also be placed on the State Public Procurement Portal.
Annexure - D

FORM No.1
[See rule 83]

Memorandum of Appeal under the Rajasthan Transparency in Public Procurement Act, 2012

Appeal No........................... of........................................

Before the...........................................(First/Second Appellate Authority)

(A). A Bidd

1. Particulars of appellant:
   (i) Name of the appellant:
   (ii) Official address, if any:
   (iii) Residential address:

2. Name and address of the respondent(s):
   (i)
   (ii)
   (iii)

3. Number and date of the order appealed against and name and designation of the officer/authority who passed the order (enclosed copy), or a statement of a decision, action or omission of the Procuring Entity in contravention to the provisions of the Act by which the appellant is aggrieved:

4. If the Appellant propose to be represented by a representative, the name and postal address of the representative:

5. Number of affidavits and documents enclosed with the appeal:

6. Grounds of appeal...........................................................
(Supported by an affidavit)

7. Prayer..............................................................................

Place..........................................................

Date..........................................................

Appellant’s Signature
<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>RATE (Ruppes)</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART (A)</td>
<td>BSER Item Erection work</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Laying of earthing risers of 75x1.2mm size M.S. Flat at a depth of 0.80 metre from top level of foundations, including excavation of trench of required depth and back filling of the same, transportation of M.S. Flat from site store to locations, preparation of risers, bending as per requirement (after heating if necessary), fixing on &amp; bending / bolting of equipment / structure &amp; peaks of structure, laying in the trench, welding to earth mesh of M.S. Rod as per drawing, including welding of extra length of M.S. Flat if required, application of bitumen compound and covering with bitumen impregnated tape on all welded joints, painting of all surfaces of risers above ground level with red oxide and green paint, for the type of soil prevalent at 0.80 metre below top level of foundations (M.S. Rod of above sizes &amp; M.S. Flat as required shall be made available by RVPN).</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) In case electricity is made available by RVPN without charges.</td>
<td></td>
<td>1400</td>
<td>38</td>
<td>53200</td>
</tr>
<tr>
<td></td>
<td>(ii) Normal Soil</td>
<td>Mtrs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Placing / Driving of earth electrode of 40 mm dia. M.S. Rod of length 3.30 metres (approx.) to a depth of 3.80 metres from the top level of foundations, including excavation of pit as required and back filling of the same, transportation of M.S. Rod from site store locations, cutting of M.S. Rod to desire length, preparation of one end as an spike if necessary, welding of earth electrode to earth mesh of M.S. Rod as per drawing, application of bitumen compound and covering with bitumen impregnated tape on all welded joints, for the type of soil prevalent at 3.80 mtrs below top level of foundations (M.S. Rod of above sizes &amp; M.S. Flat as required shall be made available by RVPN).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(a) In case electricity is made available by
RVPN without charges.

<table>
<thead>
<tr>
<th></th>
<th>Normal Soil</th>
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<th></th>
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</thead>
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<td></td>
<td>Nos.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MT</td>
<td>36.88</td>
<td>1744</td>
<td>64318.72</td>
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</table>

**ERECION OF SUB-STATION STRUCTURES**

- Erection of substation structures: Columns, beams, lighting mast and equipment structure (Excluding C.B. & Capacitor bank) of all type including transportation of structure members Nuts & Bolts, Bars, etc. from site store to location their assembly, placing on foundation, fixing of template, with foundation bolts as required, leveling & preparing for grouting as required, but excluding grouting, erection after grouting and tightening of nuts & bolts (Max. height of steel structure up to 20 MTR).

- Stringing of 220KV, 132KV, 33KV & 11KV Bus Bar of ACSR conductor including transportation of conductor, Disc Insulator & Tension Hardware from store to locations lying and cutting required length of conductor for cleaning at assembly of Disc insulator as required along with fitting of bolted type or compression type tension hardware as made available (compression must be provided by RVPN on Rent free Bases) making up at one end stringing of conductors between the beams with specified size and tension also equalizing size and fitting spacers and spacer T-clamps for twin conductor for 3-Phases of conductors in each bus section.

<table>
<thead>
<tr>
<th></th>
<th>Single ACSR Zebra</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sectio n</td>
<td>3</td>
<td>1019</td>
<td>3057</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Double ACSR Zebra</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sectio n</td>
<td>2</td>
<td>1469</td>
<td>2938</td>
</tr>
</tbody>
</table>

- Jumpers of ACSR conductor (3nos. Y-type) between bus to equipment or between equipment to equipment or between bus to bus, including transportation of conductor, disc insulators and hardware from site to locations, cleaning and assembly of disc insulators as required along with fitting of suspension hardware and erection as required, cutting required length of conductor, making connections, fixing of spacers and spacer T-clamps as required, tightening of clamps/ conductors, dressing etc. for three phases.

<table>
<thead>
<tr>
<th></th>
<th>Single ACSR Zebra / Panther Conductor</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set</td>
<td>23</td>
<td>250</td>
<td>5750</td>
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<table>
<thead>
<tr>
<th></th>
<th>Double ACSR Zebra Conductor</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set</td>
<td>2</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

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104
<p>| <strong>4</strong> STRINGING of earth wire (size 7/3.15 mm or 7/4.00 mm) including transportation of earth wire, tension hardwares etc. from site to locations, laying and cutting required length of earth wire, fitting of bolted type or compression type hardware as made available (compression machine shall be provided by RVPN on rent free basis) making up at one end, stringing of earthwire between structure peaks with specified sag and tension, jumpering and connecting earth bonds for single earthwire. |
| <strong>5D</strong> Erection of Current Transformer/ Potential Transformer/ Capacitive voltage Transformer/ Series Reactor/ Residual Transformer/ Neutral Current Transformer with clamps &amp; connectors. On already erected steel structure including transportation from site to location, fabrication of base frame, fixing of terminal connectors, tightening of nuts &amp; bolts etc. complete in all respect. |
| <strong>5D (in 220 KV CT/ PT/ CVT)</strong> Erection of Lighting Arrester on already erected steel structure including transportation of Lighting Arrester, clamps &amp; connectors, Surge counter etc. from site store to location, fabrication of base frame, fixing of terminal connectors, Surge counter, Tightening of nuts &amp; bolts etc. complete in all respect. |
| <strong>5C (ii) 220 KV</strong> Erection of Isolator on already erected steel structure including transportation of base frame, P.D's contacts, mechanism box, clamps &amp; connectors etc. from site store to location, minor fabrication as required and fixing of terminal connector etc. adjustment/ alignment of isolator and its earth blade, if provided, for their smooth operation and final adjustment if required after jumpering. |
| <strong>5D 220 KV (With single Earth Balde)</strong> |
| <strong>Nos.</strong> | 2 | 3681 | 7362 |
| <strong>220 KV (With Double Earth Balde)</strong> |
| <strong>Nos.</strong> | 2 | 4175 | 8350 |
| <strong>220 KV (Without Earth Balde)</strong> |
| <strong>Nos.</strong> | 2 | 3306 | 6612 |
| <strong>220 KV (Random)</strong> | |
| <strong>Erection of wave trap on already erected Structure Beam including transportation Wave trap, disc insulators, Hardware clamps &amp; connectors etc. from site store to location, cleaning and assembly of disc insulators along with fitting of suspension arrangement and erection, fixing of terminal connectors etc.</strong> |
| <strong>5E 220 KV</strong> |
| <strong>Nos.</strong> | 4 | 606 | 2424 |</p>
<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Description</th>
<th>Nos.</th>
<th>663</th>
<th>10608</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Erection of Post Insulators on already erected structure including transportation of P.I.'s nuts &amp; bolts, clamps &amp; connectors etc from site store to locations, fabrication of base frame, assembly if required, fixing of clamps etc.</td>
<td>220KV</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>5 G</td>
<td>Erection of 220 KV or 132 KV Circuit Breaker including transportation of equipments, structure members, nuts &amp; bolts, clamps &amp; connectors etc from site store to locations, assembly of support structure, their placing on foundation, levelling and preparing for grouting as required, but excluding grouting, assembly / placing of poles, mechanism box etc on support structure as per manufacturer's drawings, fitting of terminal connectors as required, but excluding commissioning of CB</td>
<td>220KV</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>ERECTION OF CONTROL &amp; RELAY PANELS complete in all respects including transportation from site store to control room, placing on foundation / cable trench as per layout, interconnection between Control &amp; Relay panels and with existing panels, fixing of side / top covers and doors, earthing to existing earth strip in control room, connection of bus wiring to existing panel and between control and relay panel as required.</td>
<td></td>
<td>14438</td>
<td>28876</td>
</tr>
<tr>
<td>6 G</td>
<td>i) Simplex Panel, DC Panel, RTCC Panel, PLC Panel etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Erection of marshaling kiosk/Line matching unit [LMU], Line matching &amp; distribution unit [LMDU] complete in all respect, including Transportation from site store to location from placing on foundation/cable trench as per layout preparing for grouting of foundation bolts but excluding grouting etc.</td>
<td>220KV</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>LAYING AND TERMINATION OF CABLES</td>
<td></td>
<td>475</td>
<td>1900</td>
</tr>
<tr>
<td>10</td>
<td>Control Cables</td>
<td></td>
<td>281</td>
<td>1686</td>
</tr>
</tbody>
</table>

- 1) Laying of PVC insulated unarmoured / armoured control cables of 1.1 KV grade with copper conductor in cable trenches as per specification as required, including transportation of cable drums from site store to locations, laying in cable trenches, cutting of required length, placing them on cable racks / cable trays / cable batten & dressing, including removing and re-fixing lead covers as required, making necessary connections, testing, cable marking on both the terminating ends etc as required for all
<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Quantity</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Armoured control cable</td>
<td>Mtrs</td>
<td>9000</td>
<td>4.40</td>
<td>39600</td>
</tr>
<tr>
<td>(ii) Fitting of control cable in position with single compression nickel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plated brass cable glands confirming to IS : 12943 &amp; having three metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>washers and rubber ring, including preparation of cable and drilling of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>corresponding holes in gland plates etc as required and including cost of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cable glands for each cable gland size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) 19mm armoured control cable</td>
<td>Nos.</td>
<td>475</td>
<td>37</td>
<td>17875</td>
</tr>
<tr>
<td>D) 25mm armoured control cable</td>
<td>Nos.</td>
<td>250</td>
<td>55</td>
<td>13750</td>
</tr>
<tr>
<td>(ii) Termination of wires of cables with copper conductor using copper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>terminal ends (pin or ring type as required of Dowell's or equivalent</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>make as approved by the Engineer - In - Charge duly crimped with</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>crimping tool, including making wire ends ready for crimping, ferruling &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dressing of wires etc as required including cost of terminal ends for all</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wires for each cable at both ends for cables of the following sizes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) 4C x 2.5 sq. mm.</td>
<td>Each</td>
<td>300</td>
<td>32</td>
<td>9600</td>
</tr>
<tr>
<td>d) 12C x 2.5 sq. mm.</td>
<td>Each</td>
<td>650</td>
<td>96</td>
<td>62400</td>
</tr>
<tr>
<td>h) 18C x 2.5 sq. mm.</td>
<td>Each</td>
<td>500</td>
<td>143</td>
<td>71500</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>455373</td>
</tr>
</tbody>
</table>

(Rs. Four Lacks Fifty Six Thousand three Hundred seventy three only)

Bidder quote here (Excess/Less in %)                                      (+/-)

Quoted Amount (Excess/Less in % X BSR cost of work A): B                   (+/-)

Total Quoted Price (BSR cost of work A + Quoted Amount B)                  |

Rupees in words