

**BHARAT HEAVY ELECTRICALS LTD.
(TRANSMISSION BUSINESS GROUP)
GENERAL TERMS AND CONDITIONS FOR TENDER ENQUIRY**

This Format is to be submitted in original duly signed and stamped by bidder. Deviation, if any, is to be brought out clearly in Schedule of Commercial deviation giving clause wise deviation. Any condition / clarification / deviation mentioned elsewhere will not be accepted.

Sr. No	ENQUIRY NO. 225E366 DATED 05/04/2016 DUE ON 29/04/2016
1.	<p>INSTRUCTION TO BIDDERS:</p> <p>a) Sealed quotations are invited for the items mentioned in the enquiry. Quotations should be typed and free from over writing and erasures. Corrections or additions must be clearly written both in words and figures and attested, otherwise offer shall be liable for rejection.</p> <p>b) The tenders are invited and evaluated online through e-Procurement System. The bidder shall submit his response through bid submission to the tender on e-Procurement platform at https://bheleps.buyjunction.in.</p> <p>Foreign and indigenous vendors participating through open tenders/limited tender (Through E-procurement system) will necessarily have to buy Class-III digital certificates (DSCs) issued by certifying agencies in India.</p> <p>Procedure of getting obtaining DCSs can be down loaded from <u>Important Links</u> on link http://www.bhel.com/tender/tender_home.php or may be obtain from concern executive through email request.</p> <p>Successful bidder shall be responsible for completion of the contract in all respects. Techno commercial offers shall be opened through the E-Procurement portal. However this tender may be finalized through online Reverse Auction. Bidders are request to quote their most competitive prices through the online e-procurement portal / system.</p> <p>In case of any difficulty in operating the E-Tendering System, please call up our developer's Help Desk in Junction Services Ltd. at 033-6601 1717 or BHEL representative. Please ensure the submission of your most competitive offer before the due date in the E-Tendering Portal to avoid last minute hustle.</p> <p>c) Bids are to be submitted in Two parts:</p> <ul style="list-style-type: none">i) Techno-commercial bid (Part-I): A copy of price bid (Part-II) without prices+ is also to be enclosed in Part-I bid.ii) Bidder to strictly ensure submitting the price bids in BHEL format.iii) Price bid (Part-II): To be submitted only in one copy separately. This should not contain any Technical or Commercial Terms. The rates should be quoted both in figures and words. In case of any difference between figures and words, the quoted rate in words shall prevail over figure. Further in case of difference between unit rate & total price, unit rate in words shall prevail over total price.

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	<p>d) <u>For any Technical Clarification, please contact:</u> Sh. Dileep Kumar Shukla, Dy. MANAGER / TBEM BHARAT HEAVY ELECTRICALS LIMITED TRANSMISSION BUSINESS GROUP TOWER A, 5TH FLOOR, ADVANT NAVIS IT BUSINESS PARK, PLOT NO-7, SECTOR-142, EXPRESSWAY NOIDA, NOIDA-201305, DISTT- GAUTAM BUDH NAGAR, UP, INDIA Phone : 0120-06748533 E-mail : dkshukla@bhel.in</p> <p><u>For any Commercial Clarification, please contact:</u> SH. S.C. SHIVHARE, Sr. MGR.(TBMM) / SMT. ARCHANA KUMARI, Sr. ENGR. (TBMM) BHARAT HEAVY ELECTRICALS LIMITED TRANSMISSION BUSINESS GROUP TOWER A, 5TH FLOOR, ADVANT NAVIS IT BUSINESS PARK, PLOT NO-7, SECTOR-142, EXPRESSWAY NOIDA, NOIDA-201305, DISTT- GAUTAM BUDH NAGAR, UP, INDIA Phone : 0120-6748467 / 0120-6748471 Email: archanak@bhel.in / scshivhare@bhel.in</p> <p>e) Price bid should not contain any information / description / terms & condition other than given in Part-I of the bid except prices, otherwise bid is liable for rejection.</p> <p>f) Price bid submitted along with the bid shall remain valid up to validity of offer. Unsolicited Supplementary / Revised price bid submitted during validity period of offer, unless asked by BHEL, shall not be considered. With-drawl of quotation by the bidder, at any stage after its opening, may entail blacklisting of vendor.</p> <p>g) Authorized signatory should authenticate tender documents.</p> <p>h) There will be separate contract awarded for Supply portion and Site execution portion. For Supply portion General Terms and Conditions mentioned here shall be applicable for Site execution portion, Terms and conditions for Installation services shall be applicable. However, any breach in either of the contract shall be deemed as the breach of other contract also.</p>		
2.	<p>PRICES:</p> <p><u>The Prices shall remain FIRM during contract period.</u></p> <p><u>Project Status:</u> Project with Deemed Export Benefits. Custom Duty Benefits not available.</p> <p>A. The prices shall be quoted by the vendors considering following</p> <p>The prices are to be quoted on FOR (Destination) basis. The break-up of price shall be as under:-</p> <p>a) Ex-works Price: Ex- works price including packing & forwarding charges.</p> <p>b) Excise duty: Excise duty: ED exempted against PAC (Project Authority Certificate by RRVUNL) and Mega Power Certificate issued by GOI.</p>		

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	<p>c) Sales Tax: ST / VAT / CST (against C-form) to be quoted as percentage in un-price and price bid. In case of interstate sale-in-transit supplier have to provide E1/E2 form.</p> <p>d) Entry tax / Octroi Charges: Any Entry tax / Octroi applicable at destination / destination state shall be paid extra on proof of such payment.</p> <p>e) Freight & Insurance: Freight and Transit Insurance for door delivery up to destination/store is to be quoted.</p> <p>f) Type Test charges: As per technical specification enclosed with this Enquiry.</p> <p>Note: The purchase order shall be placed on Ex- Works basis.</p> <p>“BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.</p> <p>In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit ‘online sealed bid’ in the Reverse Auction. Non-submission of ‘online sealed bid’ by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.”</p> <p>(Further to above clause, please refer attached Annexure I for Terms & Conditions Of Reverse Auction Page 1 & 2)</p> <p><u>RA guidelines is available on BHEL website (www.bhel.com)</u></p>		
3.	<p><u>TERMS OF PAYMENT:</u></p> <p>100 % Payment with Taxes, Duties, Freight & Insurance within 60 days (45 Days for MSE vendor) from the date of receipt of complete invoice with following documents in 3 sets (Original + 2 copies):</p> <ul style="list-style-type: none"> - LR duly endorsed in the name of customer by BHEL site - Receipt of material on the attached format by BHEL site - Excise invoice (If Applicable) - Delivery Challan or Packing list (case wise) - Transit insurance certificate from under writers or Copy of Intimation of Transit Insurance duly endorsed by under writers - MICC - Guarantee Certificate - Copy of Performance Bank Guarantee. <p>[A.] Documents to be furnished by vendor immediately after dispatch:</p> <ul style="list-style-type: none"> - Copy of Invoice - Copy of LR - Copy of Delivery Challan / Packing List - Copy of Insurance Certificate - Copy of Guarantee Certificate <p>[B.] Following Documents to be sent by vendor to TBG, BHEL :</p> <ul style="list-style-type: none"> - LR duly endorsed in the name of customer by BHEL site 		

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	<ul style="list-style-type: none"> - Receipt of material on the attached format by BHEL site - Excise invoice (If Applicable) - Delivery Challan / Packing list (case wise) - Transit insurance certificate from under writers or Copy of Intimation of Transit Insurance duly endorsed by under writers - Dispatch Clearance / MICC - Guarantee certificate - All Test & Inspection Reports 		
4.	<p>INTEREST LIABILITY: In case of any delay in payment due to any reason, BHEL shall not pay any interest on delayed payment.</p>		
5.	<p>GUARANTEE : The equipment / material shall be guaranteed for 18 months from the date of delivery or 12 months from the date of commissioning, whichever is earlier. The defective material / component shall be replaced free of cost at site.</p>		
6.	<p>PERFORMANCE BANK GUARANTEE: Bidder shall furnish along with first invoice Performance BG / deposit as per follows.</p> <p><u>Option A</u> BG for 10% of the total Ex-works PO value, valid for 18 months + 3 months claim period (i. e. total 21 months) from the date of last delivery.</p> <p><u>Option B</u> Retention of 10% of the total Ex-works PO value by BHEL from the first bill in lieu of Performance Bank Guarantee, to be released after expiry of 24 months from the date of first delivery.</p> <p>The Bank guarantee shall be from State Bank of India / State bank of Hyderabad / State Bank of Travancore / State Bank of Mysore / Canara Bank / Bank of Baroda / Punjab National Bank / Deutsche Bank / HDFC Bank / Standard Chartered Bank / CITI Bank / ICICI Bank / IDBI Bank / HSBC / any other Nationalised Bank. The original BG should be sent by issuing Bank directly to AGM (Finance), TBG, BHEL.</p> <p>All the bank Guarantee shall be from a schedule bank In India acceptable to BHEL. The original BG should be sent by issuing bank directly to AGM (Finance) TBG BHEL. BANK Guarantee should be valid for lodging claim within two month after expiry of guarantee period.</p> <p>If no option is specified, by default option – A shall be considered for confirmation.</p>		
7.	<p>FINAL ENGINEERING DOCUMENTATION: Final documentation as called in the specification is to be submitted within 3 months from the date of despatch of material. In case of default, the Performance BG is liable to be en-cashed.</p>		
8.	<p>INSPECTION: BHEL and / or customer / third party may inspect the Equipment / Material before despatch. In the event BHEL / Customer waives off inspection, Test Reports and Results shall be submitted for Approval. Supplier shall obtain Approval on Test Reports and MDCC / MICC (Material Inspection Clearance Certificate) before dispatch of equipment. Stage inspection during manufacturing may also be carried out. Material to be dispatched only after getting Dispatch Clearance from BHEL.</p>		

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	<p>Supplier shall send inspection call on prescribed format only, with an advance notice of 15 days. (New Format of Inspection Call attached with this Enquiry).</p> <p>“BHEL representative from unit or CQ is authorised to carry out audits along with TPIA at vendor’s works before clearing the items for despatch”.</p>		
9.	<p>DESPATCH DOCUMENTS: Following despatch documents are to be immediately sent to purchaser on despatch.</p> <ul style="list-style-type: none"> - Copy of Invoice - Copy of LR - Copy of Delivery Challan / Packing List - Copy of Insurance Certificate - Copy of Guarantee Certificate 		
10.	<p>DELIVERY REQUIREMENT: AT THE EARLIEST: Vendor to quote their best possible delivery plan in activity schedule to meet the tender’s delivery requirement. In case, BHEL’s delivery requirement are not met by vendor(s), then a chance may be given to all such vendors to review their quoted delivery schedule in line with BHEL’s delivery requirement. However, if vendor fails to meet the requisite delivery plan, then BHEL reserves the right not to consider the offer of such vendor(s).</p> <p>Time for conduction of type test, if required, is to be separately indicated.</p> <p>Note: LR date or Invoice date whichever is later shall be considered as delivery date.</p>		
11.	<p>DELAYED DELIVERY: In case of delay in execution of order beyond the lot wise contractual delivery, an amount of ½ % of total Ex-Works Value per week or part there-of subject to maximum of 10% of total Ex-Works value of P.O. will be levied.</p>		
12.	<p>VALIDITY: The offer shall be valid for 120 days from the due date of opening.</p>		
13.	<p>ACCEPTANCE / REJECTION OF TENDER: BHEL reserves the right to reject in full or part, any or all tender without assigning any reason thereof.</p> <p>BHEL also reserves right to vary the quantities mentioned in the tender.</p>		
14.	<p>EVALUATION: Comparative statement shall be prepared based on overall quantity basis unless otherwise indicated in the enquiry. Evaluation of offers shall be done on the basis of delivered cost to BHEL.</p>		
15.	<p>DEVIATION: The bids having deviation(s) w.r.to tender are liable for rejection. However, BHEL, at its discretion, may load the prices for evaluation of offer as mentioned at Sl. No. - 24.</p>		
16.	<p>ARBITRATION:</p> <p>All cases of disputes emanating from and relating to this contract shall be referred to</p>		

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	<p>the sole arbitrator appointed by Unit Head / GM, BHEL. The arbitrator may be an employee of BHEL whether serving or retired or any other person nominated by Unit Head/GM BHEL. The arbitration shall be in accordance with The Arbitration and Conciliation Act 1996 and the rules there under as amended from time to time. The arbitrator shall give a reasoned award. The decision of the arbitrator shall be final & binding upon both the parties.</p> <p>The venue of arbitration shall be Delhi.</p>
17.	<p><u>LEGAL SETTLEMENT:</u> All disputes shall be subject to jurisdiction of court situated in Delhi/New Delhi only.</p> <p>Notwithstanding contained herein anything in this NIT, the original exclusive jurisdiction shall remain of the court at Delhi / New Delhi.</p>
18.	<p><u>SUBCONTRACTING:</u> In case further subcontracting of BHEL order or part thereof is envisaged by supplier, the same can be done after written permission is obtained from BHEL. However it shall not absolve the supplier of the responsibility of fulfilling BHEL purchase order requirements.</p>
19.	<p><u>RISK PURCHASE:</u> In case the successful bidder fails to supply or fails to comply with the terms & conditions of the purchase order, BHEL reserves the right to source such material/ component / equipment/ system from any other agency at the risk and cost to BHEL of the successful bidder.</p>
20.	<p><u>ADJUSTMENT OF RECOVERY:</u> Any amount payable by the supplier under any of the condition of this contract shall be liable to be adjusted against any amount payable to the supplier under any other works/contract awarded to him by any BHEL unit. This is without prejudice to any other action as may be deemed fit by BHEL.</p>
21.	<p><u>FORCE MAJEURE CONDITION:</u> Force Majeure will mean: Circumstances beyond the control of contracting parties such as but not limited to act of God, natural catastrophes, fire, war, embargo, industrial dispute, riot, civil commotion, restrictions etc. Vendors willing to plead force majeure shall inform its effect on fulfilment of contract and shall not be held responsible for non performance in such circumstances.</p>
22.	<p><u>DEMURRAGE / WHARFAGE:</u> For the reasons of delay in receipt of documents from suppliers or due to the same being found to be incomplete, and/or faulty, the suppliers shall be responsible to reimburse in all demurrages / wharfages, if any, paid by BHEL (for stated reasons).</p>
23.	<p><u>SPECIAL CONDITION:</u> Procurement will be from manufacturers only. Manufacturers should submit offers directly. However in case of involvement of any representative the details of the same along with the copy of the agreement should be submitted in the first part of the offer. Principal manufactures must ensure that the nominated representative do not represent any other manufacture for the same item.</p>

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24.	<p>LOADING CRITERIA FOR DEVIATIONS TAKEN BY BIDDER ON:</p> <p><u>24.1 : TERMS OF PAYMENT:</u> If a bidder asks for payment within specified no. of days from the date of receipt of invoice with complete documents as per %terms of Payment+at sr. No. 3 above, loading to be done as follows:</p> <ol style="list-style-type: none"> a) Base rate of SBI (as applicable on the date of techno commercial bid opening) + 6 % shall be considered for loading for the period of relaxation sought by the bidder. b) 60 days - No loading <p><u>24.2 : DELAYED DELIVERY / PENALTY DUE TO DELAYED DELIVERY:</u> Loading for not accepting this clause / accepting only on un delivered portion shall be the maximum amount specified in this clause.</p>		
25.	<p>"MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -1 where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer. "</p>		
26.	<p>"The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice."</p>		
27.	<p><u>Technical Pre Qualification Criteria : -</u></p> <ol style="list-style-type: none"> 1 Documentation to show that at least 6 km 11kV or higher rating XLPE cables has been supplied .Copy of dispatch documents shall be enclosed. 2 Documentation in the form of certificate that the 11kV or higher rating XLPE cables has been operating satisfactorily for two years as on the scheduled date of bid opening (i.e. 03.12.2012) .Copy of performance certificate shall be enclosed. <p><u>The Bidder must ensure that they confirm the Pre Qualification Criteria and the necessary documentation in this regard would be provided by Bidder to BHEL along with their offer for ascertaining that they confirm Pre Qualification Criteria. BHEL Reserves the Right to reject any offer from Bidder in case of Non . Compliance to the Pre Qualification Criteria or inability of Bidder to produce the necessary documentation for ascertaining that they confirm the</u></p>		

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	<u>Pre Qualification Criteria.</u>
28.	Offer of techno – commercially acceptable vendors shall be considered for Price Bid Opening / RA subject to their approval from Customer.

Signature of Bidder
Seal

Terms & Conditions of Reverse Auction

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.
13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for reverse auction, the H1 bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

**BHARAT HEAVY ELECTRICALS LTD.
(TRANSMISSION BUSINESS GROUP)
TERMS & CONDITIONS FOR SERVICES**

NOTE: This format is to be submitted in original only, duly filled in. Reproduction of this format on bidder's letter head or on other paper is not acceptable.

Sl. No.	Terms & Conditions
1.0	<u>SCOPE OF WORK:</u> As per our attached Technical Specification No. TB-360-316-028 REV 00
2.0	<u>COMMENCEMENT OF WORK:</u> Project start / zero date / Readiness at site for this work shall be intimated by BHEL.
3.0	<u>COMPLETION SCHEDULE:</u> Bidder to specify delivery period in weeks from the date of Project start / zero date / Readiness at site in the activity schedule format enclosed with enquiry.
4.0	<u>OVER RUN CHARGES:</u> No over run charges are payable.
5.0	<u>IDLE LABOUR CHARGES:</u> No idle labour charges will be admissible in the event of any stoppage of work resulting in the contractor's workmen being rendered idle due to any reason at any time.
6.0	<u>SECURITY-CUM-PERFORMANCE GUARANTEE:</u> The contractor shall furnish security-cum-performance BG for 10% of contract value (for Service portion) within two weeks of placement of work order valid till guarantee period from any schedule bank subject to acceptance by TBG/BHEL Finance. The original BG shall be sent by issuing bank directly to AGM - FINANCE, TBG, BHARAT HEAVY ELECTRICALS LIMITED, NOIDA. In case BG period is expiring before expiry of Guarantee Period, vendor will have to keep the BG extended suitably till the end of Guarantee Period.
7.0	<u>INSURANCE:</u> The Contractor shall take insurance cover(s) to cover his Tools and Plant assets, workman compensation and third party liability. The contractor shall make available the original insurance cover(s) to the Engineer for necessary verification before commencement of work.
8.0	<u>GUARANTEE:</u> Though the work will be carried out under the supervision of BHEL Engineers, the contractor shall be responsible for the quality of the workmanship and shall guarantee the work done for a period of 15 months from the date of putting the complete system into commercial operation or 18 months from the date the system is declared completely erected, duly tested and accepted by customer, whichever is later and shall rectify free of cost all defects due to faulty erection detected during the guarantee period starting from the date of the completion of rectification. In the event of the contractor failing to repair the defective works within the time specified by the engineer, BHEL may proceed to undertake the repairs of such defective works at the contractor's risk and cost without prejudice to any other rights under the contract and recover the same from security deposit/ other dues of this project or any other project executed by the contractor.
9.0	<u>TERMS OF PAYMENT:</u> The terms of payment shall be as specified under Clause 3 of General Terms and Conditions of this Enquiry.
10.0	<u>ESCALATION / PRICE VARIATION:</u> Prices shall be firm for total contract period and extended period, if any, and no price escalation / price variation will be applicable.
11.0	<u>COMPENSATION FOR DELAY IN EXECUTION:</u> In case the contractor fails to

	complete the work within the time specified or any extension thereof subject to force major condition, the contractor shall be liable to pay by way of compensation, a sum equal to half percent (½%) of the contract price, per calendar week or part thereof by which the commissioning is delayed, subject to a ceiling of 10% of the contract price.
12.0	ADDITIONAL EXPENDITURE: In case any additional expenditure is incurred in the works arising out of the faulty execution of the works by the contractor, such additional expenditure shall be borne by the contractor.
13.0	REGULATION OF LOCAL AUTHORITIES AND STATUS : The contractor shall adhere to the regulation of local authorities and status.
14.0	DISCIPLINE OF WORKMEN: The contractor shall adhere to the disciplinary procedure set by the owner in respect of his employees and workman at site.
15.0	FORCE MAJEURE: The force majeure shall be as specified under Clause 21 of General Terms and Conditions of this Enquiry.
16.0	ARBITRATION: The arbitration shall be as specified under Clause 16 of General Terms and Conditions of this Enquiry.
17.0	PROTECTION OF WORK: The Contractor shall have total responsibility for protecting his works till it is finally taken over by the BHEL/Owner. No claim will be entertained by the BHEL for damage or loss to the Contractor's works & the contractor shall be responsible for the complete restoration of the damaged work to its original condition to comply with the specification & drawings.
18.0	<p>ELECTRICITY & WATER:</p> <p>Electricity for construction work shall be provided at one point (in the battery limit of the Plant Area) on chargeable basis. The contractor shall have to make their own arrangements for distribution to various locations for their works including proper switch/fuse units, distribution boards, cables poles etc. to ensure safety of men and equipment along with installation of approved energy meter.</p> <p>In addition to this, the contractor shall employ diesel operative equipment in addition to electric operated ones to ensure timely completion of work.</p> <p>Unless stated otherwise, the contractor shall make his own adequate arrangement for procuring clear water to be used in various works.</p>
19.0	<p>TESTING AND COMMISSIONING :</p> <p>All the electrical / mechanical test of the materials and equipment shall be arranged by the contractor as per standard specification / Field Quality Plan / Erection Manual / Directive of the Site Engineer/ and Owner. The contractor shall fill the check list for storage, erection, testing and commissioning of all their equipment as per BHEL systems to ensure proper quality of work.</p> <p>All the testing equipment required to carry out the site test for all their equipment or the erected equipment shall be arranged by the contractor at his own cost. However, necessary instructions and guidelines will be given by BHEL/Owner.</p> <p>The contractor shall be completely responsible for the satisfactory erection and providing test equipment and skilled manpower for testing, commissioning of all equipment.</p> <p>Before charging, the system shall have to be approved by Statutory Govt. Authorities like Electrical Inspector, other concerned agency and the contractor has to arrange approval for the same.</p>

We understand that the bids having deviation (s) w.r.t tender are to be out rightly rejected. BHEL, however at their discretion, if consider the bid, have undisputable right to load the prices for price comparison as they deem fit.

Signature of Supplier with seal

SCHEDULE OF PRICE

(BIDDERS TO STRICTLY ENSURE SUBMITTING THE PRICE BIDS IN THIS FORMAT)

NOTE: THIS FORMAT IS TO BE SUBMITTED IN ORIGINAL ONLY, DULY FILLED IN. REPRODUCTION OF THIS FORMAT ON BIDDER'S LETTER HEAD OR ON OTHER PAPER IS NOT ACCEPTABLE.

TENDER ENQUIRY NO. : 225E366 DATED 05.04.2016

SL. NO.	DESCRIPTION OF ITEM	UNIT	QTY.	UNIT PRICE	TOTAL	UNIT	TOTAL	ED	CST / ST	TOTAL F.O.R.
				EX. WORKS (Rs.)	EX. WORKS (Rs.) (5 * 4)	FREIGHT & INSURANCE (Rs.)	Freight & Insurance (Inclusive of Service Tax, if any) (Rs.) (7 * 4)		@ NIL % OF OF COL 6	@ ...% OF COL 6+9 (6 + 9)
1	2	3	4	5	6	7	8	9	10	11
1	A1-Main Items for Supply and Services-Supply Items: 11/11kV, 3CX240 sqmm Al Conductor XLPE insulated Armoured cable.	MTR	11700					EXEMPTED AGAINST PAC		
2	A2-Main Items for Supply and Services-Supply Items: 11kV outdoor heat shrinkable type cable termination kit complete in all respect suitable for 11kV, 3CX240 sq. mm cable, (Creepage distance 31mm/kV).	SET	8							
3	A3-Main Items for Supply and Services-Supply Items: 11kV heat shrinkable type straight through joint complete in all respect suitable for 11kV, 3CX240 sqmm cable.	SET	10							
4	A4-Mandatory Spares-Supply Items:11/11kV , 3CX240 sq. mm Al Conductor XLPE insulated Armoured cable.	MTR	1000							
5	A5-Mandatory Spares-Supply Items: 11kV outdoor heat shrinkable type cable termination kit complete in all respect suitable for 11kV, 3CX240 sqmm cable (Creepage distance 31mm/kV).	SET	2							
6	A6-Mandatory Spares-Supply Items: 11kV heat shrinkable type straight through joint complete in all respect suitable for 11kV, 3CX240 sq. mm cable.	SET	5							
TOTAL PRICE										

NO BENEFIT FOR CUSTOM DUTY AVAILABLE.

NOTE:

- PLEASE NOTE THAT UNPRICED COPY OF PRICE BID (i.e. WITH ALL PRICES BLANKED) SHALL BE FURNISHED ALONG WITH TECHNO-COMMERCIAL BID.
- REQUIRED COPIES OF FORMAT BE MADE & DETAILS MAY BE ANNEXED.
- THE PRICES MUST BE QUOTED IN THE PRESCRIBED UNIT ONLY.
- SALES TAX RATE AS APPLICABLE FOR SPECIFIED DESTINATION SHALL BE QUOTED. IN CASE OF CST, RATE AGAINST 'C' FORM SHALL BE QUOTED.
- IN CASE OF VARIED ED SLAB RATES, CONFIRM YOUR OPTION FOR 'X' OR 'Y'. (STRIKE OFF WHICH IS NOT APPLICABLE)
IF NO OPTION IS MENTIONED 'X' SHALL BE TAKEN.

- THE VENDORS MUST INDICATE THE APPLICABLE TARIFF NOS. UNDER WHICH ED AND / OR CST WOULD BE PAID BY THEM TO THE TAX AUTHORITIES.
- IF A VENDOR SUBMITS AN OFFER WITH REDUCED ED AND OR CST APPLICABLE THAN NORMALLY PAID ON SUCH ITEMS, THEY SHOULD SUBMIT NECESSARY DOCUMENTARY PROOF FOR THE SAME.
- 'X' THE MAXIMUM ED SLAB RATE BE CONSIDERED FOR PRICE COMPARISON. IN THE EVENT OF ORDER ED AT ACTUAL BE PAID.
- 'Y' THE QUOTED ED RATE BE CONSIDERED FOR PRICE COMPARISON. IN THE EVENT OF ORDER ED AT ACTUAL RATE LIMITED TO QUOTED RATE BE PAID.

SIGNATURE & SEAL OF TENDERER

SCHEDULE OF PRICE FOR SERVICES

(BIDDERS TO STRICTLY ENSURE SUBMITTING THE PRICE BIDS IN THIS FORMAT)

NOTE: THIS FORMAT IS TO BE SUBMITTED IN ORIGINAL ONLY, DULY FILLED IN. REPRODUCTION OF THIS FORMAT ON BIDDER'S LETTER HEAD OR ON OTHER PAPER IS NOT ACCEPTABLE.

TENDER ENQUIRY NO. : 225E366 DATED 05.04.2016

SL. NO.	DESCRIPTION OF ITEM	UNIT	QTY.	UNIT PRICE (Rs.)	TOTAL PRICE (Rs.) (5 * 4)	TAXES & DUTIES (IF ANY) RATE %
1	2	3	4	5	6	7
1	B1-Main Items for Supply and Services-Services Items: Supervision of laying and commissioning of 11kV cable.	MTR	11700			
2	B2-Main Items for Supply and Services-Services Items: Erection and commissioning of 11kV outdoor heat shrinkable type cable termination kit.	SET	8			
3	B3-Main Items for Supply and Services-Services Items: Erection and commissioning of 11kV heat shrinkable type straight through joint.	SET	10			
4	B4-Main Items for Supply and Services-Services Items: Site testing of 11kV cable System as per IS 1255 along with site testing equipment.	LOT	1			
	TOTAL					
	TOTAL PRICE FOR SERVICES PORTION INCLUDING TAXES & DUTIES					
	TOTAL PRICE FOR SERVICES PORTION WITHOUT TAXES & DUTIES					

**TRANSMISSION BUSSINESS GROUP
MATERIAL MANAGEMENT
BHEL, NOIDA**

ACTIVITY SCHEDULE

Please submit this format duly filled in along with offer. Time indicated will be used for calculating contractual delivery period.

ENQUIRY NO. 225E366

Dated: 05.04.2016

PROJECT: RRVUNL SURATGARH

ITEM: 11 KV XLPE Cable & Accessories [Supply + Services]

VENDOR :

OFFER REF.

SL. NO.	ACTIVITY	ACTIVITY TIME IN WEEKS	REMARKS IF ANY
1.	Receipt of P.O		
2.	P.O Acceptance	ONE WEEK	Vendor must Submit Po acceptance with in one week
3.	Submission of documents necessary for getting manufacturing clearance like Drawings, data sheet etc.		Documents complete in all respect are to be Submitted. Delay in approval on account of incomplete / inadequate information shall be the responsibility of supplier
4.	Review and Approval of documents and issue of manufacturing clearance	BHEL ACTIVITY	Vendor must ensure to reply all queries expeditiously.
5.	Manufacturing Time		Manufacturing time be indicated considering all constrains & must include time required for internal inspections etc.
6	Raise inspection call	-VE 2 WEEKS TO SL NO 5	Call for inspection must be raised at least two weeks in advance in the prescribed format. Non availability of offered material for inspection to the inspector will be viewed very seriously & may result in financial implications. The date of inspection must be with in the period indicated in 5 above.
7	Inspection	BHEL	
8	Issue of MICC, MDCC & other documents like EDEC , Road permits etc	BHEL	Vendor must indicate requirement well in advance.
9	Dispatch	ONE WEEK	Vendor must ensure to dispatch with in one Week of receiving all documents required
10	Services [As per Tech Spec]		(Please refer clause no. . 3 of terms and conditions for services portion and kindly quote accordingly for completion of service work)

Total time in vendor's scope:

Please mention constraints if any. For multiple lot delivery activity landmark for each lot should be mentioned. Multiple inspection calls for one lot are to be avoided & delay on this account shall be vendor's responsibility. Vendors to quote their Best Delivery Plan.

SIGNATURE AND SEAL

SCHEDULE OF COMMERCIAL DEVIATION

The following are the deviations / variations exception from the General Terms and Conditions:-

SL. NO.	CLAUSE NO. OF GENERAL TERMS & CONDITIONS	STATEMENT OF DEVIATION

Incase, this schedule is not submitted, it will be presumed that the equipment / material to be supplied under this contract is deemed to be in compliance with the General terms and Conditions.

If there is NIL deviation, even then the format to be filled as NIL DEVIATION.

NOTE: Continuation sheets of like size and format may be used as per the Bidders requirement and shall be annexed to this schedule.

Place _____ ..

Signature of the authorized representative of

Date _____ ..

Bidders Name _____

Designation _____ ..

Company seal _____ .

SCHEDULE OF TECHNICAL DEVIATION

The following are the deviations / variations exception from the Technical Specifications:-

SL. NO.	CLAUSE NO. OF TECHNICAL SPECIFICATIONS	STATEMENT OF DEVIATION

Incase, this schedule is not submitted, it will be presumed that the equipment / material to be supplied under this contract is deemed to be in compliance with the Technical Specifications.

If there is NIL deviation, even then the format to be filled as NIL DEVIATION.

NOTE: Continuation sheets of like size and format may be used as per the Bidders requirement and shall be annexed to this schedule.

Place _____

Signature of the authorized representative of

Date _____

Bidders Name _____

Designation _____

Company seal _____

CHECKLIST**SCHEDULE OF INFORMATION TO BE FURNISHED WITH THE OFFER**

NOTE: This format is to be submitted in original only, duly filled in. Reproduction of this format on bidder's letter head or on other paper is not acceptable.

Put a tick mark on YES+if the information is enclosed with the offer or put a tick mark on NO+if the information is not enclosed or write NOT APPLICABLE+if the information is not applicable.

1.	Technical offer with detailed schedule of equipment / material and spares enclosed.	YES / NO
2.	Guaranteed Technical Particulars as per Section . 4 enclosed.	YES / NO
3.	Schedule of deviation, if any, clause wise with respect to Technical Specification enclosed.	YES / NO
4.	Standard Manufacturing Quality Plan enclosed.	YES / NO
5.	GA Drawings with dimensions and weights & foundation / fixing details enclosed.	YES / NO
6.	Drawing and Data submission schedule enclosed.	YES / NO
7.	Type Test Reports enclosed.	YES / NO
8.	Bar Chart showing the schedule indicating time required for design, manufacture, test and inspection, transport, erection, site testing and commissioning enclosed.	YES / NO
9.	Makes of all components as per technical Specification enclosed.	YES / NO
10.	Schedule of commercial deviation exception from the General Terms and Conditions	YES / NO

The above checklist is verified for:-

Offer Ref. :

Equipment :

Submitted by : M/s

Project Reference. :

Signed with Seal o o o o o ..

Date o o o o o ..

(Revised Format)

DKMISS/RK9/18

22
10/06/15



**BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION BUSINESS GROUP
MATERIAL RECEIPT CERTIFICATE**

- a) Site:
- b) LR No. with date:
- c) Vehicle no.:
- d) Date of receipt of material at site:
- e) Material details (as mentioned below):

S.no.	Item Description	Type of Packages	Unit (MT/KM/NO.)	Qty as per packing list	Qty Received	Remarks

Other Remarks:

Signature with date: _____

Name & Designation: _____

(With Seal)

(Previous Format)



**BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION BUSINESS GROUP
MATERIAL RECEIPT CERTIFICATE**

Date: _____

- ~~a)~~ Site Name :
- b) Site Address:
- ~~c)~~ PO no. with date:
- ~~d)~~ Supplier Name:
- ~~e)~~ Invoice no. with date:
- f) LR No with date:
- ~~g)~~ Transporter Name:
- h) Vehicle no.:
- i) Date of receipt of material at site:
- j) Destination: From ----- To -----
- k) Material details (as mentioned below):

S.no.	Item Description	Type of Packages	Unit (MT/KM/NO.)	Qty as per packing list	Qty Received	Qty Accepted	Remarks

Other Remarks:

Signature with date: _____

Name & Designation: _____

(With Seal)

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:



(Signature)

Name -

Membership number -

Seal of Chartered Accountant

(ON RS.100/- NON - JUDICIAL STAMP PAPER)

PROFORMA FOR SECURITY-CUM-PERFORMANCE GUARANTEE

1. This deed of Guarantee made this _____ day of _____ 200 ____ by _____ Bank Ltd., _____ in favour of **Bharat Heavy Electricals Limited, Transmission Business Group, Tower-A, 5th Floor, Advant Navis IT Business Park, Plot-7, Sector-142, Expressway Noida, Noida-201305** having their registered office at **BHEL House, Siri Fort, New Delhi - 110 049**.
2. Whereas **M/s** _____ (here in after called the **Contractor / Seller**) have entered into a Contract bearing No. _____ dated _____ (herein after called the **Contract**) for supply / erection of **M/s Bharat Heavy Electricals Limited** (hereinafter called the **Company**).
3. And whereas the said Contract Inter-alia provides that the Contractor / Seller shall pay to the company a sum of Rs. _____ only, towards **Security deposit-Cum-Performance Guarantee** in the for and manner therein specified.
4. And whereas the Seller/Contractor have approached _____ Bank Limited (hereinafter referred to as the **Guarantor**) and at their request and in consideration of the arrangement arrived at between the **Contractor** and the **Guarantor**, the Guarantor has agreed to give the Guarantee as herein after mentioned in favour of the Company.

NOW THIS DEED WITNESSES AS FOLLOWS :

5. The Guarantor by the hand of Mr. _____ and its lawfully and fully constituted attorney and do hereby guarantee the due and faithful performance of the said contract and do hereby irrevocably undertake and promise to pay the Company without any demur merely on demand made by them a sum not exceeding Rs. _____ only in case the Company sustains any loss or damage by reason of any breach, default, by the Contractor / Seller of any of the terms conditions, stipulations or undertakings or any one of them contained in the said contract and the tender documents attached hereto and for payment of any moneys payable by the Contractor/ Seller to the Company under the terms and conditions of the said contract. The decision of the company regarding the breach, default, loss, damage or payment shall be conclusive and binding in the guarantor irrespective of the fact whether the contractor/seller admits or denies such claims or questions its correctness in any court, tribunal or arbitration proceedings or before any other authority.

(Contd....2.)

6. The company shall have the fullest liberty without effecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the contract or extend time by the Seller/Contractor or to postpone for any time and from time to time any of the powers exercisable by its against the Seller/Contractor and either to enforce or forbear from enforcing any of terms and conditions governing the contract or securities available to the Company and the guarantor shall not be released from it's liability under these presents by any exercise by the company of the liberty with reference to the matters aforesaid or by reason of time being given to the seller or any other forbearance, act or omission on the part of the company or any induigence by the company to the Seller/Contractor or of any other matter or thing whatsoever which under the law relating to sureties, would but for this provision have the effect of so releasing the Guarantor/contractor from its liability under this Guarantee.
7. This Guarantee shall remain in full force and effect and the Guarantor shall be liable under the same irrespective of any concession or time being granted by the company to the contractor in or for fulfilling the said contract and this Guarantee shall remain in full force irrespective of any change in terms, conditions, stipulations or any variations in the terms of contract irrespective of whether notice of such change and / or variation is given to the Guarantor or not and the claim to receive such notice of any change and or variation of the terms/or conditions of the contract is hereby specifically waived by the Guarantor.
8. The Guarantor here in contained shall not be determined prejudiced or effected by the liquidation or winding up or insolvency of or change in the constitution of the contractor but shall in all respects and for all purposes be binding and operative until all payments or all moneys due or that may hereafter become payable to the company are paid in respect of any liability or obligation of the contractor under the contract.
9. The Guarantor further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the commencement of the contract till end of the contract and its claim satisfied or discharged and till the company certified that the terms and conditions of the contract have been fully and properly carried out by the seller and accordingly discharges this Guarantee, subject, however, that the company shall have no claim under this guarantee after _____ months from the date of completion of the guarantee has been served on the guarantor before the expiry of the said period in which case the same shall be enforceable against the Guarantor not with standing the fact that the same is enforced after expiry of said period.

The Guarantor undertake not to revoke this Guarantee during the period it is in force except with the previous consent of the company in writing and agree that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the Seller or the guarantor shall not discharge the Guarantor's liability here under.

(3)

It shall not be necessary for the company to proceed against the seller before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them not with standing any security which the company may have obtained or obtained from the seller shall at the time when proceedings are taken against the Guarantor here under be outstanding or unrealised.

The Guarantor hereby declares that it has power to execute this Guarantee and the executant has full powers to do so on its behalf under the power of attorney dated _____granted to him by the proper authorities of the Guarantor.

- 10. Not withstanding anything here in before contained, our liability under this Guarantee is restricted to Rs. _____(Rs. _____only) and will expire on _____ and unless a claim in writing is presented to us or an action or suit to enforce the claim is filed against us, within **three months** from the date, all our rights shall be forfeited and we shall be relieved and discharged from all our liabilities there under.

IN WITNESS whereof the _____(Bank) have hereunto set and subscribed their hands the day, month and year first above written.

**SIGNED FOR AND ON
BEHALF OF THE BANK**

WITNESSESS

Name and Address

Signature

1.

2.

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BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION PROJECTS ENGINEERING MANAGEMENT

DOCUMENT No.	TB-360-316-028	Rev no.-00	Prepared	Check ed	Approv ed
TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	SK	AS	RS
TITLE SPECIFICATION FOR 11KV CABLE AND ACCESSORIES		SIGN	<i>SK</i>	<i>AS</i>	<i>RS</i>
		DATE	09.02.16	09/02/16	
		GROUP	TBEM	W.O. No	83001
CUSTOMER/ CONSULTANT	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , Jaipur / Tata consulting Engineer Ltd. , Bangalore				
PROJECT	2X660MW Super –Critical Thermal Power Station, Stage –V, Unit 7 & 8-400kV Switchyard at Suratgarh				

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This must not be used directly or indirectly in any way

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1.	Scope , Specific Technical requirement and Quantities	5
2.	Equipment Specification	10
3.	General Technical Requirements	4
	Title block	1
4.	Guaranteed Technical Particulars(To be submitted during contract stage)	5
5.	Check list (To be submitted during tender stage)	2
	Enclosure	

Rev No.	Date	Altered	Checke d	Approved	REVISION DETAILS			
Distribution			To	<i>TBTS</i>	<i>O/C</i>	<i>TBMM</i>	<i>TBQ M</i>	<i>TBCM</i>
			Copies	-	1	2	-	-

SECTION 1
SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES

1.1 SCOPE:

This technical specification covers the requirements of design, manufacturing, testing at works, packing and dispatch, transporting at site, supervision of laying and erection of 11kV cable, erection of cable termination and jointing, site testing of 11 kV XLPE Cables and its accessories complete in all respect along with accessories.

There are total two circuit of 11kV lines. One run of 3CX 240 sq. mm cable for each three phase line shall be laid in buried cable trench between 11kV substation (located at unit 7 & 8 side) and 11kV substation located at river water pump house side . The tentative route length of each individual 11kV line is 5850m.

The specification comprise of following sections:

Section-1: Scope, specific technical requirements & Bill of Quantities.

Section-2: Equipment specification under scope of supplies.

Section-3: General technical requirements for all equipments under the project.

Section-4: Equipment Data Sheet

Section -5: Checklist

In case of any conflict between various sections, order of precedence shall be in the same order as listed above.

The equipment is required for the following project:

Name of customer : Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , Jaipur.

Name of Consultant : Tata consulting Engineer Ltd. , Bangalore

Name of the project : 2X660MW Super –Critical Thermal Power Station, Stage –V,
Unit 7 & 8-400kV Switchyard at Suratgarh

A. SUPPLIES:

- I. Supply of 11kV cable, three core 240 sq mm , Al conductor , XLPE insulated, Armoured Flame Retardant low smoke (FRLS) outer sheathed.
- II. Supply of 11 kV cable sealing end, cable joint, accessories, tools and tackles.

B. SERVICES:

Supervision of laying and erection of 11kV cable, erection and commissioning of 11kV cable termination and jointing kit , site testing of 11 kV XLPE Cables and its accessories complete in all respect along with accessories.

Bidder shall offer both Supplies and supervision Services as per the BOQ given in this Technical Specification. Bids, in which only Supplies or only supervision Services are offered, shall be rejected.



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1.2 SPECIFIC TECHNICAL REQUIREMENTS:-

S. No	PARTICULAR	Unit	DATA
1.	Voltage grade (Uo/U) of cable	kV	11/11(UE)
2.	Codes & Standards	-	IS 7098 Part 2(for cables) and IS 13573(For termination and joint)
3.	Conductor size of cable	-	240 sq. mm
4.	Conductor material of cable		Aluminium, stranded Compacted Circular
5.	Type of Insulation	-	XLPE
6.	Metallic screen	-	Copper tape
7.	Single core/ Multi core	-	Three core
8.	Armoured / Unarmoured	-	Armoured
9.	Construction and other details of cables and its accessories	-	As per section-2
10.	Standard Drum length	m	1000
11.	Tolerance on individual drum length	-	±5%
12.	Overall tolerance on total dispatched quantities	-	(-)2% and (+) 0%
13.	System	-	11kV Unearthed
14.	Highest System Voltage	kV	12
15.	System frequency	Hz	50
16.	Rated continuous Current	A	183.71(For 3.5MVA Transformer of river water pump)
17.	System Short Circuit Withstand Current at a rated voltage for 3 second	kA r.m.s	44
18.	Minimum short circuit withstand current capacity of required cable for 0.16 second (design purpose)	kA r.m.s	44
19.	Earth fault current withstand capacity of metallic screen of cable	A	400 for 2 second
20.	System Power Frequency Withstand Voltage	KV rms	28
21.	Lightning Impulse Withstand Voltage of required cable	kVp	95
22.	Continuous Withstand Temperature (For insulation)	Deg C	90
23.	Short Circuit withstand Temperature (For insulation)	Deg C	250
24.	Creepage distance	mm/k V	31
25.	Type of outdoor cable termination and joint	-	Heat Shrinkable
26.	Cable Laying	-	Buried(As per Annexure-1)
27.	Jointing of cable	-	On two pole structure(As per Annexure-2)
28.	Ambient air temp.	Deg C	50

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Note 1 – Termination “Kits shall be complete with all accessories and consumables required for complete termination or jointing. **Tinned Copper heavy duty long Barrel type cable lugs** for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit. Tinned Copper Earthing lug and braided copper earth lead shall make part of termination kit. Termination kits shall be provided with Bi-metallic washers.

1.3 QUANTITIES :-

Material and Services required for the execution of the job are listed below. All item listed in the following BOQs shall be offered. Any item not appearing herein but clearly mentioned in Specification shall be included in the offer. The BOQs included in the offer to be submitted by the Bidder shall be exhaustive in this respect.

1.3.1 MAIN ITEMS FOR SUPPLY & SERVICES:

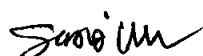
Sl. no.	Description	Unit	Total Qty.
A -Supply items			
1.	11/11kV , 3CX240 sq. mm Al Conductor XLPE insulated Armoured cable	m	11700
2.	11kV outdoor heat shrinkable type cable termination kit complete in all respect suitable for 11kV , 3CX240 sq. mm cable (Creepage distance 31mm/kV)	Sets	08
3.	11kV heat shrinkable type straight through joint complete in all respect suitable for 11kV, 3CX240 sq. mm cable.	Sets	10
B - SERVICES			
1.	Supervision of laying and commissioning of 11kV cable	m	11700
2.	Erection and commissioning of 11kV outdoor heat shrinkable type cable termination kit	Sets	08
3.	Erection and commissioning of 11kV heat shrinkable type straight through joint	Sets	10
4.	Site testing of 11kV cable System as per IS 1255 along with site testing equipment's	Lot	1

1.3.2 MANDATORY SPARE :

Sl. no.	Description	Unit	Total Qty.
A -Supply items			
1.	11/11kV , 3CX240 sq. mm Al Conductor XLPE insulated Armoured cable	m	1000
2.	11kV outdoor heat shrinkable type cable termination kit complete in all respect suitable for 11kV , 3CX240 sq. mm cable (Creepage distance 31mm/kV)	Sets	2
3.	11kV heat shrinkable type straight through joint complete in all respect suitable for 11kV, 3CX240 sq. mm cable.	Sets	5

Notes:

- 1) The un-price BOQ description shall be strictly as per cl. No. 1.3 of section -1.
- 2) Construction of buried cable trench along with excavation, back fill and supply of all required material as per Annexure-1 shall be in BHEL scope.
- 3) Supply and erection of two pole structure for jointing kit as per Annexure-2 shall be in BHEL scope.
- 4) **Cable Length** - The exact length shall also be decided by supplier after visiting site & making precise measurements at contract stage. Manufacturing lengths and drum length shall be determined as per the joint site survey with RRVUNL/BHEL.
 - a. The Payment of cables length (for supply) will be as per approved quantities after joint survey.
 - b. The exact length may vary by -20% to +20% at Contract Stage based on actual measurement at site and calculations submitted by the bidder. Individual quantity of other items may vary by ± 30 % and may get deleted during contract/execution stage.
- 5) The cable cleats including hardware for fixing the cable on two pole structure, LA structure and post Insulator shall be in supplier scope. BHEL will provide two pole structure, LA structure and post insulator structure.
- 6) Route indicators for power cables at an interval not exceeding 200m and also at turning points of the power cable route wherever practicable in line with clause no. 4.2.1.3 of IS: 1255 shall be in Bidder scope .
- 7) The cable cleats including hardware for fixing the straight joint on two pole structure shall be in supplier scope.
- 8) Earthing of 11kV cables termination and joint along with required accessories shall be in supplier scope. The complete earthing BOQ items shall be clearly mentioned in the offer.
- 9) Supplier will submit detailed bar chart indicating all the milestones from Engineering till manufacturing/ testing, dispatch to site and commissioning.
- 10) Store will be provided by BHEL. Bidder to provide their requirement of space in open and closed store during tender stage.
- 11) Accommodation for supplier staff and travel expenses for supplier staff shall be in supplier scope.
- 12) Supply of terminal Connector required for outdoor Cable termination connection with Zebra conductor shall be in BHEL scope .
- 13) Cable for road crossing shall be laid in hume pipes (Supply and erection of hume pipes shall be in BHEL scope).



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- 14) Site Test of cable and its accessories: Provision of test engineer, supply of all test equipment's and arrangement shall be in Bidder scope.
- 15) Bidder will submit short circuit calculation for metallic screen and armor coverage percentage after award of contract. Any other calculations which may be required during detailed engineering stage may also be submitted.

1.4 TYPE TESTS:

Bidder shall submit valid type test reports (as per relevant IEC/IS standard) for the tests carried out within last five years **from the date of opening of the tender** (i.e. 03.12.2012).

In case type test reports are more than 5 years old (from the date of opening of the tender) or the reports of type tests are found to be technically unacceptable , the type test shall be conducted by the vendor without cost and delivery implication to BHEL. The type test if conducted shall be witnessed by BHEL/Customer.

1.5 INSPECTION & TESTING:

Before being fitted on the equipment, all components shall be subjected to routine tests at the Contractors factory, as per the relevant IEC/IS standards. A detailed test report proving the successful passing of such tests shall be provided.

Prior to dispatch, the routine & acceptance tests shall be carried out on equipment in accordance with the applicable IEC /IS and the material shall be offered for final inspection to BHEL and RRVUNL in accordance with agreed quality plan with 3 weeks advance information.

1.6 QUALITY PLAN:

The contractor shall carry out contract works in accordance with sound quality management principles which shall include such as controls which are necessary to ensure full compliance to all requirements of the specification & applicable international standards. These quality management requirement shall apply to all activities during design, procurement, manufacturing, inspection, testing, packaging, shipping, inland transportation, storage, site erection & commissioning. Contractor shall submit detailed Quality Plan for BHEL / customer's approval within 1 week of P.O. placement.

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SECTION 2

EQUIPMENT SPECIFICATION

2.1 GENERAL:

The section covers the broad technical specifications of 11kV cable system complete with accessories and spares etc. The cable and accessories shall also be designed for maximum reliability and acceptability.

2.2 APPLICABLE STANDARDS:

The materials shall conform to the latest editions of the following Indian/International Standards:

- | | |
|-----------------|---|
| IEC 60502 Part1 | Power cables with extruded insulation and their accessories for rated voltages from 1kV up to 30kV |
| IS 7098 Part 2 | : 1985 XLPE insulated PVC sheathed cables For working voltages from 3.3 kV up to and including 33 kV |
| IS 13573 | Cable accessories for extruded power cable from 3.3kV (UE) up to and including 33kV (E) |
| IEC 60331 | Tests for electric cables under fire conditions |
| IEC 60332 | Tests for electric and optical fibre cables under fire conditions |
| IS 1554 | Specification for PVC insulated (heavy duty) Electric Cables |
| IS 5831 | 1984 PVC Insulation and Sheath of electric Cables |
| IS 8130:1984 | Conductors for insulated electric cables and flexible cords. |
| IS 613:1984 | Copper rods and bars for electrical purposes |
| IS 3975:1988 | Mild steel wires, formed and tapes for armouring of cable. |
| IS 10810:1984 | Method of tests for cables. |
| IEEE-383:1974 | Standard for type test of class IE electric cables, field splices, and connections for nuclear power generating stations. |
| ASTM-D2843,1993 | Standard test method for density of smoke from burning or decomposition of plastics. |
| ASTM-D2863,1991 | Standard test method for measuring minimum oxygen concentration to support candle - like combustion of plastics (oxygen index). |
| NEMA-WC5,1992 | Thermoplastic Insulated Wire and cable for the transmission and distribution of Electrical Energy. |

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IEC:754 (Part-1):1994	Test on gases evolved during combustion of electric cables - Determination of the amount of halogen acid gas evolved during combustion of polymeric materials taken from cables.
IEC:332	Test on electric cables under fire conditions
(Part I):1993 IS 3961	Test on a single vertical insulated wire or cable. Recommended current rating for cables –
(Part II):1967	PVC insulated and PVC sheathed heavy duty cables.
IS 10418:1982	Drums for electric cables.
IS 1255	Code of practice for installation and maintenance of power cables up to and including 33kV rating.

2.3 GENERAL REQUIREMENTS:

Cables shall be designed to withstand the mechanical, electrical and thermal stresses under the unforeseen steady state and transient conditions and shall be suitable for proposed method of installation. Conductor shall be of uniform, of good quality, free from defects. Insulation shall be Cross Linked Polyethylene (XLPE).

FOR POWER CABLES –

1.0	Type of Cable	Flame Retardant Low Smoke (FRLS)
2.0	Standard applicable in general	IS: 7098 PART (II)
3.0	Voltage Grade	11/11kV (UE)
4.0	Number of cores, cross sectional area of conductors	3Cx240 sq.mm (11/11kV, Armoured)
5.0	CONDUCTOR	
(a)	Material	Aluminium
	Grade and Class	H2, Class 2
(b)	Standard Applicable	IS: 8130
(c)	Shape	Circular, Stranded & Compacted
(d)	Min. number of strands	As per Table-2 of IS: 8130
(e)	Conductor screen	
(i)	Material	Cross-linked Semi-conducting compound
(ii)	Minimum thickness	0.3 mm
6.0	INSULATION	
(a)	Material	XLPE
(b)	Standard Applicable	IS: 7098 Part-II
(c)	Continuous withstand temperature	90°C
(d)	Short-circuit withstand temperature	250°C
7.0	INSULATION SCREEN	
(a)	Non-metallic	
(i)	Material	Cross-linked Semi-conducting compound

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(ii)	Minimum thickness	0.3 mm
(b)	Metallic	
(i)	Material	Copper
(ii)	Type	Tape
(iii)	Size	Nominal thickness 0.1mm with tolerance (±) 10%
(iv)	Minimum Overlap	10%
(c)	Earth fault current withstand capacity	400 A, 2 sec. (For multi-core cables, screen of each core shall be rated individually for the above value).
8.0	EXTRUSION (Insulation and Screens)	
(a)	Process	Triple Extrusion (Extruded semi-conducting compound conductor screen and insulation screen shall be applied along with XLPE insulation in a single operation by triple extrusion process).
(b)	Method of Curing	Dry curing/ Gas curing/ Steam curing/ Sioplas.
9.0	CORE IDENTIFICATION	Colour coding as per IS.
10.0	INNER SHEATH	
(a)	Material	PVC Type ST2 as per IS: 5831
(b)	Colour	Black
(c)	Whether FRLS	No
(d)	Fillers	Acceptable
(e)	Material of fillers (if permitted)	Same as inner sheath (Material of filler to be compatible with that of inner sheath)
(f)	Method of application	
(1)	Multi-core cables:	
(i)	With fillers	Pressure/Vacuum extruded
(ii)	Without fillers	Pressure extruded
(2)	Single-core cables:	Pressure/ Vacuum extruded
12.0	ARMOUR	
(a)	Material:	
(i)	Multi-core cables	Galvanised Steel Formed Wire/Strip armour conforming to IS 7098 part-II and IS 3975
(b)	Minimum Coverage	90%

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(c)	Gap between armour wires/ formed wires	Shall not exceed one armour wire/ formed wire space (No cross-over/ over-riding)
13.0	OUTERSHEATH	
(a)	Material	PVC Type ST2 as per IS: 5831
(b)	Colour	Black
(c)	Whether FRLS	Yes
(d)	Method of application	Extruded
(e)	Marking	Cable size (cross section area of conductor and no. of cores) voltage grade, Manufacturer's name and /or trade mark, year of manufacture, Type of insulation, Type of inner & outer sheath e.g. "FRLS" etc, @ 5m (by embossing) 'BHEL-TBG' and 'RRVUNL' @5m (by embossing) Progressive sequential length marking @ 1m (by printing)
(f)	Other properties	The sheath shall be resistant to water, UV radiation, fungus, termite and rodent attack
14.0	FRLS CHARACTERISTICS	
(a)	Oxygen index	Min 29 (As per ASTM D 2863-77)
(b)	Temperature index	Min. 250°C at oxygen index 21
(c)	Acid gas generation	Max. 20% (as per IEC-754-1)
(d)	Smoke density rating	Max.60% (As per ASTM D2843)
(e)	Flammability Test	As per IEC: 60332-III CAT-A, IEC: 60332-I, IEEE: 383 & SS: 424:1475 (Class-F3), IS:10810
15.0	Anti-fungal, Anti-rodent and Termite repulsion Test	YES
16.0	UV Radiation Test (As per BS EN ISO 4892-2)	YES
17.0	Water Absorption Test (As per IS:10810)	YES
18.0	TOLERANCE ON OUTER DIAMETER	(±)2 mm. over the declared value in filled-up Data Sheet
19.0	STANDARD DRUM LENGTH	1000m

FOR TERMINATION KITS-

1	Voltage grade:	11/11 kV (UE)
2	Application:	Outdoor
3	Type:	Heat Shrinkable
4	Type testing conforming to	As per IS: 13573
5	Make	To purchaser's approval
6	Total shrouding of all live parts required	Yes

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STRAIGHT THROUGH JOINTING KITS-

1	Voltage grade:	11/11 kV (UE)
2	Type:	Heat Shrinkable
3	Testing requirement conforming to	As per IS: 13573
4	Make:	To purchaser's approval

2.4 CABLE DRUMS:

Immediately after the inspection, both ends of each cable length shall be sealed by means of end caps in the presence of the inspector. Cable drums shall be of rugged construction, with a drum diameter of ample dimensions to accommodate cables. The drum cable length shall be chosen considering the lengths to be laid at site.

Cables shall be supplied in non-returnable heavy construction drums. All wooden parts shall be manufactured from seasoned wood treated with copper naphthenates/ zinc naphthenates (refer IS: 401). All ferrous parts shall be treated with suitable rust protective finish or coating to avoid rusting during transit and storage. BIS certification mark shall be stamped on each cable drum.

2.5 TESTS:

The cables and cable accessories shall be subjected to tests as per applicable standards in the presence of Customer /BHEL and/ or their authorized representatives . After installation, the cables shall also be subjected to tests at sites. Following test but not limited to this as mentioned below shall be conducted on cables as per latest IEC/IS .

The supplier is required to submit all the type tests reports(refer below table) carried out within last five years from the date of opening of the tender (i.e. 03.12.2012) for BHEL/Customer approval. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar cables to those ordered under this contract.

In case bidder is not able to submit report of type test(s) conducted in last five years, or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.

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S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REMARKS
1.0	Tests for Conductor			
I.	Annealing test	For copper conductor only	T, A	<i>Internal process Test Report to be furnished for acceptance test</i>
II.	Tensile test	For aluminium conductor only	T, A	
III.	Wrapping test	For aluminium conductor only	T, A	
IV.	Resistance test	For Al/Cu	T, A, R	
2.0	Tests for Armour Wires/Strips			
I.	Measurement of dimensions	Applicable for Aluminium wire & GS wire/Strip	T	
II.	Tensile test	Applicable for Aluminium wire & GS wire/Strip	T, A	
III.	Elongation at break test	Applicable for GS wire/Strip only	A	
IV.	Torsion test	For GS round wire only	A	
V.	Winding test	For GS strip only	A	
VI.	Resistivity test	Applicable for Aluminium wire & GS wire	A	
VII.	Uniformity of Zinc coating test	For G. S. wires/Strip only	A	
VIII.	Mass of Zinc coating test	For G. S. wires/Strip only	A	

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<u>S. No.</u>	<u>TEST</u>	<u>APPLICABLE FOR</u>	<u>TEST CONDUCTION REQUIRED AS</u>	<u>REMARKS</u>
IX.	Wrapping Test	For Aluminium wires only	A	
3.0	Physical Tests for XLPE Insulation & PVC sheath			
I.	Test for thickness	Applicable for XLPE insulation, PVC inner sheath & PVC outer sheath	T, A	
II.	Tensile strength and elongation test at break	Applicable for XLPE insulation & PVC outer sheath		
(a)	Before ageing		T, A	
(b)	After ageing		T, A	
III.	Ageing in air oven	Applicable for XLPE insulation & PVC outer sheath	T	
IV.	Loss of mass in air oven test	For PVC outer sheath only	T	
V.	Hot deformation test	For PVC outer sheath only	T	
VI.	Heat shock test	For PVC outer sheath only	T	
VII.	Shrinkage test	For XLPE insulation & PVC outer sheath only	T	
VIII.	Thermal stability test	For PVC outer sheath only	T	
IX.	Hot set test	For XLPE insulation only	T, A	

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S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REMARKS
X.	Water absorption (gravimetric) test	For XLPE insulation only	T	
4.0	FRLS Tests			
I.	Oxygen index test	For PVC outer sheath only	T, A	
II.	Smoke density test	For PVC outer sheath only	T, A	
III.	Acid gas generation test	For PVC outer sheath only	T, A	
5.0	Flammability Tests			
I.	Flammability test to IEC-60332 Part-3-23, Cat-A for bunched cables (Flammability test to IS: 7098-II Category C2)	For complete cable	A	Shall be conducted on one sample only/ lot
II.	Flammability test to IEC:60332 Part-1 for Single cable (Flammability test to IS: 7098-II Category C2)	For complete cable	T	Shall be conducted on one sample only/ lot
III.	Swedish chimney test to SEN SS 424 1475	For complete cable	A	Shall be conducted on one sample only/ lot
IV.	Flammability test to IEEE: 383	For complete cable	A	Shall be conducted on one sample only/ lot
6.0	Electrical Tests			
I.	High Voltage Test	For complete cable	T, A, R	

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S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REMARKS
II.	Insulation Resistance Test (Volume resistivity method)	For complete cable	T, A	
III.	Partial discharge test (shall be carried out on full drum length)		T,A,R	
IV.	Bending Test followed by Partial Discharge test		T	
V.	Dielectric Power Factor Test (i) As a function of voltage (ii) As a function of temperature	Applicable for 6.35/11kV & above only	T	
VI.	Heating Cycle Test		T	
VII.	Impulse Withstand Test	Applicable for 6.35/11kV & above only	T	
7.0	Special Tests			Shall be conducted on one sample for entire contract. Duration of UV Radiation test shall be 14 Days
a)	UV Radiation test as per BS EN ISO 4892-2	For PVC outer sheath	A	
b)	<u>Anti-rodent and Termite Repulsion test</u>	For PVC outer and inner sheath only	A	Shall be conducted on one sample only/ lot
c)	<u>Anti-Fungal Test</u>	For PVC outer and inner sheath only	A	-do-

Legend – Type test –T, Acceptance test –A, Routine test –R

Note-

- 1) Test requirements for cable as per latest standard (i.e 7098-II-2011) shall be considered, even if the same are not indicated above.
- 2) All applicable type test reports on cable accessories as per **IS: 13573 / VDE 0278** shall be submitted for approval .
- 3) Routine testing shall be conducted in line with the applicable standards and as per the Manufacturing Quality Plan approved for the project for every lot offered for inspection.
- 4) Cost of conduction of routine and acceptance testing shall be deemed to have been included in the quoted supply prices.
- 5) Cost of cables consumed for testing shall be to bidder's account.

2.6 Drawing /document to be submitted :

By Successful Bidder following drawings/documents of cable and accessories to be submitted for approval during contract stage.

- a. GTP
- b. Cross-section drawings
- c. Manufacturing Quality Plan
- d. List of sub-vendors/ suppliers of raw materials
- e. Type Test Reports
- f. Field Quality Plan
- g. Technical catalogues/ literature for the cables.
- h. Short circuit calculation for metallic screen and armor coverage percentage of cable .
- i. Drum drawing of cable

SECTION-3

3.0 GENERAL

This section stipulates the General Technical Requirements under the Contract and will form an integral part of the Technical Specification.

The provisions under this section are intended to supplement general requirements for the materials, equipment's and services covered under other respective sections and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall hold good.

3.1 PROJECT INFORMATION AND SYSTEM PARAMETERS

a)	Customer/ Purchaser/ Owner	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , Jaipur
b)	Consultant	Tata consulting Engineer Ltd. , Bangalore
c)	Project Title	2X660MW Super –Critical Thermal Power Station, Stage –V, Unit 7 & 8-400kV Switchyard at Suratgarh
d)	Location	Prabat Nagar , Suratgarh Sriganganagar district, Rajasthan
e)	Altitude and longitude	Latitude:29 deg. 10 min. N Longitude: 74 deg. 01 min. E
f)	Elevation above mean sea level	186 m(approximately)
g)	Transport Facilities	Suratgarh project is located 27 km from Suratgarh , 15 km from Suratgarh to Biradhwaj on NH15, 12km in east from NH15.
h)	Postal Address	To follow
SITE CONDITIONS		
a)	Mean of daily maximum temperature	32.3 deg. C
b)	Mean of daily minimum temperature	19.6 deg. C
c)	Highest temperature recorded	50 deg. C
d)	Lowest temperature recorded	-2.8 deg. C
e)	Design ambient temperature for electrical equipment design	50 deg. C
f)	Relative humidity	Varies between 21 % and 81%
g)	Pollution Severity	Heavily Polluted
h)	Seismic zone	II
i)	Basic Wind speed	47 m/sec
j)	Annual mean wind speed	4km/hr
k)	Terrain category	2
l)	Annual average rain fall	312 mm

3.2 GENERAL TECHNICAL REQUIREMENT

3.2.1 TYPE TESTS

All equipment/systems to be supplied shall conform to type tests as per relevant standards and proven type. The Bidder / Contractor shall furnish the reports of all the type tests carried out within last five years from the date of opening of the tender (i.e. 03.12.2012) as listed in relevant clauses in respective electrical specification and relevant standards for all components / equipment / systems. These reports should be for the tests conducted on identical/ similar components /equipment/systems to those offered / proposed to be supplied under this contract.

Type tests done in an independent government laboratory or in the presence of representative of State Electricity Board or other reputed public undertakings, the type test reports of the same shall be submitted for scrutiny /approval. If these are found suitable and technically acceptable, conducting of type tests shall be waived off.

In case Contractor is not able to submit report of type test(s) conducted in last five years, or in case type test report(s) are not found to be meeting the specification/relevant standard requirements, then all such tests shall be conducted under this contract by the Bidder free of cost to Employer/Purchaser, and reports shall be submitted for approval. No charges shall be paid under this contract. All acceptance and routine tests as per relevant standards and specification shall be deemed to be included in the bid price.

3.3 PACKING

The following details are to be clearly indicated in the material forwarding documents:

- a) Name and address of the consignee.
- b) Purchase order number.
- c) Name of supplier/s.
- d) Description of equipment / material.
- e) Net weight.
- f) Gross weight.

All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the purchaser, the Contractor shall also submit packing details/associated drawing for any equipment/ material under his scope of supply, to facilitate the purchaser to repack any equipment/ material at a later date, in case the need arises. Any material found short inside the packing cases shall be supplied by the supplier without any extra cost. The cases containing easily damageable material shall be very carefully packed and marked with appropriate caution symbol i.e. fragile, handle with care, use no Hooks etc.

3.4 DOCUMENTATION

3.4.1 LIST OF DOCUMENTS

The bidder shall submit a detailed list of drawings / documents along with the bid proposal which he intends to submit to the Employer after award of the contract.

The supplier shall necessarily submit all the drawings / documents unless any thing is waived.

All engineering data submitted by the Contractor after final process including review and approval by the Employer shall form part of the Contract Document and the entire works performed under this specification shall be performed in strict conformity, unless otherwise expressly requested by the Employer in Writing.

4.4.2 DRAWINGS

All drawings submitted by the Contractor including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, material description, Bill of Materials, weight of each component, break-up for packing and shipment, the external connections, fixing arrangement required, the dimensions required for installation and interconnections with other equipments and materials, clearances and spaces required for installation and interconnection between various portions of equipments and any other information specifically requested in the specifications.

Each drawing submitted by the Contractor shall be clearly marked with the name of the Employer, name of consultant, the unit designation, RRVUNL contract no. and the name of the Project .If standard catalogue pages are submitted, the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

Further work by the Contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the Employer if so required.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawing shall be at the Contractor's risk. The Contractor may make any changes in the design which are necessary to make the equipment conform to the provisions and intent of the Contract and such changes will again be subject to approval by the Employer. Approval of Contractor's drawing or work by the Employer shall not relieve the contractor of any of his responsibilities and liabilities under the Contract.

3.4.3 APPROVAL PROCEDURE

The scheduled dates for the submission of these as well as for, any data/information to be furnished by the Employer would be discussed and finalised at the time of award. The supplier shall also submit required no. of copies as mentioned in this specification of all drawings/design documents/test reports for approval by the Employer. The following schedule shall be followed generally for approval.

i.	Approval/comments/by employer on Initial submission	Within 3 weeks of receipt
ii.	Resubmission	Within 2 (two) weeks (whenever from date of comments required) Including both ways postal time.
iii.	Approval or comments	Within 2 weeks of receipt of resubmission
iv.	Furnishing of distribution copies	2 weeks from the date of last approval.

Note: The contractor may please note that all resubmissions must incorporate, all comments given in the submission by the Employer failing which the submission of documents is likely to be returned. Every revision shall be a revision number, date and subject, in a revision block provided in the drawing, clearly marking the changes incorporated.

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The title block of drawings shall contain the following information incorporated in all contract drawings. Please refer enclosed sheet for details of Title block.

3.4.4 DOCUMENTS TO BE SUBMITTED ALONGWITH OFFER

- 1) Drawings
- 2) Guaranteed Technical Particulars
- 3) Type Test Reports
- 4) Manufacturing Quality Plan

3.4.5 DOCUMENTATION SCHEDULE

S. No.	DESCRIPTION	TENDER STAGE	CONTRACT STAGE FOR APPROVAL	FINAL DOCUMENTATION	
				Prints	CDs
1	Drawings and Data Sheets	1	7	8	-
2	Drawings "As Built "	-	-	8	05
3	Type Test Reports	1	3	4	-
4	Erection Manuals	-	7	8	-
5	Operation and Maintenance Manuals	-	7	8	-
6	Manufacturing Quality Plan	1	7	8	-
7	Field Quality Plan	1	7	8	-
8	Inspection Test Reports	-	-	8	-

Soft copies of drawings at contract stage shall also be submitted in **PDF format**.

Drawings will also be submitted in CD in AUTOCAD package for all major items.

Final Documentation shall be submitted in bound volumes with Customer & Project etc. written on top.

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REV.	DATE	DESCRIPTION	BY	CHECKED	DATE

OWNER
**BAJASTHAN RAJYA VIDYUT UTPADAN NIGAM
 LIMITED**

PROJECT
**2X660MW THERMAL POWER PLANT, BHARAT GARH
 STAGE - V, UNIT 7 & 8 AT SIBATGARH, BAJASTHAN**

DESIGNER

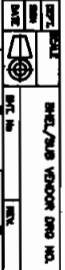
M/S. CONSULTING ENGINEERS LIMITED

CONTRACTOR

**BHARAT HEAVY ELECTRICALS LTD
 TRANSDIVISION BUSINESS GROUP**

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE



SECTION -4

**GUARANTEED TECHNICAL PARTICULARS OF CABLES
 (TO BE SUBMITTED BY SUCCESSFUL BIDDER)**

(14)

- | | | | |
|------|--|---|-----|
| 1.0 | General | | |
| 1.1 | Name of manufacturer | : | |
| 1.2 | Place of Manufacture | : | |
| 2.0 | Standards applicable | | |
| 2.1 | IS: 7098 Part-II | : | YES |
| | For general specification of XLPE Cables | | |
| 2.2 | IS: 8130 | : | YES |
| | For conductor material | | |
| 2.3 | IS: 5831 | : | YES |
| | For material of innersheath & outersheath. | | |
| 2.4 | IS: 3975 / IS: 8130 | : | YES |
| | For armour of 3 core/ single core cables | | |
| 2.5 | IS: 10810 | : | YES |
| | For method of tests | | |
| 2.6 | IS:10418 | : | YES |
| | For cable drums | | |
| 2.7 | ASTMD-2863 | : | YES |
| | For oxygen index test | | |
| 2.8 | SS:424-1475 & IEC-332-III-Cat-A,
IEC-332-II / IEEE: 383 | : | YES |
| | For flammability test | | |
| 2.9 | IEC-754-1 | : | YES |
| | For acid gas generation test | | |
| 2.10 | ASTMD-2843 | : | YES |
| | For smoke generation test | | |
| 2.11 | Current rating of cables conforms to | : | |
| 2.12 | Short circuit rating conforms to | : | |

(13)

2.13	Formula for calculating short circuit current for different durations	:	
3.0	(a) Installation Conditions at site		
	i) ambient air temperature	:	deg. C
	ii) ground temperature	:	deg. C
	iii) Depth of laying of cables buried in ground	:	cm
	iv) thermal resistivity of soil	:	deg. C cm/W
	(b) Installation conditions for current rating specified at clause 6.3	:	
4.0	CHARACTERISTICS OF FRLS SHEATH		
	a) Oxygen index	:	
	b) Temperature index	:	
	c) Acid gas generation	:	
	d) Smoke density rating	:	
5.0	CABLE DRUMS		
	a) Type & construction	:	
	b) Standard drum length	:	
	c) Tolerance on drum length	:	
6.0	INFORMATION TO BE FILLED IN FOR EACH SIZE CABLE IN THE FORM OF TABLE		
6.1	No. of cores x size	:	
6.2	Voltage grade (U ₀ /U)	:	kV
6.3	Base current ratings (*) based on Clause 3.0		
	a) In air	:	Amp
	b) In ground	:	Amp
	c) ducts	:	Amp
6.4	Short circuit rating	:	kA, sec.
6.5	a) D.C. resistance of conductor at 20 deg. C	:	ohm/km
	b) A.C. resistance of conductor at	:	ohm/km

90 deg. C

- | | | |
|---|---|--------|
| c) Reactance of cable at normal frequency | : | ohm/km |
| d) Electrostatic capacitance of cable at normal frequency | : | mF/km |

(12)

6.6 CONDUCTOR

- | | | |
|--|---|---------|
| a) Material type & grade | : | |
| b) No & dia of wires in each core before stranding | : | no x mm |
| c) Shape | : | |

6.7 CONDUCTOR SCREEN

- | | | |
|----------------------|---|--|
| a) Material | : | |
| b) Minimum thickness | : | |

6.8 XLPE INSULATION

- | | | |
|------------------------------------|---|----|
| a) Nominal thickness of insulation | : | mm |
| b) Method of curing | : | |

6.9 INSULATION SCREEN

- | | | |
|---|---|----------|
| a) Material and thickness (minimum and nominal) | | |
| i) Metallic | : | |
| No. of tapes and minimum overlapping | : | |
| ii) Non-metallic | : | |
| b) Earth fault current withstand capacity (Calculation to be furnished) | : | kA, sec. |

6.10 PVC ST2 INNERSHEATH

- | | | |
|--------------------------------------|---|-------------------|
| a) Material | : | |
| b) Thickness (min.) | : | mm |
| c) Method of application | | |
| 1) Multi-core cables | | |
| i) With fillers | : | |
| ii) With out fillers | : | Pressure Extruded |
| 2) Single core cables | : | |
| d) Type & Shape of fillers (if used) | : | |
| e) Colour | : | |

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6.11	ARMOUR		
	(a) Material	:	
	b) Size/ dimensions	:	
	c) Minimum no. of wires/ formed wires	:	
	d) Tolerance on formed wire dimension	:	
	e) Maximum resistivity of GS formed wire	:	
	f) Maximum resistivity of Al round wire	:	
	g) Minimum coverage	:	
6.12	PVC ST2 FRLS OUTERSHEATH		
	a) Nominal thickness of outer sheath	:	mm
6.13	Diameters		
	a) Diameter of insulated conductor	:	mm
	b) Diameter of laid up core	:	mm
	c) Cable diameter under armour	:	mm
	d) Cable diameter over armour	:	mm
	e) Overall diameter of cable	:	mm
6.14	Tolerance on overall diameter	:	(±) mm
6.15	Minimum bending radius	:	x O.D.
6.16	Safe pulling force	:	kg.
6.17	Weight of cable	:	kg./km
	(a) Weight of conductor	:	MT./km
	(b) Weight of XLPE insulation	:	MT./km
	(c) Weight of PVC (Inner Sheath, Outer Sheath & Fillers)	:	kg./km
	(d) Weight of Armour (As applicable)	:	kg./km
6.18	Reel indicating the length, type, voltage grade, Conductor size and number of core of the cable	:	
6.19	Dimension of drum	:	mm
6.20	Shipping weight	:	kg.
6.21	Cable marking on outer sheath	:	

(*) For single core cables, the continuous current rating shall be furnished separately for armour earthed at one end and at both ends.
 (*) Eccentricity and Ovality also to be indicated.

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GURANTEED TECHNICAL PARTICULARS OF CABLE ACCESSORIES
(TO BE SUBMITTED BY SUCCESSFUL BIDDER)
(SEPARATE FOR EACH TYPE & SIZE OF CABLE)

1.0.0 GENERAL

1.1.0 Name of manufacturer:

1.2.0 Place of manufacture:

2.0.0 Standard Applicable:

IS: 13573/ VDE 0278 for testing of kits:

3.0.0 TECHNICAL DETAILS

3.1.0 TERMINATION KITS

- a) Make:
- b) Type:
- c) Application: Outdoor
- d) Voltage Grade:
- e) Kit no. as per catalogue:
- f) Applicable conductor size:
- g) Whether previously type tested/ within past five years:
- h) Shelf life of the least durable component: years
- i) Tinned Copper heavy duty type cable lugs
Form part of termination kits: Yes
- j) Total shrouding of all live parts: Yes

3.2.0 STRAIGHT THROUGH JOINTS

- a) Make:
- b) Type:
- c) Voltage Grade:
- d) Kit no. as per catalogue:
- e) Applicable conductor size:
- f) Whether previously type tested within past five years:
- g) Shelf life of the least durable component: years

SECTION – 5
CHECK LIST

1. TECHNICAL REQUIREMENTS FOR 11KV XLPE CABLES AND ITS ACCEESORIES

Sl.	Particulars	Reply by bidder.	
1	TECHNICAL QUALIFYING REQUIREMENT		
1.1	Papers for qualifying requirement enclosed.	Confirmed	Yes/No
1.2	The bid shall be submitted by the Manufacturer of the 11 kV Cable. The bidder's scope includes supply and services like installation, testing and commissioning. Bids submitted by agents will not be considered.	Confirmed	Yes/No
1.3	All the documents shall be submitted in English. Translated pages should be attested by the bidder.	Confirmed	Yes/No
2	Un-priced Offer –		
2.1	Confirm that all items have been quoted. (If any item has not been quoted, the same shall be specifically brought out in Schedule of Technical Deviation)	Confirmed	Yes/No
2.2	Terminal connector for overhead connection with outdoor cable sealing end shall be provided by BHEL.	Confirmed	Yes/No
3	Cable Lengths		
3.1	Manufacturing lengths and drum length shall be determined as per the joint site survey with RRVUNL/BHEL.	Confirmed	Yes/No
4	Technical		
4.1	Calculation for metallic screen and armor coverage percentage shall be submitted after award of contract.	Confirmed	Yes/No
4.2	Confirm that the Complete systems have been offered as per the requirements of Technical Specification and Technical Deviation sheet has been submitted. Deviations mentioned elsewhere in the bid will not be considered.	Confirmed	Yes/No
5	Barchart		
5.1	Bidder will submit detailed bar chart indicating all the milestones from Engineering till manufacturing/ testing, dispatch to site and commissioning.	Confirmed	Yes/No
6	Conditions		
6.1	The necessary power supply at site shall be provided by BHEL at one point only.	Noted	Yes/No
6.2	<u>Termination and Joints</u> : Provision of Joints and Terminating material, tools and Scaffolding, cranes for lifting for the sealing end materials, assembly of sealing ends have been included in Bidder scope .	Confirmed	Yes/No
6.3	Store will be provided by BHEL. Bidder to provide their requirement of space in open and closed store during tender stage. Office facilities & accommodation for supplier staff, Travel expenses for supplier staff shall be in supplier scope.	Confirmed	Yes/No

Sl.	Particulars	Reply by bidder.	
6.4	Route indicators for power cables at an interval not exceeding 200m and also at turning points of the power cable route wherever practicable in line with clause no. 4.2.1.3 of IS: 1255 shall be in Bidder scope .	Confirmed	Yes/No
6.5	The cable cleats including hardware for fixing the cable on two pole structure, LA structure and post Insulator shall be in supplier scope. BHEL will provide two pole structure, LA structure and post insulator structure.	Confirmed	Yes/No
6.6	The cable cleats including hardware for fixing the straight joint on two pole structure shall be in supplier scope.	Confirmed	Yes/No
7	Site Test		
7.1	Provision of test engineer, supply of all test equipment and arrangement shall be in bidder's scope.	Confirmed	Yes/No
7.2	No separate site test will be conducted by BHEL/Customer	Confirmed	Yes/No
8	TYPE TESTS REQUIREMENTS		
8.1	The 11kV Cabling system (11 kV XLPE Cables, cable sealing end, jointer etc.) should have been type tested.	Confirmed	Yes/No
8.2	The test - reports submitted shall be of the tests conducted within last 5 years prior to the date of bid opening. Date of Bid opening is 03.12.12	Confirmed	Yes/No
8.3	The type tests conducted earlier should have either been conducted in an accredited laboratory (accredited base on ISO / IEC Guide 25 / 17025 or EN 45001 by the national accreditation body of the country where laboratory is located). If the laboratory is not a national laboratory and member of STL, relevant papers of accreditation shall be submitted in English. If the laboratory is in-house, the tests should have been witnessed by an independent agency.	Confirmed	Yes/No
8.3	The type test report shall be complete including list the test objects, photographs, oscillographs, test arrangement, drawing of tested objects (cables, accessories, etc), test connections. The type test report shall be in English. If it is in any other language, it should include an English version (Translation shall be attested by the Bidder). The English version should be complete with measured values and conclusion.	Confirmed	Yes/No
9	INSPECTION & TESTING		
9.1	Inspection and Testing shall be as approved Quality Plan.	Confirmed	Yes/No

7

SCHEDULE OF TECHNICAL DEVIATIONS

Bidder shall list below all technical deviation clause wise w.r.t. tender specifications:

<u>S.No.</u>	<u>Page No.</u>	<u>Clause No.</u>	<u>Deviation</u>	<u>Reason / Justification</u>
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Any deviation not specifically brought out in this section shall not be admissible for any commercial implication at later stage. Except to the technical deviations listed in this schedule, bidder's offer shall be considered in full compliance to the tender specifications irrespective of any such deviation indicated / taken elsewhere in the submitted offer.

Date:

Tenderer's Stamp & Signature

ENCLOSURES

6

SI no.	Description	Drawing/document no.
1.	Layout plan and elevation of 11kV S/s at Suratgarh (Total 3 sheets)	TB-3-360-316-016, Rev -02
2.	Buried cable trench for 11kV cable	Annexure-1
3.	Two pole structure for 11kV cable jointing	Annexure-2
4.	11kV cable trench route	Annexure-3

TABLE -1 : BILL OF MATERIAL OF SWITCHYARD EQUIPMENTS

ITEM CODE	DESCRIPTION	SYMBOL	QUANTITIES IN NO. (FORMER PLANT)	QUANTITIES IN NO. (NEW PLANT)
1	11KV 1 PHASE AIRBORN ARRESTER 10KA CLASS-3 CUM 11KV GALVANISED		4(4x1x4)(CUM)	4(4x1x4)(CUM)
2	25KV GOLA SIDA FOR 25-30KV HDB (SILICONE POLYMER) WITH 1/2S (INSULATOR OPERATED)		1	1
3	25KV AIR FURT INSULATOR 1 PHASE CUM 11KV CABLE GALVANISED 1 PHASE		4(4x1x4)(CUM)	4(4x1x4)(CUM)

TABLE 2: MINIMUM CLEARANCE TABLE (IN AIR)

S. NO.	DESCRIPTION	UNIT	11KV	25KV
1.	PHASE TO PHASE	MM	200	200
2.	PHASE TO EARTH	MM	140	200
3.	MINIMUM DISTANCE OF THE LOWEST EARTH PART OF INSULATOR SUPPORTING LINE CONDUCTORS FROM GROUND	MM	2000	2000
4.	SECTION CLEARANCE	MM	3000	3000
5.	PLUMB HEIGHT FROM GROUND LEVEL	MM	200	200
6.	MINIMUM LINE PART TO GROUND CLEARANCE	MM	2000	2000

TABLE-3: SYSTEM PARAMETERS

S. NO.	DESCRIPTION	UNIT	11KV	25KV
1.	NOMINAL SYSTEM VOLTAGE	KV	11	25
2.	HIGHEST SYSTEM VOLTAGE	KV	12	26
3.	BASIC INSULATION LEVEL	MLV	75	170
4.	POWER FREQUENCY SWITCHING	KVMS	20	70
5.	CIRCUIT BREAKER (MVA)	MVA/MV	20	51

LEGEND

	PRESENT LEVEL SCOPE
	FENCE
	COLUMN WITH POLE
	GATE

NOTE :-

1. ALL DIMENSIONS ARE IN MM.
2. SYSTEM FACTY LEVEL FOR 11KV SYSTEM IS 4.5M FROM 2 SECOND.
3. ALL DIMENSIONS SHALL BE AS PER THE DRAWING AND THE DIMENSIONS SHALL BE LATTER TYPE.
4. ALL DIMENSIONS SHALL BE AS PER THE DRAWING AND THE DIMENSIONS SHALL BE LATTER TYPE.
5. ALL DIMENSIONS SHALL BE AS PER THE DRAWING AND THE DIMENSIONS SHALL BE LATTER TYPE.

REFERENCE

1. SINGLE LINE DIAGRAM FOR 400 KV SUBSTATION SUBSTATION - DRG. TB-1-200-010-001
2. LAYOUT OF 11KV SWITCHYARD DRAWING NO. TB-0-200-010-001
3. LAYOUT OF 25KV SWITCHYARD DRAWING NO. TB-0-200-010-002
4. LAYOUT OF 400KV SWITCHYARD DRAWING NO. TB-0-200-010-003
5. STRUCTURE LAYOUT DRAWING NO. TB-0-200-010-004
6. RING MAIN LINE DRAWING NO. TB-0-200-010-005

NO.	REVISION	DATE	BY	CHKD.	APPROVED BY
01	ISSUED FOR TENDER				
02	ISSUED FOR WORK				

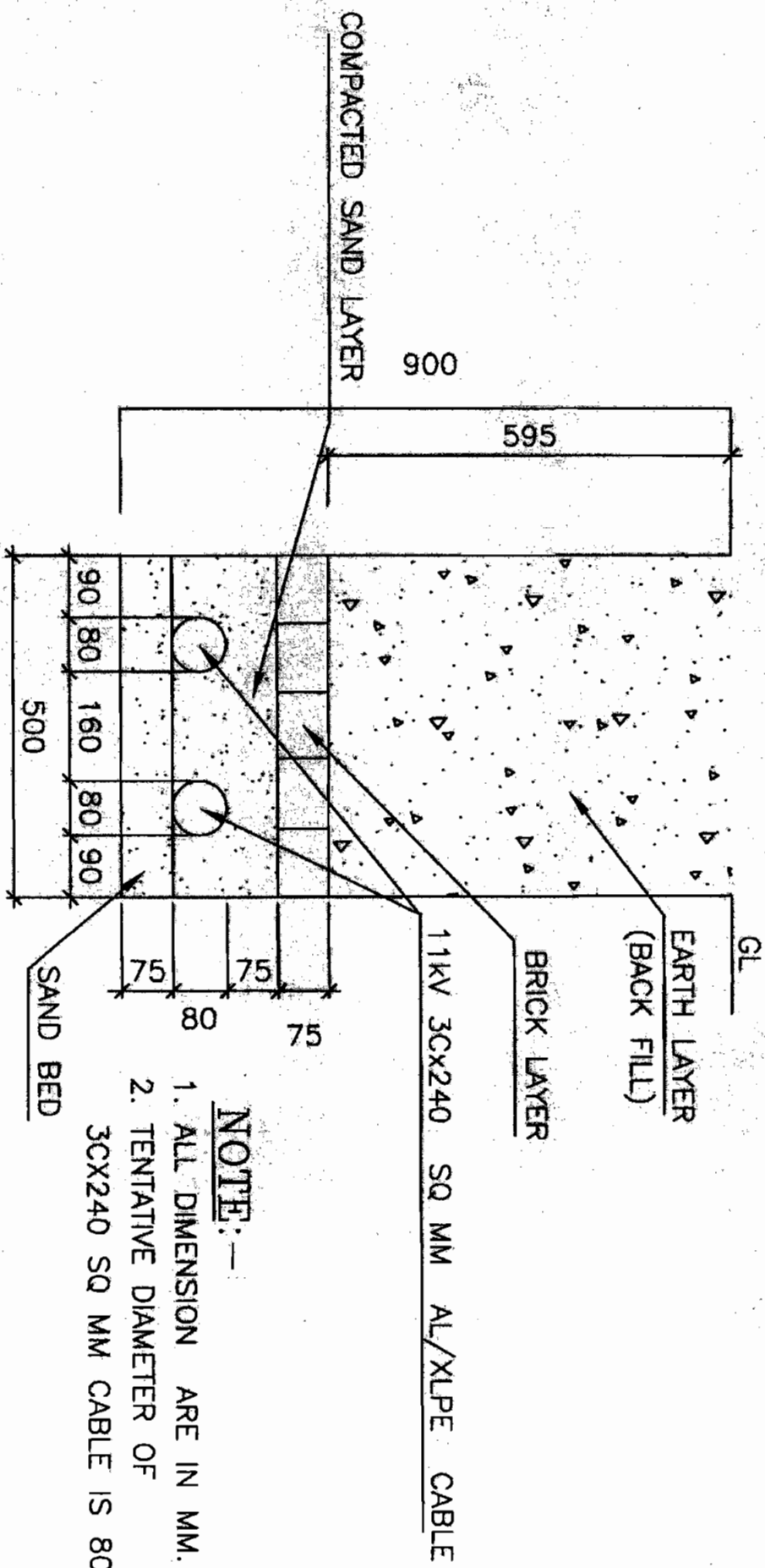
PROJECT: 2X660MW THERMAL POWER PLANT SURATGARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN

CONSULTING ENGINEERS LIMITED

CLIENT: BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP

NO.	REV.	DATE	BY	CHKD.	APPROVED BY
01	ISSUED FOR TENDER				
02	ISSUED FOR WORK				

ANNEXURE-1



NOTE:-

1. ALL DIMENSION ARE IN MM.
2. TENTATIVE DIAMETER OF 3C X 240 SQ MM CABLE IS 80MM

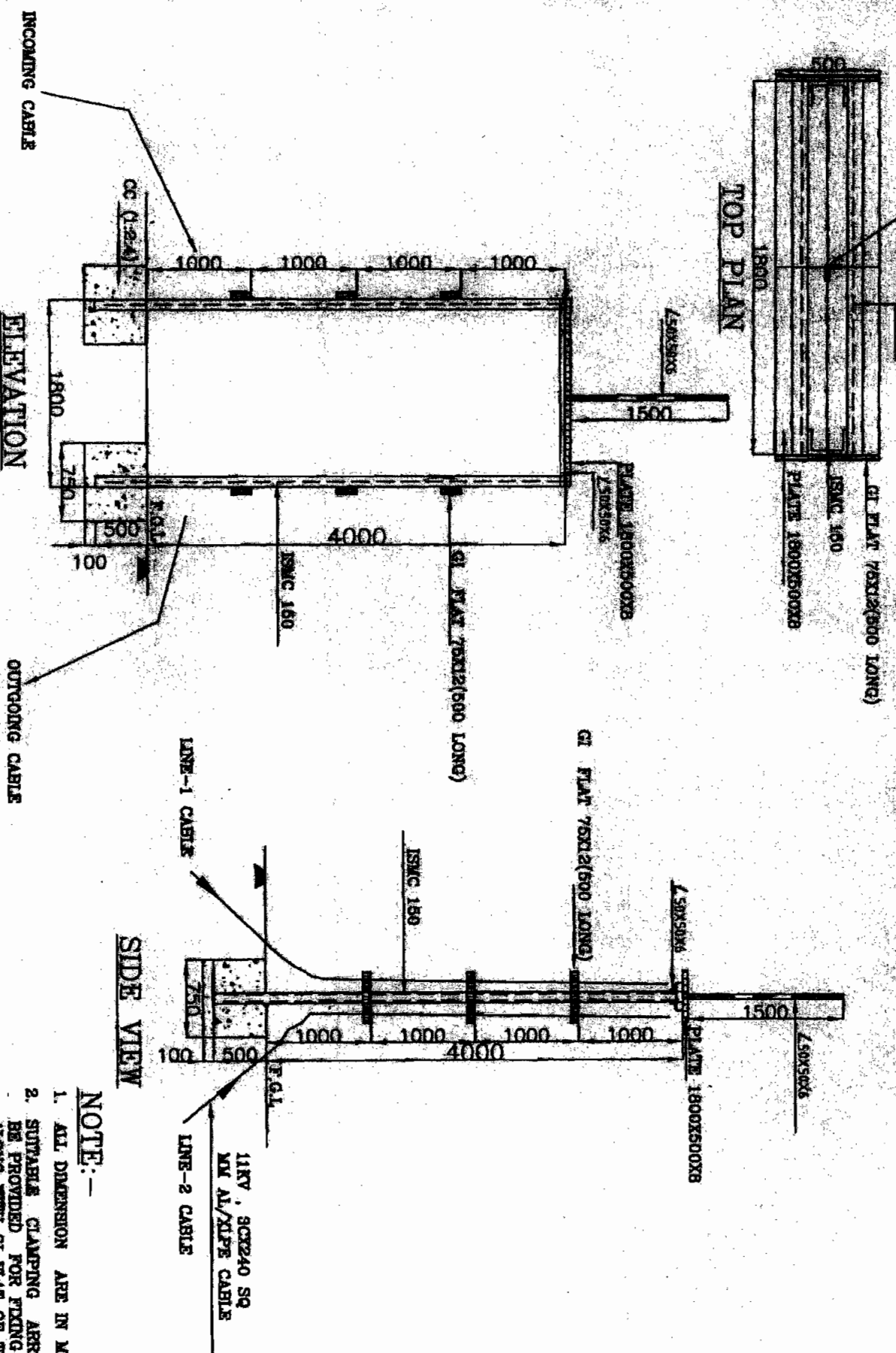
BURIED CABLE TRENCH FOR 11KV CABLE

See drawing 10/11/16

(3)

①

ANNEXURE-2 (TWO POLE STRUCTURE FOR 11KV CABLE JOINTING)



SIDE VIEW

NOTE:-

1. ALL DIMENSION ARE IN MM.
2. SUITABLE CLAMPING ARRANGEMENT SHALL BE PROVIDED FOR FIXING OF 11KV CABLE ALONG WITH GI FLAT OF TWO POLE STRUCTURE
3. JOINTING KIT OF BOTH LINE-1 AND LINE-2 CABLE SHALL BE PLACE ON TOP PLATE (1800x500x8) OF TWO POLE STRUCTURE

Srihari Kumar / 2.11.17

