BSES RAJDHANI POWER LIMITED

TENDER NOTIFICATION FOR

RATE CONTRACT FOR SUPPLY & INSTALLATION OF END TERMINATION & STRAIGHT THROUGH CABLE JOINTING KITS OF VARIOUS SIZES OF CABLES UPTO 11 KV

NIT NO CMC/BR/21-22/RB/FH/947, DT-04.09.2021

Due Date for Submission: 24.09.2021, 1500 Hrs.

BSES RAJDHANI POWER LTD (BRPL)
BSES Bhawan, Nehru Place, New Delhi-110019
Corporate Identification Number is **U74899DL2001PLC111527**
Telephone Number : **+91 11 3009 9999**
Fax Number : **+91 11 2641 9833**
Website is **www.bsesdelhi.com**

Bidders seal & signature

BSES RAJDHANI POWER LIMITED

SECTION – I: REQUEST FOR QUOTATION

Event Information

BRPL invites sealed tenders in 2 envelopes for establishing "RATE CONTRACT FOR SUPPLY & INSTALLATION OF END TERMINATION & STRAIGHT THROUGH CABLE JOINTING KITS OF VARIOUS SIZES OF CABLES UPTO 11 KV in BRPL area from reputed manufacturers. The bidder must qualify the technical requirements as specified in clause 2.0 stated below. All envelopes shall be duly super scribed as — **"**RATE CONTRACT FOR SUPPLY & INSTALLATION OF END TERMINATION & STRAIGHT THROUGH CABLE JOINTING KITS OF VARIOUS SIZES OF CABLES UPTO 11 KV"**- NIT NO CMC/BR/21-22/RB/FH/947 DUE ON 24.09.2021".**

Sl. No.	Item Description	Technical Specification	Estimated Cost	Qty.	Deliveryat
1	Rate Contract For Supply & Installation of LT & HT Cable End Termination & Straight Through Jointing Kits of Various Size of Cable up to 11 KV	SP-HCSTJ-03-R4 SP-HSGTR-04-R3 SP-HSTJK-05-R2 SP-LTJKT-06-R2 GN101-03-SP-52-01	Rs 24 Cr	As per Section V	New Delhi STORES

Note: - 1) The quantity indicated in Section V is for 1 year. However the rates quoted shall remain valid for 2 years.
2) BRPL has reserve right to change/Modify the scope of work defined in BOQ before awarding of contract

The schedule of specifications with detail terms & conditions can be obtained from address given below against submission of non-refundable demand draft of **Rs.1180/-** drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi. The tender papers will be issued on all working days upto 24.08.2017**, 1700Hrs**. The tender documents & detail terms and conditions can also be downloaded from the website **"www.bsesdelhi.com --> Tenders --> BSES Rajdhani Power Ltd --> Open Tenders"**.
In case tender papers are downloaded from the above website, then the bidder has to enclose a demand draft covering the cost of bid documents.

The bids shall be addressed to:

Head of Department
Contracts & Materials Deptt.
BSES Rajdhani Power Ltd
C&M Deptt.
1st Floor, C Block
BSES Bhawan, Nehru Place
New Delhi 110019

BRPL reserves the right to accept/reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents.

Bidders seal & signature

Tender will be summarily rejected if:

(i) **Earnest Money Deposit (EMD)** of value INR **24,00,000/-** is not deposited in shape of Bank Draft/Pay Order/Banker's Cheque/BG drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi.
(ii) The offer does not contain "FOR NEW DELHI" price indicating break-up towards all taxes, duties & freight for supply part
(iii) The offer does not contain cost indicating break-up towards taxes & duties for installation part
(iv) Complete Technical details are not enclosed.
(v) Tender is received after due date and time**.**

Qualification Criteria –

The prospective bidder must qualify all of the following requirements to be eligible to participate in the bidding Bidders who meet following requirements will be considered as successful bidder and BRPL has a right to disqualify those bidders who do not meet these requirements.

- The bidder must be manufacturer of cable jointing & termination kits up to & including 11 kV having valid type test reports carried out at CPRI/ERDA for similar joints being offered against present tender. Type test report shall not be more than 5 years old. In case of no changes in design, type test report shall be accepted up to 10 years old from the date of NIT.

- The bidder should have plant installed capacity of minimum 20 % of quantity per month as indicated in Price format.

- The bidder should have more than 7 years' experience in the field of cable jointing up to 11 kV in India. The prospective bidder should have in excess of 2 years experience of maintenance/rectifications of underground cables. WO copy shall be provided in support of the clause.

- The bidder should have adequate experienced jointers having electrical license up to & including 11 kV etc. bidder should have team of min 20 trained & experienced engineers/technicians in Delhi-NCR for the maintenance & rectification of underground cables up to 11 kV. List of manpower shall be provided with tender.

- The bidder should have qualified technical & qualified QA personnel at various stages of manufacturing & testing.

- The prospective bidder should have supplied and installed min. no. of joints/terminations in a year during last 5 years at various voltage classes in India

Voltage class	**Numbers**
1.1KV	3000
11KV	1500

- Bidder should have average annual sales turnover of Rs. 15.0 crores or more in last 3 years

- The bidder must possess valid ISO9001:2015 certification

- Bidder should have valid registration No. sales Tax/DVAT/GST/service Tax, & PAN No. PF&ESI registration in Delhi.

Bidders seal & signature

3.0 **Bidding and Award Process**

Bidders are requested to submit their offer strictly in line with this tender document. **NO DEVIATION IS ACCEPTABLE**. BRPL shall respond to the clarifications raised by various bidders and the same will be intimated to all participating bidders through website.

BID SUBMISSION

The bidders are required to submit the bids in 2(two) parts and submitted in 1 original + 1 copy to the following address

Head of Department
Contracts & Material Deptt.
BSES Rajdhani Power Ltd
1st Floor, C Block
BSES Bhawan, Nehru Place
New Delhi 110019

PART A : **TECHNICAL BID** comprising of following:

- EMD
- Non-refundable demand draft for Rs 1180/- in case the forms are downloaded from website
- Documentary evidence in support of qualifying criteria at sl. No 2.0 i.e. Audited Balance Sheet of last 3 years, CA Certificate Of turnover for last 3 years, Performance Certificates etc
- Technical Literature, GTP, Type test report etc
- Qualified Manpower available
- Testing Facilities
- Original Tender documents duly stamped & signed on each page as token of acceptance
- Acceptance to Commercial Terms and Conditions viz. Delivery schedule/period, Payment terms, BG etc
- Power of Attorney for signing the bid

PART B : **FINANCIAL BID** comprising (1 original only)

- Price strictly in the Format enclosed indicating Break up of basic price, taxes & duties, Freight etc

TIME SCHEDULE

The bidders should complete the following within the dates specified as under:

S. No.	Steps	Date
1	Date of sale of bid documents	24.09.2021.1530Hrs
2	Last date of Queries, if any	15.09.2021 1500Hrs.
3	Pre-Bid Meting	17.09.2021 1500 Hrs
4	Last date of receipt of bid documents	24.09.2021 1500Hrs
5	Date & time of opening of tender – Part A	24.09.2021 1600Hrs
6	Date & Time of opening of Part B of qualifiedbidders	Successful bidders will be intimated through mail

This is a two part bid process. Bidders are to submit the bids in 2(two) parts

Both these parts should be furnished in separate sealed covers super scribing NIT no. DUE DATE OF SUBMISSION, with particulars as **PART-A TECHNICAL BID & COMMERCIAL TERMS & CONDITIONS** and **Part-B "FINANCIAL BID** and these sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

Part – A: Technical Bid should not contain any cost information whatsoever and shall be submitted within the due date.

PART - B: This envelope will be opened after techno-commercial evaluation and only of the qualified bidders.

REVERSE AUCTION: Purchaser reserves the right to use **REVERSE AUCTION** through SAP-SRM as an optional tool as an integral part of the entire tendering process. All techno-commercially qualified bidders shall participate in this event

Notwithstanding anything stated above, the Purchaser reserves the right to assess bidder's capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

BIDS RECEIVED AFTER DUE DATE AND TIME MAY BE LIABLE TO REJECTION

4.0 Award Decision

Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to submit the bid competitively. The decision to place purchase order/LOI solely depends on purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Purchaser may deem relevant.

The purchaser reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.

In the event of your bid being selected by purchaser (and / or its affiliates) and you subsequent DEFAULT on your bid; you will be required to pay purchaser (and / or its affiliates) an amount equal to the difference in your bid and the next lowest bid on the quantity declared in NIT/RFQ.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and BRPL reserves the right to award other suppliers who are found fit.

QTY VARIATION: The purchaser reserves the rights to vary the quantity by (±) 30% of the tender quantity.

The rates quoted shall remain valid for 2 years. Purchaser shall release purchase orders as per requirement and stock position in order to maintain adequate stock required.

In the event of order to a new vendor, the party shall establish a Call Centre (24x7) in the nominated district/circle/area of BRPL.

Market Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules prior to participating. In addition to other remedies available, we reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. Bidders who violate the marketplace rules or engage in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace.
- Breach of the terms of the published in Request for Quotation/NIT.

6.0 Supplier Confidentiality

All information contained in this RFQ is confidential and shall not be disclosed, published or advertised in any manner without written authorization from BRPL. This includes all bidding information submitted.

All RFQ documents remain the property of BRPL and all suppliers are required to return these documents to BRPL upon request.

Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

7.0 Contact Information

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by post / courier to following address. The same shall not be communicated through email/phone

	Technical	Commercial
Contact Person	to CES	To:- faiyaz.hussain@relienaceada.com
	Copy to : Pankaj Goyal	Copy to : Pankaj Goyal
Address	BSES RAJDHANI Power Ltd ,5th Floor , 20 No Building, Nehru Place,New Delhi 110019	C&M Deptt. 1st Floor , D-Block, BSES RAJDHANI Power Ltd BSES Bhawan, Nehru Place, New Delhi 110019
Email	Amit.as.tomar@releianceada.com	Pankaj.goyal@releianceada.com

Bidders seal & signature

SECTION – II: INSTRUCTION TO BIDDERS

A. GENERAL

1.00 BSES Rajdhani Power Ltd hereinafter referred to as "The Purchaser" are desirous of implementing the various Systems Improvement/Repair & Maintenance works at their respective licensed area in Delhi. The Purchaser has now floated this tender for supply & installation of Cable jointing Kits as notified earlier in this bid document.

2.00 SCOPE OF WORK

The scope shall include Design, Manufacture, Testing at works conforming to the Technical Specifications/IS along with Packing, Forwarding, Transportation and Unloading and proper stacking at Purchaser's stores/site, Establishment of 24x7 Call Centre, Installation of the kits upto satisfaction of Engineer-in-Charge.

3.0 DISCLAIMER

This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise a rising in any way from the selection process for the Supply.

Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy Itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.

This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

4 COST OF BIDDING

The Bidder shall bear all cost associated with the preparation and submission of its Bid and Purchaser will in no case be responsible or liable for those costs.

B. BIDDING DOCUMENTS

The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents are as follows:

(a) Request for Quotation (RFQ) - Section - I
(b) Instructions to Bidders (ITB) - Section - II
(c) Terms & Conditions of Contract (T&C) - Section -III
(d) Delivery schedule - Section IV
(e) Price Format - Section V
(f) EMD BG Format - Section VI
(g) Bid Form - Section VII

(h) Technical Specifications St Thru Kits - Section –VIII
(i) Technical Specifications – End Term - Section –VIII

5.02 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and Specifications. Failure to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will may result in the rejection of the Bid.

AMENDMENT OF BIDDING DOCUMENTS

At any time prior to the deadline for submission of Bids, the Purchaser may for any reasons, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.

The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified in web site **www.bsesdelhi.com** and the same will be binding on them.

In order to afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids. The same shall be published as a corrigendum in website **www.bsesdelhi.com**

Purchaser shall reserve the rights to following

a) Extend due date of submission
b) Modify tender document in part/whole
c) Cancel the entire tender

C. PREPARATION OF BIDS

7.0 LANGUAGE OF BID

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

8.0 DOCUMENTS COMPRISING THE BID

The Bid prepared and submitted by the Bidder shall comprise the following components:

(a) Bid Form, Price & other Schedules (STRICTLY AS PER FORMAT) and Technical Data Sheets completed in accordance with Technical Specification.

(b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.

(c) Tender documents duly stamped and signed on each page by authorized signatory.

BID FORM

The Bidder shall submit one "Original', "1st Copy' and "2nd Copy" of the Bid Form and the appropriate Price Schedules and Technical Data Sheets duly filled in as per attached specification (Section VIII) enclosed with the Bidding Documents.

EMD

Pursuant to Clause 8.0(b) above, the bidder shall furnish, as part of its bid, a EMD amounting to as specified in the Section-I. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form**:**

(a) Banker's Cheque/Demand Draft/Pay Order drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi.

(b) A bank guarantee issued by any scheduled bank strictly as per the format enclosed and shall be valid for a period of thirty (30) days beyond the validity of the bid.

The EMD may be forfeited in case of:

(a) The Bidder withdraws its bid during the period of specified bid validity

Or

(b) The case of a successful Bidder, if the Bidder does not

(i) Accept the Purchase Order, or
(ii) Furnish the required performance security BG.

10.0 **BID PRICES**

Bidders shall quote for the entire Scope of Supply with a break-up of prices for individual items. The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, Transportation to site, all in accordance with the requirement of Bidding Documents The Bidder shall complete the appropriate Price Schedules included herein , stating the Unit Price for each item & total Price.

The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during execution of the supply work, breakup of price constituents, should be there.

Prices quoted by the Bidder shall be **"Firm"** and not subject to any price adjustment during the performance of the Contract. **A Bid submitted with an adjustable price/Price Variation Clause will be treated as non -responsive and rejected.**

11.0 **BID CURRENCIES**

Prices shall be quoted in Indian Rupees Only.

12.0 **PERIOD OF VALIDITY OF BIDS**

Bids shall remain valid for 120 (One Hundred Twenty) days from the due date of submission of the Bid or amended due date of submission, whichever is later.

Notwithstanding Clause 12.01 above, the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing and sent by post/courier

13.0 **ALTERNATIVE BIDS**

Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the Bidding Documents.

14.0 **FORMAT AND SIGNING OF BID**

The original Bid Form and accompanying documents (as specified in Clause 9.0), clearly marked "Original Bid" "1st copy" "2nd Copy" must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0. In the event of any discrepancy between the original and the copies, the original shall govern.

The original and copy of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Attorney accompanying the Bid.

The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D. SUBMISSION OF BIDS

15.0 **SEALING AND MARKING OF BIDS**

Bid submission: One original + 2 Copies (hard copies) of all the Bid Documents shall be sealed and submitted to the Purchaser before the closing time for submission of the bid.

The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be super scribed with —"Technical Bid & EMD". The price bid shall be inside another sealed envelope with super scribed as "Financial Bid". Both these envelopes shall be sealed inside another big envelope. All the envelopes should bear the Name and Address of the Bidder and marking for the Original and Copy. The envelopes should be super scribed with —"Tender Notice No. & Due date of opening".

The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to the Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc shall be entertained by the Purchaser.

16.0 **DEADLINE FOR SUBMISSION OF BIDS**

The original Bid, together with the required copies, must be received by the Purchaser at the address specified no **later than the due date specified earlier**

The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause9.0,in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will there after be subject to the deadline as extended

17.0 **ONE BID PER BIDDER**

Each Bidder shall submit only one Bid by itself. No Joint Venture is acceptable. A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

18.0 **LATE BIDS**

Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0, will be declared "Late" and may be rejected and returned unopened to the Bidder.

19.0 **MODIFICATIONS AND WITHDRAWAL OF BIDS**

19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.

E. EVALUATION OF BID

20.0 **PROCESS TO BE CONFIDENTIAL**

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

21.0 **CLARIFICATION OF BIDS**

To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its Discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

22.0 **PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS**

Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. Purchaser may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non - conformity.

EVALUATION AND COMPARISON OF BIDS

The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids would be subjected to a responsiveness check.

The Technical Proposals and the Conditional ties of the Bidders would be evaluated.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation.

The Purchaser's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

(a) Delivery Schedule

(b) Conformance to Qualifying Criteria

(c) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents.

The cost of all quantifiable deviations and omissions from the specification, terms and conditions specified in Bidding Documents shall be evaluated. The Purchaser will make its own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.

(d) Any adjustments in price, which result from the above procedures, shall be added for the purposes of comparative evaluation only to arrive at an "Evaluated Bid Price". Bid Prices quoted by Bidders shall remain unaltered.

F. AWARD OF CONTRACT

24.0 CONTACTING THE PURCHASER

If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

Any effort by a Bidder to influence the Purchaser and/or in the Purchaser‘s decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder‘s Bid.

25.0 THE PURCHASER ’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR A LL BIDS

The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser‘s action.

26.0 AWARD OF CONTRACT

The Purchaser will award the Contract to the successful Bidder whose Bid has been determined to be the lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Purchaser reserves the right to award order to other bidders in the tender, provided it is required for timely execution of project & provided he agrees to come to the lowest rate. Purchaser reserves the right to distribute the entire tender quantity at its own discretion without citing any reasons thereof.

27.0 THE PURCHASER ’S RIGHT TO MODIFY QUANTITIES/SCOPE

The Purchaser reserves the right to MODIFY the quantity/scope i.e. increase or decrease the numbers/quantities/scope without any change in terms and conditions before awarding of contact or during the execution of the Order.

28.0 **LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance with in 7 days of issue of the letter of intent / Notification of Award by Purchaser.

29.0 **PERFORMANCE BANK GAURANTEE**

The successful Bidder shall furnish the Performance Bank Guarantee for an amount of 10% (Ten percent) of the Contract Price. The Performance Bond shall be valid for a period of 24 months from the date of Commissioning or 30 months from the date of last dispatch whichever is earlier plus 3 months claim period. Upon submission of the performance security, the EMD shall be released.

CORRUPT OR FRADULENT PRACTICES

The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

(a) Defines, for the purposes of this provision , the terms set forth below as follows:

(i) "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them ,or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and

(ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non -competitive levels and to deprive the Purchaser of the benefits of free and open competition.

(b) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;

(c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

Furthermore, Bidders shall be aware of the provision stated in the Terms and Conditions of Contract.

SECTION – III: TERMS AND CONDITIONS

1.0 General Instructions

All the Bids shall be prepared and submitted in accordance with these instructions.

Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.

The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred /sold to the other party.

The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of RFQ requirement is incomplete.

The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

Definition of Terms

"Purchaser" shall mean BSES Rajdhani Power Limited, on whose behalf this bid enquiry is issued by its authorized representative / officers.

"Bidder" shall mean the firm who quotes against this bid enquiry issued by the Purchaser. "Supplier" or "Supplier" shall mean the successful Bidder and/or Bidders whose bid has been accepted by the Purchaser and on whom the "Letter of Acceptance" is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.

"Supply" shall mean the Scope of Contract as described.

"Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Condition, and Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.

"Letter of Acceptance" shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by thePurchaser. The "Letter of Acceptance" issued by the Purchaser shall be binding on the "Supplier" The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.

"Month" shall mean the calendar month and "Day" shall mean the calendar day.

"Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

"Offer Sheet" shall mean Bidder's firm offer submitted to BRPL in accordance with the specification.

"Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.

"Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".

"Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force Majeure.

"Acceptance" shall mean and deemed to include one or more of the following as will be stipulatedin the specification:

a) The written acceptance of material by the inspector at suppliers works to ship the materials.
b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
c) Where the scope of the contract includes supply, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

3.0 Contract Documents & Priority

3.01 Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet.

4.0 Scope of Supply -General

The "Scope of Supply" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.

Bidder shall have to quote for the Bill of quantities as listed in Section – IV of this RFQ.
Quantity variation and additional requirement if any shall be communicated to successful bidder during project execution.

All relevant drawings, data and instruction manuals.

5.0 Quality Assurance and Inspection

Immediately on award of contract, the bidder shall prepare detailed quality assurance plan / test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection, etc. In case of standard items, BRPL shall forward the standard QAP which is to be followed by vendor during manufacturing.

Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier to proceed with the work pasta hold point only after clearance by purchaser or a witness waiver letter from BRPL.

The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all the requirements of the procurement documents and also all the codes & reference documents mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

On completion of manufacturing the items can only be dispatched after receipt of dispatch instructions issued by the Purchaser.

All in-house testing and inspection shall be done with out any extra cost. The in-house inspection shall be

carried out in presence of BSES/BSES authorized third party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices.

Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidder's representative.

6.0 Packing, Packing List & Marking

Packing: Supplier shall pack or shall cause to be packed all Commodities in crates/boxes/drums/containers/cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BRPL, Delhi/New Delhi stores/site without undue risk of damage in transit.

Packing List: The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width and weight) of each container/box/drum/carton, Item SAP Code, PO No & date, unique Sr. Nos. of each item (Joint & Termination Kits),etc . One copy of the packing list shall be enclosed in each package delivered.

7.01 Price basis for supply of materials

Bidder to quote their prices on Landed Cost Basis and separate price for each item.
FIRM prices for supply to BRPL Delhi/ New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of Goods and Tax, Freight etc. **Octroi is presently not applicable in Delhi and however if applicable shall be reimbursed at actual.**
The above supply prices shall also include unloading at BRPL Delhi/New Delhi stores/site.
Transit insurance will be arranged by Purchaser; however bidder to furnish required details in advance for arranging the same by Purchaser.

Purchaser shall issue Form 'C' wherever applicable and accordingly bidder to consider applicable taxes in the quoted price.

Terms of payment and billing

For Supply of Equipments:

100% payment shall be made within 45 days from the date of receipt of material at store/ site.

Bidder to submit the following documents against dispatch of each consignment:

i. Consignee copy of LR
ii. Supplier detailed invoice showing commodity description, quantity, unit price, total price and basis of delivery.
iii. Original certificate issued by BRPL confirming receipt of material at site and acceptance of the same.
iv. Dispatch clearance & inspection report issued by the inspection authority
v. Packing List.
vi. Test Reports
vii. Guarantee Certificate.

9.0 Price Validity

9.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BRPL Delhi for 120 days from the due date of submission or amended due date of submission, whichever is later. For awarded suppliers, the prices shall remain valid and firm till contract completion.

10.0 Performance Guarantee

Supplier shall establish a performance bond in favor of BRPL in an amount not less than ten percent (10%) of the total price of the Contract (the "Performance Bond"). The Performance Bond shall be valid for a period of 24 months from the date of Commissioning or 30 months from the date of last dispatch whichever is earlier plus 3 months claim period.

Bank guarantee shall be drawn in favour of BSES Rajdhani Power Ltd as applicable. The performance Bank guarantee shall be in the format as specified by BRPL.

11.0 Forfeiture

Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BRPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

Each Performance BG established under will be automatically and unconditionally forfeited withoutrecourse if BRPL in its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

12.0 Release

All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 10.0) except for the case set forth in Clause 21.0.

13.0 Warranty / Defects Liability Period

13.01 The bidder to guarantee the materials / items supplied against any defect of failure, which arise due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 60 months from the date of commissioning or 66 months from the date of delivery whichever is earlier. If during the defects liability period any materials / items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation.

14.0 Return, Replacement or Substitution.

BRPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BRPL may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BRPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BRPL shall furnish proof to Supplier of the cost of such substitute purchase. In either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BRPL may set off such costs against any amounts payable by BRPL to Supplier. Supplier shall reimburse BRPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

15.0 Effective Date of Commencement of Contract:

15.01 The date of the issuance of the Letter of Acceptance/ Purchase Order shall be treated as the effective date of the commencement of Contract.

16.0 Time – The Essence Of Contract

16.01 the time and the date of completion of the "Supply"" as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply.

17.0 The Laws and Jurisdiction of Contract:

The laws applicable to this Contract shall be the Laws in force in India.

All disputes arising in connection with the present Contract shall be settled amicably by mutual consultation failing which shall be finally settled as per the rules of Arbitration and Conciliation Act, 1996 at the discretion of Purchaser. The venue of arbitration shall be at Mumbai in India

Events of Default

Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

(a) Supplier fails or refuses to pay any amounts due under the Contract;

(b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof

(c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;

(d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BRPL.

Consequences of Default.

(a) If an Event of Default shall occur and be continuing, BRPL may forthwith terminate the Contract by written notice.

(b) In the event of an Event of Default, BRPL may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

(i) present for payment to the relevant bank the Performance Bond;

(ii) Purchase the same or similar Commodities from any third party; and/or

(iii) Recover any losses and/or additional expenses BRPL may incur as a result of Supplier's default.

20.0 Penalty for Delay

If supply of items / equipments is delayed beyond the supply schedule as stipulated in purchase order then the Supplier shall be liable to pay to the Purchaser as penalty for delay, a sum of 1% (one percent) of the basic (ex-works) price for every week delay or part thereof for individual milestone deliveries.

The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the basic (ex-works) price

The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier.

21.0 Statutory variation in Taxes and Duties

The total order value shall be adjusted on account of any variations in Statutory Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period only. However, incase of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.

Force Majeure

General

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.

(ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause.

Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements:

(i) The following events and circumstances:

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.

b) Explosions or fires

(ii) War declared by the Government of India, provided that the ports at Mumbai are declared as a war zone.

(iii) Dangers of navigation, perils of the sea.

Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full that party shall:

i) Immediately notify the other party in writing of the force majeure events within 7(seven) working days of the occurrence of the force majeure event

ii) Be entitled to suspend performance of the obligation under the Contract which is affected by

force majeure event for the duration of the force majeure event.

iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable
iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.
v) Provide prompt notice of the resumption of full performance or obligation to the other party.

Mitigation of Events of Force Majeure Each Party shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;
(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and
(iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

Burden of Proof In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30days and neither Party shall be liable to the other for any consequences arising on account of such termination.

Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.

Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.

Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed betweenthe Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as failure to perform such obligations shall be due to and event of Force Majeure."

23.0 Transfer and Sub-Letting

23.01 The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

24.0 Recoveries

24.01 When ever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall

pay to the purchaser on demand the remaining?

25.0 Waiver

25.01 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

26.0 Indemnification

26.01 Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

SECTION – IV: QUANTITY AND DELIVERY REQUIREMENT

Sl. No.	Item Description	Specification	Total Qty.	Delivery Schedule	Destination
1	Rate Contract For Supply & Installation of LT & HT Cable End Termination & Straight Through Jointing Kits of Various Size of Cable up to 11 KV	SP-HCSTJ-03-R4 SP-HSGTR-04-R3 SP-HSTJK-05-R2 SP-LTJKT-06-R2 GN101-03-SP-52-01	As per Section V	AS PER BRPL REQUIREMENTS	BRPL Stores Delhi

Bidders seal & signature

SECTION – V: PRICE FORMAT SUPPLY AND INSTALLTION

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
11KV STRAIGHT THROUGH JOINTING KITS								
3X300 SQMM XLPE Single phase repaire	EA	379			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		126			Rocky soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
3X400 SQMM XLPE Single phase repaire without OFC	EA	3			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		2			Rocky soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
3X400 SQMM XLPE Single phase repaire with OFC	EA	3			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		2			Rocky soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
3X400 SQMM XLPE with OFC	EA	225			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		75			Rocky soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
3X300 SQMM XLPE	EA	3415			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		1138			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
3X150 SQMM XLPE	EA	270			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		90			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
3X300 SQMM PILCA	EA	4			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		1			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
3X150 SQMM PILCA	EA	3			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		1			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
3X300 SQMM TRANSITION	EA	583			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		194			Rocky soil			Usage of JCB/Pneumatic hammer for 5 hours is considered.For durarion beyond 5 hours, Use of JCB rates under **'Misc work '** will be paid
3X150 SQMM TRANSITION	EA	239			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		79			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
1X630 SQMM XLPE	EA	3			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		1			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
1X1000 SQMM XLPE	EA	3			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		1			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
3X400 SQMM XLPE (Mechanical Connector)	EA	106			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		35			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
3X400 SQMM XLPE (Ferrule)	EA	106			Soft soil			Lumpsum digging cost for 6 meters. Beyond 6 meters ,rates as per Extra digging in soft soil (>6mtr) under **'Misc Work** ' will be paid
		35			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
11KV END TERMINATION KITS - INDOOR								
3X400 SQMM XLPE OFC Embeded	EA	150			NA		0.00	Excavation is not required
3X300 SQMM XLPE	EA	1868			NA		0.00	Excavation is not required
3X150 SQMM XLPE	EA	719			NA		0.00	Excavation is not required
1X1000 SQMM XLPE	EA	135			NA		0.00	Excavation is not required
3X400 SQMM XLPE	EA	41			NA		0.00	Excavation is not required
11KV END TERMINATION KITS - OUTDOOR								
3X400 SQMM XLPE OFC Embeded	EA	50			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
3X300 SQMM XLPE	EA	910			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
3X150 SQMM XLPE	EA	585			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
1X630 SQMM XLPE	EA	1			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
1X1000 SQMM XLPE	EA	141			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
1X1000 SQMM PILCA	EA	4			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
3X150 SQMM PILCA	EA	4			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**
3X400 SQMM XLPE	EA	41			NA		0.00	Diging if required will be paid extra at per meter rates mentioned under **'Misc work'**

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
1.1KV STRAIGHT THROUGH JOINTING KITS								
4X300 SQMM XLPE	EA	3061			Soft soil			Lumpsum cost and fixed.
		1020			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
4X150 SQMM XLPE	EA	1105			Soft soil			Lumpsum cost and fixed.
		368			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
4X95 SQMM XLPE	EA	113			Soft soil			Lumpsum cost and fixed.
		37			Rocky soil			Usage of JCB/Pneumatic hammer for 6 hours is considered.For durarion beyond 6 hours, Use of JCB rates under **'Misc work '** will be paid
4X50 SQMM XLPE	EA	1380			Soft soil			Digging if required will be paid extra at per meter rates applicable for soft soil as mentioned under **'Misc work'** subject to approval of CH
		460			Rocky soil			Digging if required will be paid extra at per meter rates applicable for rocky soil as mentioned under **'Misc work'** subject to approval of CH
4X25 SQMM XLPE	EA	1022			Soft soil			Overahead lines and hence no digging required
		340			Rocky soil			Overahead lines and hence no digging required
2X10 SQMM XLPE	EA	3			Soft soil			Overahead lines and hence no digging required
		1			Rocky soil			Overahead lines and hence no digging required
2X25 SQMM XLPE	EA	3			Soft soil			Overahead lines and hence no digging required
		1			Rocky soil			Overahead lines and hence no digging required

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST		Total in Rs. (X+Y+Z)*A	Remarks
1.1KV END TERMINATION KITS								
4X300 SQMM XLPE	EA	4688			NA			Digging if required will be paid extra at per meter rates mentioned under **'Misc work'** subject to approval of CH
4X150 SQMM XLPE	EA	656			NA			Digging if required will be paid extra at per meter rates mentioned under **'Misc work'** subject to approval of CH
11KV AB CABLE END TERMINATION KITS								
1X150 SQMM XLPE	EA	6528			NA			Span replacement **OR** dismantling& installation whichever is required based on the site need will be paid (if done by the vendor) afer due certification by CH
1X95 SQMM XLPE	EA	7060			NA			Span replacement **OR** dismantling & installation whichever is required based on the site need will be paid(if done by the vendor) afer due certification by CH
11KV AB CABLE ST THROUGH JOINTING KITS								
1X150 SQMM XLPE	EA	3465						Dismantling and installation if required for making straight through joint, if done by the vendor will be paid after due certification by CH
1X95 SQMM XLPE	EA	3309						Dismantling and installation if required for making straight through joint, if done by the vendor will be paid after due certification by CH
Misc work								
Extra digging in soft soil (>6mtr)	Rs/Mtr	4253	N/A	N/A				
Extra digging in rocky soil (>6mtr)	Rs/Mtr	1418	N/A	N/A				
Use of JCB	Rs/Hr	189						

Descriptions	UoM	Qty	Supply Rate in Rs. /joint in Rs. incl. GST	Installation rate in Rs. /joint in Rs. incl. GST	Lump Sum digging cost / dismantling & installation of AB cable in Rs. incl. GST	Total in Rs. (X+Y+Z)*A	Remarks

Note:

1) The LS amount of digging is applicable (up to 6mtr). Over and above the Lump Sum digging rate which is upto 6mtr and required JCB ,the approval of Circle (Head) is mandatory.No extra payment shall be given for fault related digging / dismantling & installation of AB cable and it is to be under Lump Sum cost of AB cable jointing required for attending the fault.

2) HTAB cable replacement is included in the scope of HTAB cable jointing and termination
3) ETC of RFID Ball (Active/Passive) for all kind of straight through joint of 11kV is included in jointing scope including Issuing, transporation from store to site
4) Installation of coffin to cover the joint including sand filling as well as transportion from BRPL store to site is included in jointing scope
5) The rate of digging in rocky soil includes the use of JCB/Hammers
6) Wherever JCB is required to be used in soft soil , normal digging line items rate shall not be applicable and applicable JCB rates will be paid.
7) Use of JCB/pneumatic hammer wherever required has to be duly certified by the CH
8) Normal digging rate & digging with JCB can not be claim at a time

Additional information

1) Wherever AB cable span replacement /dismantling & installation is required to be done by the vendor for repairing the fault , it will be paid at the rates as mentioned with due approval of Circle Head
2) No digging is considered for 1.1 KV straight through joints for cable sizes 25 sq.mm and below
3) Charges for digging mentioned against rocky soil assumes JCB/pneumatic hammer use for 6 hours
4) For usage of JCB /pneumatic hammer above 6 hours ,extra hour will be paid per hour
5) Quantities mentioned above are all indicative and will vary based on actual site requirement .
6) ETC of RFID Ball (Active/Passive) for all kind of straight through joint of 11kV is included in jointing scope including Issuing, transporation from store to site
8) All the rates mentioned above are inclusive of GST

BSES RAJDHANI POWER LIMITED

SECTION VI

BID FORM

To

Head of Department
Contracts & Material Deptt.
BSES Rajdhani Power Ltd
1st Floor, C Block
BSES Bhawan, Nehru Place
New Delhi 110019

Sir,

1 We understand that BRPL is desirous of procuring of …….. in it's licensed distribution network area in Delhi
Having examined the Bidding Documents for the above named works, we the undersigned, offer to deliver the goods in full conformity with the Terms and Conditions and technical specifications
2 If our Bid is accepted, we undertake to deliver the entire goods as) as per delivery schedule mentioned in Section IV from the date of award of purchase order/letter of intent.
3 If our Bid is accepted, we will furnish a performance bank guarantee for an amount of 10% (Ten)percent of the total contract value for due performance of the Contract in accordance with the Terms and Conditions.
4 We agree to abide by this Bid for a period of 120 days from the due date of bid submission and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5 We declare that we have studied the provision of Indian Laws for supply of equipments/materials and the prices have been quoted accordingly.
6 Unless and until Letter of Intent is issued, this Bid, together with your written acceptance there of, shall constitute a binding contract between us.
7 We understand that you are not bound to accept the lowest, or any bid you may receive.
8 There is provision for Resolution of Disputes under this Contract, in accordance with the Laws and Jurisdiction of Contract.

Dated this..... day of 2021
Signature..... In the capacity of ……

.....duly authorized to sign for and on behalf of(IN BLOCK CAPITALS)
.....

BSES RAJDHANI POWER LIMITED

SECTION VII
FORMAT FOR EMD BANK GUARANTEE

(To be issued in a Non Judicial Stamp Paper of Rs.50/-purchased in the name of the bank)

Whereas [*name of the Bidder*] (herein after called the "Bidder") has submitted its bid dated [*date of submission of bid*] for the supply of [*name and/or description of the goods*] (here after called the "Bid").

KNOW ALL PEOPLE by these presents that WE [name of bank] at [*Branch Name and address*],having our registered office at[*address of the registered office of the bank*](herein after called the "Bank"),are bound unto BSES Rajdhani Power Ltd., with it's Corporate Office at BSES Bhawan Nehru Place, New Delhi -110019 ,(herein after called —the "Purchaser")in the sum of …….. (Rupees…….only) for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents.

Sealed with the Common Seal of the said Bank this_____day of_____2021.

TH E CONDITIONS of this obligation are:

If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form ; or

2. If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:

(a) fails or refuses to execute the Contract Form ,if required; or

(b) fails or refuses to furnish the performance security, In accordance with the Instructions to Bidders/ Terms and Conditions;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including One Hundred Twenty (120) days after the due date of submission bid or amendments, whichever is later, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness(s)

BSES RAJDHANI POWER LIMITED

COMMERCIAL TERMS AND CONDITIONS - SUPPLY

Sl No	Item Description	AS PER BRPL	BIDDER'S CONFIRMATION
1	Validity	120 days from the due date of tender	
2	Price basis	a) Firm, FOR Delhi store basis. Prices shall be inclusive of all taxes & duties, freight upto Delhi stores. b) Unloading at stores shall be in vendor's scope c) Transit insurance in BRPL scope	
3	Payment terms	100% payment within 45 days after receipt of material at stores	
4	Delivery schedule	25% of PO qty per month	
5	Defect Liability period	60 months after commissioning or 66 months from the last date of dispatch, whichever is earlier	
6	Penalty for delay	1% per week of delay of undelivered units or part thereof subject to maximum of 10% of total PO value of undelivered units	
7	Performance Bank Guarantee	10% of total PO value valid for 24 months after commissioning or 30 months from the last date of dispatch, whichever is earlier plus 3 months towards claim period	

BSES RAJDHANI POWER LIMITED

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed & stamped by the bidder along-with bid)

BSES Rajdhani Power Ltd (BRPL) intends to use reverse auction through SAP-SRM tool as an integral part of entire tendering process. All bidders who are techno-commercially qualified on the basis of tender requirements shall participate in the reverse auction.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid:-

1. In case of bidding through Internet medium, bidders are advised to ensure availability of all associated infrastructure as required to participate in the reverse auction event. Inability to bid due to telephone glitch, internet response issues, software & hardware hangs/failures, power failures or any other reason shall not be the responsibility of BRPL.

2. In case bidder fails to participate in the reverse auction event due to any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid submitted by them as a part of tender shall be considered as bidder's Final No Regret offer. Any off-line price bids received from a bidder in lieu of non-participation in the reverse auction event shall be rejected by BRPL.

3. The bidder is advised to understand the auto bid process safeguard themselves against any possibility of non-participation in the reverse auction event.

4. The bidder shall be prepared with competitive price quotes during the day of reverse auction event.

5. The prices quoted by bidder in reverse auction event shall be on FOR Landed cost BRPL Store/site basis inclusive of all relevant taxes, duties, levies, transportation charges etc.
6. The prices submitted by the bidder during reverse auction event shall be binding on the Bidder.

7. The bidder agrees to non-disclosure of trade information regarding bid details e.g. purchase, identity, bid process/technology, bid documentation etc.

8. BRPL will make every effort to make the bid process transparent. However award decision of BRPL will be final and binding on the bidder.

9. The prices submitted during reverse auction event shall be binding on the bidder.

10. No request for Time extension of the reverse auction event shall be considered by BRPL.

Bidders seal & signature

BSES RAJDHANI POWER LIMITED

TERMS & CONDITIONS FOR INSTALLATION WORK:

1. Definition:

The following terms & expressions as used in this work order shall have the meaning defined and interpreted here under:

Company: The terms "Company" shall mean BSES Rajdhani Power Limited having its office at BSES Bhawan, Nehru Place, New Delhi-110019 and shall included its authorized representatives, agents, successors and assigns.

Contractor: Contractor shall mean the successful vendor to whom the contract has been awarded

Rate: The unit rates for the work to be carried out at site shall be as per finalized unit rates through tender. The Invoice of the Contractor will be processed as per the actual work done and the quantities of each items performed by the Contractor as per the site requirement to be certified by Engineer In-charge.

The finalized rates shall be firm for the entire duration of work to be carried out by the Contractor under the work order and are not subject to escalation for any reason whatsoever.

Work Order Specification: The terms "work order Specification" shall mean the Technical specification of the work as agreed by you and description of work as detailed in ANNEXURE enclosed and all such particulars mentioned directly/referred to or implied as such in the work order.

Site: The terms "Site" shall mean the working location mentioned in the work order.

2. ENGINEER IN-CHARGE: The term "Engineer In-Charge" shall mean the Company's nominated representative for the purpose of carrying out the work.

3. EXAMINATION OF SITE AND LOCAL CONDITIONS:

The contractor is deemed to have visited all the sites comes under BRPL licensed area under the work order and ascertained therefore all site conditions and information pertaining to his work. The company shall not accept any claim whatsoever arising out of the difficulties at site/terrain/local conditions, if any.

4. LANGUAGE AND MEASUREMENT:

The work order issued to the contractor by the company and all correspondence and documents relating to the work order placed on the Contractor shall be written in English language. Metric System shall be followed for all dimension, units etc.

5. SCOPE OF WORK:

The scope of work of the contractor shall be “setting up a complaint centre to cater to the demands of BRPL, in respect of repair and installation of 1.1KV and 11KVCables Joints and Termination.

The detailed scope of work shall be as under:

1. The contractor shall provide services for establishing a 24x7 call centre for attending to complaint calls, to guide BRPL for detection of cable fault and repair the cable. The complaint will be registered all 24 hours a day. Work for the complaint registered between 12 O'clock in night and up to 8AM in the morning shall commence at 8 AM on the same day. However, in case of emergency and on specific request from BRPL, work shall be carried out in the night as well, and the CONTRACTOR shall endeavor on best effort basis to attend to the fault forthwith.

2. For the above the contractor shall establish a 24x7 Call Centre. The location of the call centre shall be in BRPL area. Telephone Nos. of the Call centers shall be made available by the contractor to BRPL. Telephone Nos. of all concerned officers pertaining to each zone of BRPL shall be made available by BRPL to the contractor. CONTRACTOR shall establish the Call Centre with Telephone connection, Fax machine, 2 Nos. computer with LAN/WAN, with printer, accessories and stationery.

Also, CONTRACTOR shall arrange call logging and Data entry operators one for each shift.

CONTRACTOR shall depute minimum one supervisor, and adequate numbers of MV and HV Jointers per circle. One Vehicle for each Call Centre shall be deployed by CONTRACTOR for 24 hours service.

3. Call shall be made at the call centre of CONTRACTOR by authorized Junior Engineer (JE)/ Assistant Engineer (AE) of BRPL, informing about the occurrence of cable fault. All further co-ordination related to the reported fault shall be made with the concerned JE/AE of the area concerned. A list of the authorized JEs/AEs shall be provided by BRPL to CONTRACTOR.

4. BRPL will ensure that the feeder/cable on which the fault has been reported is isolated and safeguarded for fault location. The cable so isolated and safeguarded shall be discharged by the JE/AE in the presence of CONTRACTOR representative and handed over to CONTRACTOR representative along with PTW (Permit to work). All equipments in the sub-station, other than the one taken over shall be treated as live.

5. After location of the fault is known, and BRPL has taken due permissions from the Municipal Corporation of Delhi (MCD) and/or Public Works Department (PWD) and/or Traffic and/or Local police and /or such other agencies, as may be necessary in this regard, CONTRACTOR shall commence the work for excavation at the site

6. Any cable identification and puncturing shall be done by BRPL. CONTRACTOR shall provide the necessary assistance and arrange for cutting of the cable only after identification.

7. If, for any reason, CONTRACTOR can not do jointing on the same day as the cable is cut, then the ends of cable shall be sealed by CONTRACTOR to prevent entry of moisture. Heat shrinkable Cable end caps shall be provided by BRPL for sealing of the cable.

8. After isolation of the fault by CONTRACTOR, the insulation resistance of the cable shall be measured to verify its healthiness as per the specification given in ANNEXURE- B. The test shall be done using 2.5/5KV Megger for HV cable and 500V Megger for LT cable. Moisture test shall be done by CONTRACTOR for HT cable to check the presence of moisture. If the result of the Insulation Resistance (IR) test is unsatisfactory then an HV test shall be carried out on the cable. Equipments and materials for HV tests, megger and moisture checking shall be arranged by CONTRACTOR. CONTRACTOR shall install cable accessories on healthy cables as per the specification in ANNEXURE-B. However, if in an emergency situation, BRPL would like CONTRACTOR to carry out the jointing/termination on cables with presence of moisture or having poor IR result, BRPL will not invoke the Guarantee clause or levy damages or take any consequential action for failure, if any.

9. CONTRACTOR shall carry out the jointing of cables only after obtaining written clearance from BRPL Engineers. BRPL shall issue free of cost all the required materials to CONTRACTOR, including but not limited to cable pieces, cable jointing /terminating kits, Heat shrinkable end caps, mechanical connectors, special Kits for jointing dissimilar size metal cables, clamps, cleats, jumpers, parallel groove(PG) clamps, Hume pipes and any other materials required to carry out the job. Any other incidental work including hand tools, crimping machine required for carrying out the jointing work shall be arranged by CONTRACTOR.

10. Installation of all joints and termination shall be carried out as per instruction manual. Non-standard kits or methods shall not be adopted by CONTRACTOR for any such work without prior written permission. Crimping of lugs and ferrules shall be carried out using crimping tools. CONTRACTOR shall deploy only trained and skilled jointers with the requisite knowledge of the job.

11. CONTRACTOR shall issue identity cards to its personnel deployed for execution of the assigned work in the various zones.record of all the faults attended shall be maintained in a computerized data base format, approved by BRPL and shall be forwarded monthly basis as per annexure-I

12. CONTRACTOR shall ensure that adequate resources of men and material are deployed for each job and the work is completed within the target time as defined below. CONTRACTOR will adhere to the target period from the time of spiking of the faulty cable for different type of faults as details below.

11KV Faults	: 4 hours
1.1KV Faults	: 2 hours

However, if due to site conditions or factors beyond the control of BRPL and/or CONTRACTOR, the job is delayed, then the target date will be revised jointly by BRPL and CONTRACTOR.

The delay may, inter alia, be for any of the following reasons:

a) Moisture in the cable due to which the excavation has to be extended.

b) Cable is very deep.

c) Job is suspended due to external interference like Traffic Police, PWD, MCD or general public.

d) Non- receipt of required material from BRPL.

e) Any of the consents/ approvals not being granted or delayed by the relevant authorities upon application having been made or granted but ceasing to be in full force for the required period to carry out the job.

f) Trench-less cable laying is done.

g) Digging involved is in excess of 10 meters.

13. BRPL shall arrange for fault Location, pinpointing the cable and spiking of cable. CONTRACTOR shall arrange excavation, backfilling, drawing of materials from the District stores, testing of cables before and after jointing and other allied works include lighting, dewatering, providing tents and related civil works. All labour for cable handling, pulling, laying and related civil works shall be in scope of CONTRACTOR.

14. DIGGING & EXCAVATION

CONTRACTOR scope of work will be:

a) Carrying out the necessary excavation to uncover the faulty cable portion /accessory and also uncover the required cable length for the jointing /termination installation.

b) Removing the faulty section.

c) Testing the installation involving the cable and accessories, if necessary and applicable.

d) Transportation the faulty section back to the Divisional Stores.

e) Transporting the site the required material and equipment for repairing the faulty cable.

f) Carrying out the installation of cable, Hume pipe, Joint markers provide Lighting (where necessary), provide for the removal of the subsoil water, provide tents etc. for the safe installation of the kits.

g) Hi- potential testing / Megger testing of the repaired installation, as required.

h) Burying the cable and accessories that were excavated after providing the cable covers and sand filling, bricks, etc.

i) Submitting a report to BRPL of the work done and fault location at periodic intervals, as may be mutually agreed with BRPL.

j) Location of fault upon receiving intimation from BRPL as per para 4 above.

k) If a cable is used in between two joints the joint will be considered as double straight through joint irrespective of length of cable laid in between.

l) Cable laying in excess of 30 mtrs and upto 100 mtrs shall be approved by concerned AGM#s. In special cases where cable laying is in excess 100 mtrs, the same will not be covered under the scope of this rate contract. Such cases of cable laying including jointing will be carried out by agency under separate scheme which will be prepared by concerned manager.

m) Rates for cable laying include overhead cable laying as well.

The contractor shall provide petty material such as old cloths, waste cotton, gas cylinder, hexa blade, kerosene oil, amry papers, brick and sand to cover the joints. Removal of surplus malba as far as possible is also under contractor's scope.

15. CONTRACTOR shall make necessary arrangements of all facilities such as temporary lighting, sanitary installation, fire protection, disposal of waste, etc. Necessary warning lights shall be arranged by CONTRACTOR on trenches, which have to kept open overnight. The barricading of the sites shall be done by CONTRACTOR as required at site. The electricity for lighting can be taken from any of the installation of BRPL if possible.

16. BRPL's Responsibilities will include:

a) BRPL will assist CONTRACTOR in identifying the cable routes to the extent possible, in the areas allotted to CONTRACTOR.

b) Inform CONTRACTOR about the fault occurrence.

c) Isolate and safeguard the cable and hand over the same to CONTRACTOR along with the PTW.

d) Issuing a #Satisfaction Report# hereto within 24 hours of the completion of each job

e) BRPL will issue all the required materials, for making a satisfactory completion of all jointing jobs based on the requisition made by the CONTRACTOR. Contractor's scope is to draw the material from the District Stores of BRPL. However, if required, materials can be drawn in advance from the zonal Stores to meet exigencies.

(g) BRPL shall, if required, allocate storage space at various locations to store materials required for carrying out the cable repair work.

(h) Any work which is not covered under the scope of this agreement shall be carried out only based on the specific written request of BRPL and on the payment terms to be mutually agreed between the Parties.

17. REPAIR WORK:

(a) BRPL will spike the cable in the presence of CONTRACTOR representative, prior to the repair work being carried out as per the work schedule.

(b) Further BRPL reserves the right of engaging any other agency or resorting to any other suitable means to carry out these jobs in the event of workmen of CONTRACTOR refusing to work, going on strike or for any

other reason likely to delay the fault repair inordinately. Differential of repair expenses, if any, will be deducted from Contractor's bill to the extent not exceeding the amount which CONTRACTOR would have billed for the said work on the basis of the rates and other terms & conditions of this Agreement. Prior to doing so, BRPL will call upon CONTRACTOR by giving a notice in writing to carry out the job within half the time set

18. RECORD KEEPING:

CONTRACTOR will maintain the following records:

(a) Details of the complaints received.(Annexure-I)

(b) Detailed job cards for the repairs undertaken (Annexure-II)

19. HUMAN RESOURCES:

i) CONTRACTOR personnel will meet their own expenses when deputed for the execution of work. At no point of time during the currency of contract, CONTRACTOR employees shall press upon BRPL for employment, wages and allowances or any other related matter, payments etc.

ii) CONTRACTOR shall bear all expenses / cost to be incurred towards salary, allowance, perks travelling allowances, advances, insurance, safety measures, security, transport and all other misc. expenses etc. of their employee / workmen during the currency of this Agreement. Also CONTRACTOR shall be sole responsible for making payment for hospitalization, compensation thereof in case of any accident of it#s own personnel subject to the Liabilities clause.

20. GEOGRAPHICAL COVERAGE:

CONTRACTOR will independently establish one Complaint Centre for each circle (one for South circle & one for West circle)

21. PRICE/RATE:

The prices shall be as finalized by the tender process. The prices are firm and final during the tenure of this agreement. No escalation and variation shall be allowed.

22. TERMS OF PAYMENT

CONTRACTOR will raise invoices for the fixed charges on a monthly basis. CONTRACTOR will raise invoices on a monthly basis for the work executed which will be verified by the respective area Manager. All certified bill should be send to respective Circle Heads (O&M) for system verification before submitting to finance department

100% payment will be released to CONTRACTOR within 30 days of submission of Contractor's invoice at BRPL, Nehru Place Office along with the work completion certificate. The work completion certificate (Job Card) should be issued by concerned JE/AE by certifying that the work has been completed in full satisfaction of all relevant clauses applicable under the work order and

all the documents in support of the certification shall be enclosed. The concerned JE/AE of BRPL shall sign the job card within 24 hours of the -work completion which consists following:

filling of all the following fields in the Job cards for cable joints is must for each job performed by the agency in BRPL.

1. The new Job Card has provision for recording cross-reference of Fault ID (generated by OMS), which is mandatory.

Exceptions where fault ID is not generated, approval of Head (O&M) is required.

2. Cross reference of Job Card No is to be recorded on the corresponding cable fault screen in OMS.

3. Progressive certification is required by the B/D Maintenance Engineer during close of his shift.

4. In addition to certification by the Maintenance Engineer, the Job Card has to be certified by the Shit-in-Charge in which the job is completed.

CONTRACTOR shall submit Performance Bank Guarantee in mutually acceptable format for an for an amount of Rs. 10, 00,000/- (Rupees Ten Lacs only) valid up to 18 months from the date of this agreement.

Note: Instruction as given in Annexure III (Standard Operating Procedure) are to be followed while verification of Cable Jointing Bills.

24. TAXES

All taxes, duties, turnover tax, labour cess etc (except service tax.) leviable by State or Central Governments or local bodies shall be to Contractor's account. Any taxes and duties as may be levied by the government in future during the currency of this Agreement shall be borne by BRPL. Income tax /WCT will be deducted at source from the invoices of CONTRACTOR at the rates in force. CONTRACTOR shall furnish their Service Tax

Registration number. Service tax shall be paid extra at actual. Any variation in the taxes and duties shall be to BRPL account.

25. GUARANTEES:

All CONTRACTOR installations done by CONTRACTOR jointers or CONTRACTOR authorized representatives during the tenure of this agreement shall be guaranteed for good performance for a period of 5 years from the date of installation for joints or terminations and 2 years for LT Joints and terminations. **Individual joints/ terminations shall be properly tagged by Contractor clearly mentioning date of jointing/ termination on the tag.**

In the event of any failure of the joints or terminations due to poor workmanship or design or manufacturing defects, then CONTRACTOR shall replace such joints and termination and make the joint and terminations including excavation and restoration to BRPL free of cost.

26. LIQUIDATED DAMAGES:

The jointing work shall be completed within the stipulated time as defined. If the work is not completed within the stipulated period in clause no. 12 of the Agreement, CONTRACTOR shall liable to pay the liquidated damages for any delay beyond the time mentioned. BRPL shall recover liquidated damages @ 0.5% per hour per job, subject to a maximum of 5 % per job amount involved.

27. STATUTORY OBLIGATIONS:

CONTRACTOR shall take all steps necessary or otherwise, to comply with the various applicable laws, rules, regulations, notifications, including, the provisions of Contract Labour (Regulation & Abolition Act 1970) as amended, Minimum wages Act, 1984, Workmen Compensation Act, ESI Act, PF Act, Bonus Act and all other applicable laws and rules framed there under including any statutory approvals required from the Central/State Governments or the Ministry of Labour.

28. WORKMEN COMPENSATION:

CONTRACTOR shall take insurance policy under the Workman Compensation Act to cover such workers who are not covered under ESI and PF by the Contractor however engaged to undertake the jobs covered under this order and a copy of this insurance policy will be given to Company for reference and records. This insurance policy shall be kept valid at all times. In case there are no worker involve other than those who are covered under ESI and PF by the Contractor, the Contractor shall certify for the same.

CONTRACTOR shall keep BRPL indemnified at all times, against all claims that may arise under this agreement, including claims of compensation under the provisions of Workmen Compensation Act 1923 and as amended from time to time or any compensation payable under any other law for the time being in force by any workman engaged by CONTRACTOR in carrying out the job involved under this agreement and against costs and expenses, if any, incurred by BRPL in connection therewith and without prejudice to make any recovery.

BRPL shall be entitled to deduct from the moneys due to CONTRACTOR under this Agreement, moneys paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and BRPL and CONTRACTOR shall mutually agree upon the sums payable by CONTRACTOR under the provisions of this clause.

Nothing contained in this agreement, shall establish any relationship of any kind between BRPL on the one hand and the employees, workmen and labourers, of any kind whatsoever of CONTRACTOR on the other hand.

29. DOCUMENTATION:

CONTRACTOR shall submit the following documents to the Engineer -in-Charge, within a week of commencement of the agreement:

i.) Copy of the document showing legal status of the firm along with names and addresses of the Senior Management personnel

ii.) Copy of the document showing allotment of PF code number by RPFC office.

iii.) Copy of insurance policy obtained to comply with the provision of the Workman compensation Act, 1923.

Nothing contained herein shall limit the nature of documents that BRPL may require CONTRACTOR to submit to BRPL.

30. SAFETY CODE:

CONTRACTOR shall ensure adequate safe conditions and ensure safety precautions at Site as required under applicable laws and shall be solely and entirely responsible for the complete safety of its workmen as well as other workers at site

CONTRACTOR shall also obtain accident liability insurance at its own cost for its employees and pay compensation on account of injury, fatal or otherwise due to accident during service and shall indemnity BRPL against any such claim.

BRPL shall ground and lock the feeder on which the joint/termination work is carried out and hand over the PTW and Keys to CONTRACTOR. BRPL shall ensure that the feeder is not charged till the time PTW and Keys are returned to BRPL.

31. LIABILITIES:

CONTRACTOR will obtain a third party insurance, to cover all losses, accidents, injuries, damages, claims, etc., which may be made or levied by any person or persons either against CONTRACTOR or BRPL subject to maximum limit of 2 Lacs.. CONTRACTOR shall be responsible for any accidents, injuries to its personnel, whileproviding services under this Agreement. BRPL shall, however, be responsible for any act of omission or commission, which may cause any accident, damage, injury including to Contractor's personnel.

Since CONTRACTOR has no privity with the ultimate customer of BRPL, BRPL will indemnify and keep indemnified CONTRACTOR against any loss, damages, claims, etc. BRPL will bear and pay

all costs and expenses of CONTRACTOR in the event of CONTRACTOR being dragged to Court or any judicial or quasi-judicial body, or any other authority.

32. GOVERNING LAW AND ARBITRATION:

Governing Law.

This agreement shall be governed by the laws of India and each party submits to the exclusive jurisdiction of the courts in New Delhi.

Dispute Resolution Mechanism.

All disputes and differences arising out of or in connection with this Agreement shall in the first instance be resolved amicably by mutual discussions of the CEOs of BRPL and CONTRACTOR. If the dispute cannot be resolved by mutual discussions and agreement the parties will take such dispute to an arbitration panel comprising three arbitrators. The parties shall be entitled to appoint one arbitrator each and the two arbitrators so appointed shall appoint the third arbitrator who shall act as presiding arbitrator. The party seeking to invoke arbitration shall appoint its arbitrator in its notice of arbitration. The other party shall appoint its arbitrator and intimate the same within thirty days of the receipt of the notice of arbitration. In the event that such party fails to appoint its arbitrator within the specified period the arbitrator named in the notice for arbitration shall decide the dispute as the sole arbitrator. The arbitration shall be conducted in New Delhi in accordance with the provisions of the Arbitration and Conciliation Act 1996. The award of the arbitral panel shall be final and binding on all parties. The arbitration proceedings shall be conducted in English. The costs of arbitration shall be borne equally by CONTRACTOR and BRPL.

33 REPRESENTATION, WARRANTIES AND GUARANTEES

CONTRACTOR hereby represents warrants and guarantees that:

(i) It is a legally registered entity under the laws of India;

(ii) The agreement contains valid and binding obligations and is enforceable in accordance with the terms hereof;

(iii) It has studied the technical feasibility, Site conditions and other prevailing conditions and all other operational details and based on these studies carried out, has agreed to provide to BRPL the services as contemplated in this agreement;

(iv) It has appraised itself of all applicable rules and regulations, and shall at all times comply with such rules and regulations;

(v) It shall procure/hire vehicles and manpower suitable for the purposes of this agreement to render services as contemplated in this agreement;

(vi) The Services would be conducted in a safe and efficient manner at the Site and at all times in compliance with Good Industry Practices and requirements of BRPL;

(vii) It shall duly pay the duties, taxes and levies as are set out in this agreement. which are to be paid by CONTRACTOR;

(viii) There is no action, suit or proceeding, at law or in equity, or to the best of its knowledge, any official investigation before or by any governmental authority, arbitration tribunal or other body pending or, to the

best of its knowledge, threatened against or affecting it or any of its property, rights or assets, which could reasonably be expected to result in a material adverse effect on its ability to perform its obligations under this agreement or on the validity or enforceability of this agreement;

34. FORCE MAJEURE:

Force Majeure means any of the following events or circumstances if such event is beyond the reasonable direct or indirect control of CONTRACTOR and which results in Contractor's inability to perform its obligations in whole or in part:

(a) Strike or other industrial dispute or disturbance other than lockouts;

(b) Act of foreign enemy, war (whether declared or undeclared), revolution, coup d#etat, terrorist act, blockade insurrection, arson, disturbance of public order, sabotage and act of vandalism;

(c) Ionizing radiation, or contamination by radioactivity from nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive, toxic, explosive, nuclear assembly or nuclear component thereof;

(d) Acts of God such as lightning, storm, cyclone, hurricane, typhoon, flood, tidal wave, earthquake, landslide, epidemic or similar cataclysmic event;

(e) Explosion or fire;

(f) Any legislation law, directive, regulation rule, decree, order restraint or other action by public sector entity or other Governments and all supranational, national or local agencies, authorities, departments, ministries and officials;

35. SECRECY CLAUSE:

The technical information and other related documents forming part of this agreement and the information obtained by either party during the course of investigation under this agreement shall be the exclusive property of either party and shall not be used by either party for any other purpose except for the execution of the agreement. The technical information drawing, records and other document shall not be copied, transferred, or divulged and/or disclosed to any third party in full/part, not misused in any form whatsoever by either party except to the extent for the execution of this agreement.

The technical information and other related documents shall be returned by either party to each other with all approved copies and duplicates including all details as are prepared during the execution of this agreement, if any, immediately after they have been used for agreed purpose.

In the event of any breach of this provision, either party shall indemnify each other against any loss, costs or damages or claims by either party in respect of such breach.

Both the parties agree not to use their names in any manner either for credit arrangement or otherwise and it is agreed that either party shall not in any way be responsible for the debts, liabilities or obligations of the other and/or its employees.

36. Both parties to the Agreement hereby covenant that neither party shall be responsible for theft if any committed by its staff and they shall indemnify each other from and against all claims, demands, actions, suits and proceedings, whatsoever that may be brought or made against the other by or on behalf of any person, body, authority whatsoever and whomsoever and all duties, penalties, levies, taxes, losses, damages, costs, charges and expenses and all other liabilities of whatsoever nature which each party may be liable to pay, incur or sustain by virtue of or as a result of the performance or non performance or observance or non observance of any of the terms and conditions of this contract.

37. INDEMNIFICATION

CONTRACTOR shall indemnify at all times BRPL and hold harmless all directors and employees of BRPL against any claims, law suits or damages occurring as a result of the award of this contract or due to the operation, maintenance and administration of this contract and against costs and expenses, if any incurred by BRPL in connection therewith and prejudice to make any recovery.

38. Subletting

The Contractor shall not sublet, transfer, assign contract or any substantial part there of without the written permission of the Company.

39. NON-EXCLUSIVITY

The award of agreement to CONTRACTOR shall not preclude BRPL from awarding the same order for similar work at the same rates, or on any terms and conditions to other party or parties.

40. TERMINATION CLAUSE

The agreement can be terminated by either party before the expiry of its term by giving 30 day notice under the following conditions:

i) Either party fails to perform as per the terms of this agreement.

ii) It is found by either party that the other has intentionally manipulated or corrupted the data, or disclosed any of the contents of the details to any third party.

iii) Either party repudiates this order or otherwise evidences intention not to be bound by this agreement;

iv) Either party assigns, mortgages, or charges or purports to assign, mortgage, or charge any of its obligations or rights in contravention to the provisions of this order; or, transfers or novates any of its obligations in contravention to the provisions of this agreement.

v) Breach of the Secrecy Clause.

vi) If at any stage during the tenure of the agreement , either party is found to be involved or indulging or even attempting illegal, unlawful action or activities or some fraudulent or even trying to give bribe official/staff or misuse or abuse any data of the other.

Prior to giving the termination notice, both parties will exhaust the remedy of:-

(a) the aggrieved party will call upon the other party to rectify the grievance/ issue within a period of 45 days; failing which

(b) a committee comprising of two representatives, each of CONTRACTOR and BRPL resolving the issue; failing which

(c) the CEOs of BRPL and CONTRACTOR resolving the issue; failing which

It is agreed and understood that only on the failure of the above three options, will the party contemplating termination give the Notice of Termination

41. PERSONNEL:

CONTRACTOR shall maintain supervisory and other personnel round the clock for efficient operation of the system.

The personnel shall have adequate qualification and experience for performing the job.

If any of Contractor's personnel is, in the opinion of BRPL, guilty of any misconduct or incompetence or negligence, then, if so directed by BRPL, CONTRACTOR shall at once remove such employee and replace it by a qualified and competent substitute within a mutually agreed time frame.

CONTRACTOR shall issue identity cards to its employees deployed for execution of the assigned work in the Circle.

42. ENTIRE AGREEMENT:

This Agreement hereto contains the complete understanding between BRPL and CONTRACTOR with respect to the matters contained herein and supersedes all other agreements, whether written or oral with respect to the matters contained herein.

43. AMENDMENT:

Any modification, amendment or other change to this Agreement shall be affected only by a written instrument signed by the authorized representatives of both BRPL and CONTRACTOR.

ANNEXURE-A

The Contractor must submit the following to Engineer-In-Charge before commencement of work:

a) An Electrical license. (If applicable)
b) PF Code No. and all employees to have PF A/c No. under PF every Act, 1952.
c) All employees to have a temporary or permanent ESI Card as per ESI Act.
d) SSI Registration No.
e) PAN No.
f) Work Contract Tax/VAT Registration Number.
g) Labour License under Contract Labour Act (R & A) Act 1970 (All Engineer-in-charge responsible for execution of the job should obtain a copy of Labour License as per guidelines of HR department before start of the work by the contractor.)

The Contractor must follow:

a) Third party Insurance Policy before start of work.
b) To follow Minimum Wages Act prevailing in the state.
c) Salary/ Wages to be distributed in presence of representative of Company's representative not later than 7th of each month.
d) To maintain Wage-cum-Attendance Register.
e) To maintain First Aid Box at Site.
f) Latest P.F. and E.S.I. challans pertaining to the period in which work was undertaken along with a certificate mentioning that P.F. and E.S.I. applicable to all the employees has been deducted and deposited with the Authorities within the time Limits specified under the respective Acts.
g) Workman Compensation Policy. (If applicable)
h) Labour license before start of work. (If applicable)

ANNEXURE B

Guidelines for Excavation and Cable Laving

(1) Once the fault is pinpointed and the location of fault is known, CONTRACTOR shall deploy his crew for excavation. Meanwhile 'an Intimation letter with all the relevant details and duly signed by the JE/AE shall be submitted at the office of the MCD/PWD. ,

2) Use of crow bars shall be restricted for removal of the hard upper crust of the earth. Thereafter, excavation shall be carried out with pick axes.

3) If during the progress of excavation warning covers of our cables or of other utilities are exposed, earth around these covers shall be scooped carefully with Phawra, fencing pins or tip of a pick axe. After loosening the covers they shall be removed and stacked for reuse. Every care shall be taken not to damage any of the utilities during the course of work.

4) The entire trench along the length shall be barricaded with corrugated sheets painted with red and white strips.

5) Warning lights shall be provided over the trench in the night.

6) Wherever crossing of lanes are involved, cable shall be laid in hume pipes.

7) The excavated material should be stacked on both sides of the trench to avoid inconvenience to public and traffic.

8) In case the depth of the trench is more than 1.5mtrs, appropriate shoring of walls' shall be done to prevent collapse of the excavated trench,

9) Wherever possible, the depth of the cable that shall be laid for repair will be as given below:

LT cable (1.1 KV) - 0.6m

HV cable (11 KV) - 0.9m

10) The jointing pit shall preferably be of the size 2m x 5m, as to give enough working space for the jointer.

11) In case the HT cable that is cut, is to be kept open in the trench for more than 2 days then the ends of the cable shall be sealed. Sealing can be done by plumbing for PILC cables and by sealing caps for XLPE cables.

12) If digging or jointing is to be done in the evening or night then arrangement for lighting for sufficient illumination shall be made by CONTRACTOR,

13) The jointing pit shall be covered with tarpaulin or plastic sheet before the jointing work is started.

14) After jointing work is over, soft soil (available at site) sand shall be used for backfilling.

15) While backfilling, care should be taken to consolidate the earth below the joints and cables to avoid subsequent subsidence.

16) While backfilling, the crown of the earth left shall be between 50mm to 100mm above road surface and shall be free from sharp stones and boulders. The backfilled earth shall be rammed to level the surface and removal of surplus debris as far as possible.

17) After completion of the entire job and the cable is put into load service, Letter for Road Restoration with the relevant details and signed by the JE/ AM shall be submitted to the MCD/PWD.

Electrical Test on Cables

l) Megger Test shall be carried out on HT cable before and after Jointing. The acceptable value for the Test is minimum 50M OHMS. By and large the Meggar values for all the phases should be equal. If the values are unequal then HV Test shall be conducted on the cable.

2) High Voltage shall be carried out after jointing .Test shall be carried out by applying the rated voltage on one core and grounding the other two phases. The voltage shall be increased gradually .The leakage current should be steady during the test. The voltage and time duration for the test is as given below.

Rating of the cable	Test Voltage	Test Time	Acceptable Leakage current.
11kv	6.5kv	5min	Less than 0.5mA

3) Individual joints/ terminations shall be properly tagged by Contractor clearly mentioning date of jointing/ termination on the tag.

4) Identification Tags will be supplied & installed for each 11KV, kits as per approved SOP of BRPL

SOP for Tagging of Cable Joints

Process of tagging of cable Joints have been envisaged to track the cable joint failure cases which has failed under guarantee period.

1. Vendor will supply tag along with Jointing Kit to BRPL of the following nomenclature i.e. XXYYZZZZZ where
    a. XX - vendor initials

b. YY – Year of manufacture of Cable Jointing Kit

c. ZZZZZ – Five digit number (starting from 00001)

d. The tag will be made of Stainless steel material. The size of the tag will be 3.5 Inches X 0.3 Inch.

2. During preparation of joint, tag will be attached at either side of the cable through a tie at a nearest distance of about 50cm from the newly installed joint.
3. A sticker of same nomenclature i.e XXYYZZZZZ will be provided by the vendor along with Jointing Kit. This sticker will be pasted on the Job card while entering details of cable fault.
4. The Tag Id (XXYYZZZZZ) and Job card no. to be strictly entered in the OMS while closing the Cable fault in OMS.
5. A Copy of Job card will be kept in the office of DGM(O&M) along with the register where details of cable fault will be entered in supervision of DGM(O&M).The format of the same is attached below:

SL No.	Cable(From------- To)	Date of Cable fault	Type of fault	Fault Id	Job Card No.	Nomenclature of Tag	Remark

6. The (X, Y) co-ordinates of the joint should also be recorded on the back side of the Job card for capturing the same in GIS.
7. Monthly MIS of the Cable Joint failure to be sent by respective Circle Head/Divisional Chief to Head(O&M)/Head(NWO)/Head(Finance) clearly specifying the total no. of Joints utilized for restoring the cable fault and levy of penalties towards failure.

VENDOR CODE OF CONDUCT

Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives. Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

I. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

- Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.
- Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.
- Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.
- Prevention of Under Age Labour - Child labour is strictly prohibited. Vendors shall not employ children. The minimum age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.
- Juvenile Labour - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their heath, safety, or morals, consistent with ILO Minimum Age Convention No. 138.
- Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.
- Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed the maximum set by local law. Further, a work week should not be more

than 60 hours per week, including overtime, except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.

- Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions, seek representation and or join worker's councils in accordance with local laws should be acknowledged.

II. Health and Safety Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education is essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

- Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to: a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.
- Emergency Preparedness - Emergency situations and events are to be identified and assessed, and• their impact minimized by implementing emergency plans and response procedures, including: emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.
- Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) are to be controlled through proper design, engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tagout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.
- Machine Safeguarding - Production and other machinery is to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

- Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.
- Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet facilities, potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided with appropriate emergency egress, hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.
- Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks,• including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

III. Environmental

Vendors should recognize that environmental responsibility is integral to producing world class products. In manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

The environmental standards are:

- Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.
- Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement, storage, recycling or reuse and disposal.
- Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.
- Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.

- Wastewater and Solid Waste - Wastewater and solid waste generated from operations, industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.
- Environmental Permits and Reporting - All required environmental permits (e.g. discharge• monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

IV. Ethics

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.

- Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as an Vendor and in legal action.
- Disclosure of Information - Vendors must disclose information regarding its business activities, structure, financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.
- No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.
- Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in• advertising, sales, and competition.
- Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.
- Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.
- Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

V. Management System

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b)

Conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

The management system should contain the following elements:

- Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.
- Management Accountability and Responsibility - Clearly identified company representative[s] responsible for ensuring implementation and periodic review of the status of the management systems.
- Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.
- Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.
- Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, targets and implementation plans including a periodic assessment of Vendor's performance against those objectives.
- Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.
- Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.
- Worker Feedback and Participation - Ongoing processes to assess employees' understanding of• and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.
- Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory• requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.
- Corrective Action Process - Process for timely correction of deficiencies identified by internal or• external assessments, inspections, investigations and reviews.
- Documentation and Records - Creation of documents and records to ensure regulatory compliance• and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modelled on and contains language from the Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information.

	ANNEXURE-I	
	MONTHLY SUMMARY REPORT FOR SERVICE CABLE/LT/11 KV CABLE	
1	Company	
2	District	
3	Period	
4	Voltage	
5	S. No.	
6	BSES Job No.	
7	MRS No.	
8	Fault ID	
9	Date & Time of Spiking of Cable	
10	Completion Date & Time	
11	Total Hours	
12	Total Minutes	
13	Feeder Location	
14	Reason for delay	
15	Type of Cable	
16	Single St.Th. Qty.(upto 6 mtr.)	
17	Double St.Th. Qty.(upto 6 mtr.)	
18	Single St.Th. Qty. (above 6 mtr)	
19	Double St.Th. Qty. (above 6 mtr)	
20	Jointing Chrg. Qty. for St.Th.	
21	Termination without Excav.	
22	Termination with Excav.	
23	Jointing Chrg. for Termination	
24	Cable laying in excess of 10 mtr.	
25	Jointers BSES / Vendor	
26	No. of Digging	

JOB CARD FOR CABLE JOINTING WORK

JOB CARD NO			Date				Fault IID	
DIVISION			Purpose		Project/Scheme			O&M
Contractor								
Voltage Grade	11 KV							
No. of Cores	1							
Cable size:	1000/ 800/ 630/ 500/ 400/ 300/ 240/ 225/ 185/ 150/ 120/ 95/ 70/ 50							sqmm

Bidders seal & signature

BSES RAJDHANI POWER LIMITED

	Type of Joints				No. of Joints		Docate no.	IR Ref
					Single	Double		
	XLPE/XLPE(or PVC/PVC) Straight through Joint							
	XLPE/PILC Transition Joint							
Jointing Details	PILC/PILC Straight through Joint							
	XLPE Indoor Termination							
	XLPE Outdoor Termination							
	PILC Indoor Termination							
	PILC Outdoor Termination							
Feeder details	From					To		
Location	From					To		
Landmark:								
Falut Occurance Date:								
Job allocated by:					PTW Ref:			
	Date		Time				Date	Time
Date & Time of Spiking:					Work Completed on:			
Digging Details (in mtr):	Length			Width			Depth	
Details of Cable Laid:	Size			Length			Docate Ref:	
Contractor supervisor:				Signature:			Date:	
Stage Verification:	Stage/ work Verified			Name & Signature		Date & time		
Digging/jointing etc.								
Remark if any:								
Job Certified by:								
Shift Incharge		Name		Signature		Date		

Bidders seal & signature

Annexure - III

Standard Operating Procedure (SOP)

Instruction to be followed while verifying the Cable jointing bills:-

1. Job card to be prepared against Fault Id only which is shown in OMS. If the cable fault is not in trunk cable i.e. in between two S/stn than fault id to be prepared manually in OMS.
2. A clear photograph of joints in faulty conduction and joints prepared with revival of cable must be attached in the Job card.
3. Separate MRS to be generated for each and every job card. In case of HT AB Cable separate MRS to be generated for joints/Cable used by vendors and the division AMC.
4. If any material adjustment is needed for the material drawn against the Job Card than return of the material adjustment is to be done in the same MRS as work gets completed and then only Oder/notification to be closed.
5. TAG Id which is symbol of date when joint is installed must be inserted with cable tie adjacent to the new joint.
6. MRS to be closed within three days after completion of work and adjustment of material.
7. Before signing the bill of Vendor, it must be ensured that is accounted properly and material shown in the Job Card is matching with the MRS including MRS number.
8. The Division to ensure the issue of completed job card by 7th day of every month to vendors for preparation of their bill.
9. The Vendor has to submit the bill for verification to the division by next 5 days i.e. by 12th day of every month.
10. Divisions & Vendor to ensure that the bills after verification and signing are processed for final submission to finance by 20th of the month.
11. Any scarp i.e. cable, cable joint box etc obtained in the work should be returned through SDF.
12. New Joints should be marked in GIS with GPS coordinates.
13. Punching of MRS (for material issued and its reversal) in SAP should be in the same month of services done with reference to the concerned division and month.
14. Details of old material removed from the site and return docket should also be provided along with the invoice submitted.
15. Submission of bills to be specified in the work order with clause of penalty if not submitted within 15 days of execution.
16. Clearing of malba should be mentioned and site photograph should be enclosed with invoice.
17. Helmet with provision of video recording to be provided during jointing work.
18. Complaint registered in odd hours (i.e. midnight) should be re-checked and a site photograph be submitted before and after execution.

The above must be strictly followed.

Scope Demarcation for Installation of Jointing and Termination Kits upto 11kV

Sl no	Descriptions	Responsibility		Remark
		Bidder	BRPL	
1	FLC and feeder shutdown	x	√	
2	Preparation of Material Reservation Slip (MRS) to issue the material	x	√	
3	RCP approval	x	√	
4	Issuing and Transportation of Termination, Jointing Kits, required cable, coffin, RFID Ball from BRPL store to site	√	x	RFID Ball shall be provided by BRPL
5	Vehicle arrangement for Manpower & Material movement	√	x	
6	Barricading including lightening, dewatering, providing tents etc.	√	x	
7	Safety Tools, jointing tools, Safety PPE	√	x	
8	Digging for Termination including back filling if any	√	x	
9	Installation of Termination kits on cable	√	x	
10	Connecting of cable to equipments after installation of termination kits on cable	x	√	
11	Digging for Straight through joints including backfilling	√	x	
12	Jointing and Encasing of joint in presence of supervisor	√	x	
13	Handling of cable i.e- lifting to pole, dismantling from pole, dressing of cable etc.	√	x	
14	All kind of back filling after jointing and termination kits	√	x	
15	Filling and submission of job card including GPS location marking within 48 hours	√	√	
16	Return of scrap (Faulty Joint/Cable pieces) shall be deposited to SDO office after completion of jointing and termination	√	x	
17	Road restoration after completion of work	x	√	
18	After completion of Jointing work, it should be properly covered with **Coffins** from all side for 66/33/11kV of cable along with sand filling. Transportation of coffin from BRPL store to site location	√	x	Coffin shall be provided by BRPL
19	After completion of Jointing work, it should be properly covered with bricks from all side for 1.1kV cable including supply of bricks, sand, cement etc.	√	x	
20	Joints shall be done by Hydraulic crimping tool Gap between two crimp shall not be more than 15mm nad shall cover the complete length of ferrule / lugs barrel	√	x	
21	Max. time required to reach the site for Joints with or without RCP permission shall not be more than 120min	√	x	
22	Cable Jointer will be having Tab for instant punching of **clear photograph/video of joints in faulty condition and joints prepared with revival of cable**	√	x	
23	After completion of Joint preparation, updated status of No. of Joints and length of cable used should be updated in IOMS module through Tab by jointer in the I-OMS fault id with the name of Jointer.	√	x	
24	TAG Id which is symbol of date when joint is installed **must be entered in the IOMS by the Call Center of Jointer**	√	x	
25	Vendors if could not submit the Bill by the timeline, then 10 % of the invoice value shall be imposed to vendor as a penalty and bill can be considered for non payment in case of extreme condition	√	x	
26	If during audit any discrepancy found in the reconciliation, penalty with 10% of total PO value shall be imposed on vender	√	x	
27	Jointing should be preferred in day other then in night (allowed only in exceptional reasons)	√	x	

28	Skilled worker is being utilized (Authorization letter need to be provided)for all kind of Jointing work.	√	x	
29	Earthing Strip and Mess wire / Copper braid wire to be connected at the end of the cable while preparing end termination. Photo of the same after proper connection should be uploaded into the IOMS	√	x	
30	For Nallah/Road Crossing GI Pipe to be utilized while preparing joint including transport from BRPL store to site	√	x	GI Pipe shall be provided by BRPL
32	Cut faulty section and Pre-test (Hi Pot) of cable for multiple fault	√	x	
33	Removal of surplus malba	√	x	
34	JCB and Pneumatic hammer included for digging	√	x	
35	Replacement of HTAB cable for HTAB cable jointing and termination	√	x	
36	ETC of RFID Ball (Active/Passive) for all kind of straight through joint of 11kV, 33kV and 66kV including Issuing, transportation from store to site	√	x	
37	Joint failure/LT/HT analysis – OEM to submit failure analysis report to BRPL within 15 days of time	√	x	
38	Joint date details Batch code and mfg details to be incorporated in OCJ App	√	x	
39	Supervision of jointing ,quality, safety @ site	√	√	SDO to ensure at site
40	Quality manual in which detailed jointing process & quality of the job along with QAP to be provided	√	x	

BSES

Specification

for

1.1kV LT Outdoor Termination Kit

Specification no.: GN101-03-SP-52-01

Prepared by:		Approved by :		Approved by:		Rev	Dated
Name	Sign	Name	Sign	Name	Sign		
Pronab Bairagi		Amit Tomar	26.04.17	Vijay Pampalia	26/4/17	01	26.04.2017

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Records of Revision

Item/Clause No.	Change in Specification	Approved By	Rev
5.5.0	**Type test**		**01**
8.0.0	**Deviation**		**01**
9.0.0	**Inspection Expenses**		**01**
4.1.3 (A)	**Hydraulic Crimping**		**01**
Annexure-G	Job Card		**01**
Annexure-H	SOP		**01**
10.0.0	**Failure Analysis and Penalty**		**01**

1.0.0 Scope of work

Heat Shrinkable Outdoor Termination Kits, suitable for 1.1 kV LT Power , XLPE Insulated, PVC sheathed cables shall be designed, manufactured, tested, packed and delivered by the Vendor, as per Purchaser's requirements.

2.0.0 Codes & standards

2.1.0 National Standards:

S. No.	Standard Number	Title
2.1.1	IS - 13573: 2011	Including Amendment part 1, Joints & Terminations, for Polymeric cables for working voltages 1.1 kV up to and Including 3.3 kV - Type test requirements.
2.1.2	IS – 7098 Part 1 : 1988	Cross-linked Polyethylene (XLPE) Insulated PVC sheathed cables : Part 1 : For working voltages from up to and including 1.1 kV
2.1.3	IS - 10810: 1984	Methods of test for cables

2.2.0 International standards

S. No.	Standard Number	Title
2.2.1	EA TS - 09 - 13	Electricity Association - Technical Specification -09-13 Material component for use in Electric Power Cable Termination & Joints for System voltage above 1000 V up to 36 kV
2.2.2	IEC - 885 Part 1-3	Electric test methods for electric cables
2.2.3	IEC 60502-2009	Power cables with extruded Insulation and their accessories for rated voltages from 1kV up to 30kV.
2.2.4	ASTM D 2303	Standards Methods for Liquid, Inclined -Plane Tracking and Erosion of Insulation Material.
2.2.5	EN 50393	Specification, for 1.1 kV Cable joint & Terminations kit.

3.0.0 Cable Construction

Normal sizes of XLPE cables used in BSES system and the construction features of these cables are indicated below:

XLPE type Cables: **4-core x 150 or 300 sq.mm. Al**

3.1.0	Conductor	For XLPE : a) Electrolytic Grade stranded Aluminum Conductor b) Grade: H2/ H4 as per IS: 8130/84 (For Al) c) Shape: compacted sector shaped stranded d) Class 2
3.2.0	Insulation	For XLPE: Extruded XLPE Insulation
3.3.0	Inner Sheath	Extruded Inner Sheath of Black PVC type ST-2.
3.4.0	Armour	Galvanised steel flat strip armour
3.5.0	Outer Sheath	Extruded outer sheath of PVC (ST-2)

4.0.0 Cable Termination Kits

4.1.0 General Construction:

The material shall be constructed in accordance with the applicable standards. The kits shall be suitable for storage without deterioration at temperatures up to 50 degrees C and shall have unlimited shelf life. The heat shrink system of the identical type brand as offered in the bids shall have proven performance of at least 5 years in Indian conditions. It should be supported by type test report and purchase orders of other utilities.

4.1.1 Type of Termination:

Termination shall be heat shrinkable suitable for 1.1kV (E) four core XLPE Insulated and armoured cables (In line with BSES Specification & IS 7098·partl/1S 13573 (Part1)) having sector shaped stranded aluminium conductors of sizes 150 mm2 & 300 mm2. Bidder shall furnish documentary evidence confirming adherence to these or the dimensions as per the type test report, whichever is higher. Fault level as well as duration withstands capacity of termination kits shall be matched with the parameters of cables (or which the kits are intended to be used for).

4.1.2 Class of Terminations:

The heat shrinkable cable terminations are of Outdoor Termination suitable for pole top

mounting or on outdoor ACB terminal

4.1.3 Heat shrinkable component- General Properties:

Components shall be capable of being stored without deterioration upto a temperature of 50 Deg. C and shall have unlimited shelf life. Sealant activated by heat shall be used in conjunction with heat shrinkable components to provide on environmental to the completed termination.

A) Aluminum Lug:

Long barrel Aluminum Lugs with Anticorrosive/Antioxidation paste suitable for use in termination kits low voltage distribution system. Connectors (Lugs) used should be in line with IS 8337 and as **Annexure-F.**

All the lugs shall be crimped with hydraulic crimping tools during termination work. Using of Hydraulic crimping tool is mandatory.

B) Tinned Copper Earthing Braid:

A flexible tinned copper braid Insulated with Heat shrink tube shall provide electrical continuity of steel wire armour. The fault current capacity of copper braid should withstand the cable fault current capacity based upon different size of cable as defined in IS: 13234.The conductor shall be bonded to the armour wires by a combination of galvanized steel ring inserted under the wires and stainless steel horse clips (steel grade SS 304). The arrangement shall ensure that temperature rise at bonding points shall be limited to permissible temperature of cable.

Earthing braid should be provided with length sufficient to take one complete turn on armour and then continue to the other end of the armour with one turn around, This one turn will ensure the firm contact with the armour to tighten this braid worm drive clips two per side to be provided with back up ring the remaining 70 % of braid will be insulated with heat shrink tubes to ensure the Insulated earth at Heat shrink breakout region.

Braid terminal lug shall be suitable to accommodate M12 bolts for connection with earthing.

C) Heat shrink Insulating tube:

The minimum length of outer sleeve shall be . It shall also have UV rating to protect from direct sun light exposure.

Each Phase and neutral tube shall have different colour for easy identification. Preferably, Red, Yellow, Blue colour to be used for Phases and Black for neutral. If the same is not possible then at least, Red colour to be used for Phases and Black for neutral. Lug seal with HMA to be provided for lug sealing.

D) Sub kit:

The sub kit consists of Mopping cloth, PVC Tape, Core cleaning solvent, Black mastic tape AI203 Paper and other standard accessories essential for installation and satisfactory performance of the kit.

4.2.0 Properties of Heat shrinkable components:

Property	Requirement
Electric Strength	≥ 8 kV/mm
Heat shock at 250 deg C for 15 Min	No spilling, cracking, dripping or flowing
Tensile strength	≥12 Mpa (120 kg/sq.mm)
Elongation	≥ 200%
After Thermal Ageing at 120 deg C for 500Hrs.	
Tensile strength	≥10 Mpa (100 kg/sq.mm)
Elongation	≥ 100%

4.3.0 General Kit contents of the Termination For 1.1Kv Cable:

BOM FOR 1.1 KV XLPE TERMINATION		
S.No.	**Item**	**Quantity**
1	Lugs/Connector with Anticorrosive/Antioxidation paste	4Nos
2.	Lug seal tube	4 nos
3.	Heat Shrink Core Protection Sleeves	4Nos
4	Earthing Set (with tinned copper braid)	1No
5.	Heat Shrink Breakout	1No
6.	Sub-kit (of Mopping cloth, PVC Tape, Core cleaning solvent, Black mastic tape and AI203 Paper etc)	1Set
7.	Installation Instruction manual with field quality plan	1No
8.	Packing Box	1No

5.0 TESTS

All routine, acceptance & type tests shall be carried out accordance with the relevant IS/IEC. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative.

All the components shall also be type tested as per the relevant standards.

Following tests shall be necessarily conducted on the Termination kits in addition to others specified in IS/IEC standards

5.1.0 Type Tests

a) Impulse voltage withstand test
b) Heat cycle test.
c) A.C. withstand voltage test (Air and Water)
d) Load cycle test
e) Heat cycle test in water
f) Insulation resistance test (Air and Waler)

5.2.0 Routine Test:

The bidder shall provide material wise routine test report conducted at their works during inspection.

5.3.0 Acceptance tests:

a) Visual Inspection- The offered kits shall be free from any visible defects,
b) Physical verification of contents - all the contents shall be checked as per kit contents list enclosed by the bidder,
c) Electric Strength test for Insulation tubing.
d) Elongation tests for all types of tubing.
e) Wall thickness ratio
f) Longitudinal change after full recovery.
g) Tracking and corrosion resistance test.
h) Tensile strength.

5.4.0 TYPE TEST CERTIFICATES

The bidder shall furnish the type test certificates for the tests mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per the relevant standards. Type tests should have been conducted from CPRI/ERDA during the period not before 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to the Purchaser.

5.5.0

If product is not type tested or test report is more than 5 years old from CPRI/ERDA, same shall be carried out by seller, sample shall be selected randomly by BSES, test cost to be borne by seller. For new vendor, type test is mandatory from CPRI/ERDA of BSES sample at their own cost. All the cost of inspector shall be borne by seller as mentioned in inspection expenses clause

6.0.0 DRAWINGS, DATA & MANUALS

6.1.0	Documents	Copy of signed documents also shall be part of entire soft file (e-file) or CD.)
6.2.0	Along with the Bid	Vendor shall submit signed 3 sets (plus 1 set of soft copy) of following documents: a) GTP (duly filled-in) (as per Annexure - A). b) Cross-sectional drawings for components Assembly c) Type Test Certificates d) Complete Catalogue and Instructions. e) Manufacturing quality plan f) Field Quality Plan g) Lug dimension sheets. e) Any other document.
6.3.0	After Award of Contract	Vendor shall submit signed 2 sets (plus 1 set of soft copy) of above mentioned documents within 15 days, for Purchaser's approval.
6.4.0	"As-Built" documents	Final signed "As-built" documents for the equipment in 3 sets (hardcopy), 1 no. soft copy and 1 no. CD. These documents shall include signed Routine & Acceptance Test Certificates also.
6.5.0	Packing, Marking, Shipping, Handling and Storage	Every component/kit/box shall be properly sealed/ packed for protection against damage.
6.6.0	Identification Labels:	Markings / Labels shall be on both sides of every packed box. 1) Identification number/type designation (as per manufacturer's standard) 2) Voltage grade, size, description of the Kit (including the voltage grade, size, type of the cables, for which it is to be used) 3) Batch no., lot no., etc. 4) Quantity 5) a) Purchase Order no. & date b) Purchaser's name c) BSES's SAP code number 6) Weight (kg) of each Cable Termination Kit and of each box containing kits. 7) Manufacturer's name 8) Month & Year of Manufacturing 9) Date of packing, Shelf life (if applicable)
6.7.0	Transit damage	The seller shall be responsible for any transit damage due to improper packing.

7.0.0 Quality Assurance (QA)

7.1.0	Vendor's Quality Plan (QP)	To be submitted for Purchaser's approval.
7.2.0	Sampling Method	Sampling Method for quality checks shall be as per manufacturer's standard practice / ESI guidelines and Purchaser's prior approval shall be taken for the same.
7.3.0	Inspection Hold-Points	To be mutually identified, agreed and approved in Quality Plan.

8.0.0 Deviations

8.1.0.	Deviations	a) Deviations from this specification shall be listed by bidder clause wise along with optional offer and has to submit the list along with bid./quotation. BSES will review the deviations and if BSES is agreed with the deviation, seller has to take written confirmation from BSES on deviation during tender evaluation.. b) In the absence of any list of deviations from the Seller with bid as well as written confirmation from BSES on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully. c) Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BSES old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not be considered as a deviation from this tech spec at any stage of contract.

9.0.0 Inspection Expenses

Inspection (i.e. routing test, acceptance test, type test, factory visit etc.) shall be done any time by BSES on the basis of PO or may involve 3rd party as per BSES requirement. Inspection expenses like accommodation, fooding, local transport, air fair, train fair, taxi (NCR) etc shall be bore by seller.

Any kind of test (routine/type test/acceptance test if any) at 3rd lab (i.e. CPRI/ERDA/NABL approved lab) shall be carried out by seller at their own cost. BSES may witness the test and the expenses like accommodation, fooding, local transport, air fair, train, taxi etc. shall be borne by seller.

Above expenses shall be applied at each and every inspection and shall stand till closing of PO/WO/Rate contracts etc.

10.0.0 Failure Analysis and Penalty

Failure of joint shall be analyzed by BSES and Vendor jointly. Joint failure in regards to poor quality joint, poor work man ship, etc. shall be in the account of vendors. Losses due to failure shall be recovered from vendor in case of warranty.

Annexure – A: Guaranteed Technical Particulars (GTP)

The Seller is deemed to have examined all parts of the Specification documents and to have been fully informed, as to the nature of work and the conditions related to its performance.

S. No.	Description	Units	Vendor's data
1	Manufacturer's name		
2	Purchase Order no. & date		
3	Guarantee Period (minimum)	60 Months (from date of commissioning) / 66 Months (from date of receipt at Purchaser's store), whichever is earlier	
4	Applicable IS /IEC Standard followed by Vendor (incl. type test standard)		
5	Voltage Grade	kV	
6	A.C. withstand voltage Dry (Ph./ground)	kV	
6.1	Time duration	Minutes	
7	A.C. withstand voltage wet (Ph./ground) immersed in water	kV	
7.1	Time duration	Minutes	
8	Impulse Withstand Voltages	kV	
9	Load Cycle Test		

	a) Each Cycle – Heating Duration Temperature Cooling Duration b) Number of Cycles	Hrs. Deg. C Hrs	
10	Heat Cycle test in water on outer sheath		
11.	Leak Tightness		
12.	Insulation Resistance in Air	500volt 50 Mega ohm	
13.	Insulation Resistance immersed in water	500volt 50 Mega ohm	
14.	Dielectric Strength of Insulating Material		
15.	DC Voltage Withstand test	kV/Min	
16.	Accelerated ageing test		
17	**KIT PARTICULARS**		
17.1	Material of the tubing /moulded parts		
17.2	Method of environmental seal		
17.3	Allowable Kit storage Temperature (50 deg. C)	Deg. C	
17.4	Shelf life of H.S. components	unlimited	
17.5	Cable Termination Installation Instructions manual	**Yes/No**	
17.6	Method of earth bond a) Size and no. of braids b) Size of armour support c) No. of hose clips		
17.7	Method of mechanical protection a) for 4-core Cable		

17.8	Method of protection against corrosion (type & coating thickness of protective layer on steel mat)		
17.9	Method of conductor continuity a) For crimping connector b) For mechanical connector	Hydraulic Crimping for Lugs	
18	Description of items in the Kit, which are imported /sourced From Principal /Sub-suppliers		
19	Names of items in the Kit and their respective shelf life (months/years)		
20	Kit Content Table (KCT) enclosed? (Refer Annexure - B)	Yes / No	
21	Drawing for Aluminum lugs with dimension(ferrule) enclosed	Yes / No (If yes, mention the document reference)	
22	Is Annexure - D (Technical Deviation Sheet) duly filled-in?		
23	Packing (Qty) i) Packing of every Kit h) Group Packing	1 no -- No. of Kits per Box -- No. of Boxes	
24	Installation Procedure enclosed?	Yes / No (If yes, mention the document reference)	
25	Quality Assurance Plan (QAP for raw materials, in-process inspection, factory testing) is enclosed?	Yes / No	
26	Whether all heat-shrinkable and moulded components of the kit meet the requirements of and have been tested in accordance with EA TS -09-1 3.(for heat-shrinkable joints)	Yes / No (If yes, details of test report no. /Date /name of test laboratory to be mentioned.)	
27	Type Test Reports (TTR) (Relevant test report no. & date, With type, size, other details of each type of Kit.)		

	a) Prepared termination CPRI/ERDA TTR as per BIS / IEC enclosed? b) Loose Components: CPRI/ERDA TTR as per EA TS 09-13 enclosed?	Yes/No Yes/No	
28	Printing details on each of the Heat- shrinkable and Moulded components	(Mention the text, presently Printed on each of the component)	

Annexure – B: Kit Content Table (KCT)

Vendor shall submit KCT as a consolidated table, consisting of all data, such as:

A. Heading

1. Voltage grade, size, description of the Kit
(Including the voltage grade, size, type of the cables, for which it is to be used)

2. Type designation (as per manufacturer's standard)

B. Details / Parameters

(For each component/item of the KCT)
1. Lot no. /Batch no., etc.
2. Item number (manufacturer's standard)
3. Description
a) Material, type, make and grade
b) Dimensions cross sectional area
c) Color,
d) Other description, if any
4. Function of the item
5. Quantity
6. Make/Name/Location of manufacturer/sub-vendor
7. a) Minimum supplied (or in expanded form) diameter
   b) Maximum freely recovered diameter
8. a) Minimum supplied (or in expanded form) thickness
   b) Maximum freely recovered thickness

C. Notes on the KCT

Markings, printings, other details for individual/group of components are to be mentioned on KCT. For example:
a) Printing of item code, size, batch no., etc.
b) Printing on components
c) Other embossing or engraving, it any.

(Note: Vendor may attach an Annexure, for any additional information, if required.)

Annexure – C: Routine and Acceptance Test

A. Visual Examination

Condition of selected items / components, as per sampling method, shall be recorded. Some of the normal check-points can be as follows:

1. Every component shall be verified in quantity and description as per KCT.
2. All items shall be free from any defects, pin holes, cracks, etc.
3. Metallic components to be free from sharp edges.

B. Measurements of Dimensions

(Required / observed dimension — length, diameter, etc.)

1. Supplied dimensions
2. Recovered dimensions

C. Destructive Testing

On various heat-shrinkable /moulded components of ready Kits (Items 3 and 4 are applicable only for heat-shrinkable components)

1. Tensile Strength
2. Wall Thickness Ratio
3. Heat Shock
4. Longitudinal Change, after full recovery
5. Ultimate Elongation
6. Low Temperature Flexibility
7. Dielectric Strength
8. Volume Resistivity

D. Routine Test Reports (RTR)

(Typical)

Each RTR shall clearly indicate P.O. no. & date and also BSES's SAP code no. RTR shall record the serial numbers of the kits selected, as per vendor's sampling method. Following details, besides vendor's/manufacturers standard check-points, shall appear in every RTR.

Annexure – D: Technical Deviation Sheet

Sr No.	Clause No.	Deviation

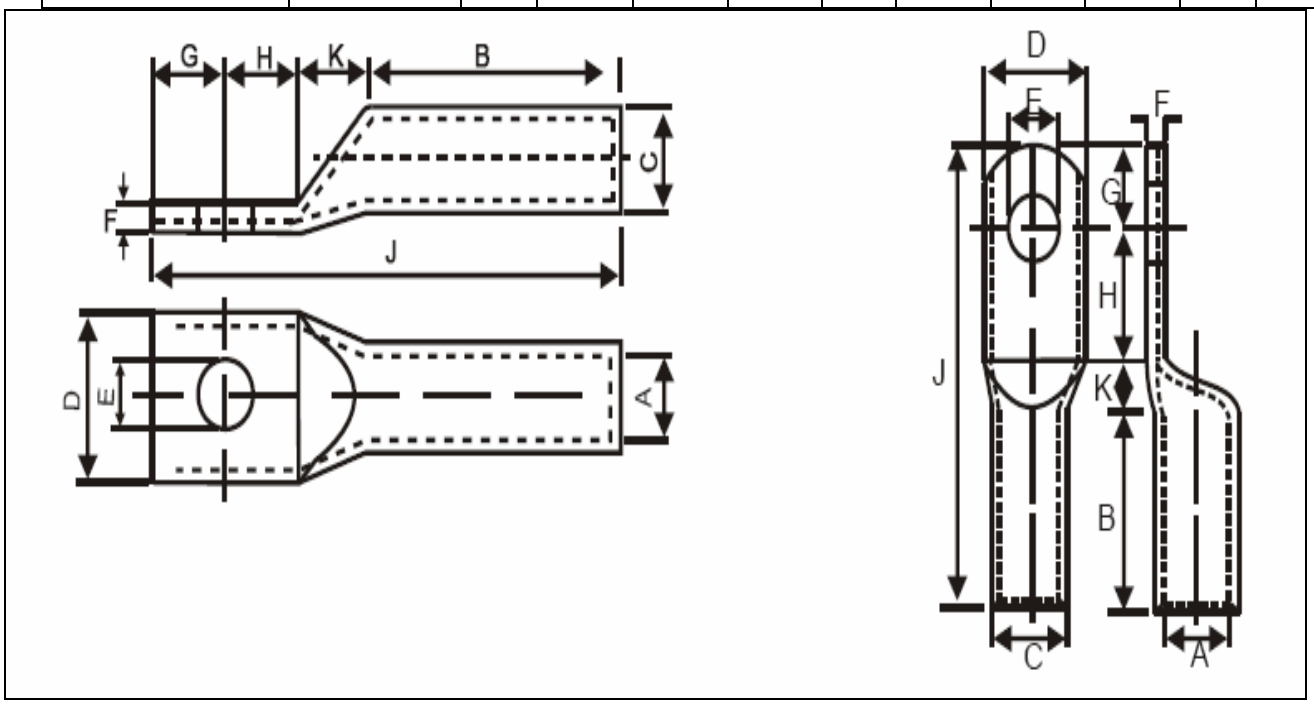
Annexure – E: Service Conditions

(Atmospheric conditions at Site)

1	Delhi	
a)	Average grade Atmospheric Condition:	Heavily Polluted, Dry
b)	Maximum altitude above sea level	1000 M
c)	Ambient Air temperature	Highest 50 deg C, Average 40 deg C
d)	Minimum ambient air Temperature	0 deg C
e)	Relative Humidity	90 % Max
f)	Thermal Resistivity of Soil	150 Deg. C cmm
g)	Seismic Zone	4
h)	Rainfall	750 mm concentrated in four months

Annexure – F: Aluminum Lug for XLPE Cable

Cable Size											
Cable details	**Conductor shape**	**E**	**A**	**C**	**D**	**F**	**B**	**K**	**H**	**G**	**J**
CABLE ARM XLPE 1.1KV 4C 300MM2 AL	SECTOR SHAPE	17	23.5 - 24.1	30.9 - 31.2	44.2 - 45.2	7 - 7.5	89	14	27	27	157
CABLE ARM XLPE 1.1KV 4C 150MM2 AL	SECTOR SHAPE	13	16.2 – 16.6	21.4 - 21.6	30.6 - 31.2	4.7 - 5.3	83	11	17	17	128



NOTE: ALL DIMENSIONS ARE IN MM

Annexure-G

BSES Rajdhani Power Ltd.

Job Card For Cable Jointing Work

Job Card No | Date | Fault ID

Division | Purpose: Project / Scheme | O&M

Contractor

Voltage Grade: 11kv | 33kv | 66kv | 1.1 KV/LT

No. of cores: 1 | 3 | 3.5/4

Cable Size: 1000 /800 /630 /500 /400 /300 /240/225/ 185 / 120 / 95 / 70 / 50/25 sqmm

Jointing Details

Type of Joints	No. of Joints		Docate No.	IR Ref.
	Single	Double		
XLPE/XLPE(or PVC/PVC) Straight Through Joints				
XLPE/PILCA Transition Joint				
PILCA/PILCA Straight Through Joints				
XLPE Indoor Termination				
XLPE Outdoor Termination				
PILC Indoor Termination				
PILC Outdoor Termination				

Feeder Details: From | To

Location: From | To

Landmark: _____

Fault Occurance Date: _____

Job Allocated By: _____ PWT Ref: _____

Date and Time of Spiking: Date | Time

Work Completed On: Date | Time

Digging Details (In Meter): Length | Wedth | Depth

Details of cable laid: Size | Length (In Meter) | Docate Ref.:

Contractor Supervisor : _____ Signature : _____ Date : _____

Jointer Details: _____

Stage Verification ie : Digging / Jointing etc.

Stage/Work Verification	Name & Signature	Date & Time

Scrap Details including Qty: _____

New Kit Details: _____

Old Kit Details: _____

Type of Fault: _____

Remark If any : _____

Job Certified By :

Shift Incharge	Name	Signature	Date

1 COPY - BILLING COPY*

Annexure- H

SOP FOR REPAIRING OF CABLE FAULT (Shall be part of PO)		
SI. No.	Activity	Responsibility
Initiation		
1	Identify and isolate fault and inform GNIIT in case of cable fault	Break down team
2	Updation of the details in OMS against respective feeder tripping event.	GNIIT
Fault Location		
1	Information sent to FLC team and SDO.	GNIIT
2	Mobilize FLC team and cable jointing contractor.	SDO
3	Identification of fault location	FLC Team
Preparation for Jointing		
1	Seeking permission from road owning agency	SDO
2	Payment of RR charges to Road owning agency	Finance
3	Digging	Cable jointing contractor
4	Cut faulty section and Pre-test (HV test) cable for multiple fault	Cable jointing contractor
5	BOQ estimation for jointing work (type, size and length of cable, type of jointing kit)	Cable jointing contractor
6	Filling material reservation slip (MRS) in SAP	SDO
7	Issuing and transporting material from store.	Cable jointing contractor
Jointing		
1	Cable preparation (overlap length of cable, slide of armour, build up with inner sheath etc)	Cable jointing contractor (for jointing details refer to manufacturer instruction manual)
2	Copper tape shields	
3	Core preparation	
4	Location of parts in completed joints	
5	Earthing of connection	
6	Completion of joints	
7	Take Photographs before, during and after jointing and send to CES	SDO
8	Supervision during jointing	SDO
9	Sending failed joint to Division store	Cable jointing contractor
Completion and reporting		
1	Intimate to breakdown team about joint completion.	Cable jointing contractor
2	Conduct HV test	Break down team
3	Restore of Supply through jointed cable	Break down team
4	Backfilling and compaction of excavated soil	Cable jointing contractor
5	Completion information in Job Card (Details	Cable jointing contractor

	of work done, material consumption, location, feeder name and joint tag no., date, supervisor name, jointer name) sent to SDO	
6	Above information sent to GNIIT	SDO
7	Send information about GPS location of Cable fault to GIS	SDO
8	daily report of cable jointing to CES	Division Head
9	Updation of information in OMS including supervisor name, jointer name, feeder name	GNIIT
10	Information to include GPS location of cable fault.	GNIIT

Special Note-

1) Joints to be done preferably during day. In case of constraints, DGM (O&M) to authorize for night time jointing with supervisor
2) Daily joint report to be shared with CES
3) Bi-monthly analysis of faulty joint for ensuring warranty compliance to be organized at circle level by contractor in presence of DGM (O&M) and CES
4) Certification of job card for payment by DGM (O&M) subject to OMS compliance CES to check any gaps.

Technical Specification
For LT Cable Joints

Specification no – SP-LTJKT-06-R2

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Pronab Bairagi		Amit Tomar	26.04.17	Vijay Panpalia	26/4/17	R2	26/04/2017

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Annexure-G	SOP		01
3.8	GPS Coordination		01
3.9	Hydraulic Crimping		01
3.10	Coffin for completed joint		01
12.0	Deviation		02
13.0	Inspection Expenses		02
14.0.0	Joint Failure Analysis and Penalty		02

1.0.0 Scope of supply

Design, manufacture, testing of LT jointing kits (1.1kV) at manufacturers works before dispatch, packing, delivery of material and submission of documents to purchaser.

2.0.0 Codes & standards

S No.	Title	Indian Standard
2.1	Cable accessories for extruded power cable	IS 13573 (Part 1):2011
2.2	Epoxy resin system for Cast resin insulated cable jointing up to and including 11Kv	IS:10333:1982
2.2	Ferrule	IS:8308, IS:5082
2.3	Mould	IS 8438-1987

3.0.0 Jointing Type and size

3.1	Jointing Type	Polyurethane Cable Jointing / Heat Shrinkable Cable Jointing
3.2	Kit Size	S3- 4C 25 sq mm (STRT) S4- 4C 50 sq mm (STRT) S5- 3.5C/4C 150 sq mm (STRT) S5- 3.5C/4C 120-150 sq mm (TRJ) S6- 3.5C/4C 300 sq mm (STRT) S6- 3.5C/4C 240-300 sq mm (TRJ)
3.3	Rating Of Cable	1.1 KV
3.4	Rated frequency	50 HZ
3.5	Maximum Conductor Temperature	Continuous- 90 deg C, Short circuit- 250 Deg C
3.6	Cable Laying Conditions	Depth of Trench: 0.75 Meter Ground Temperature: 25 deg C Thermal resistivity of soil: 150 º C cm/ W Average Ambient Temperature: 35 º C
3.7	Kit Contents	As detailed in Bill of Material (BOM)
3.8	GPS Coordination	Vendor to capture GPS coordinates and shall include in job card of each joint at their own cost
3.9	Hydraulic Crimping	Using of Hydraulic crimping tool is mandatory for crimping purpose
3.10	Coffin for completed joint	After successfully completion of joint, Coffin shall be made by bidder for completed joint. Drawing shall be provided by BSES. Excluding drawing, everything shall be in the scope of bidder.

4.0.0 Heat Shrinkable Joints

4.1	Minimum Requirement	1. 7 Ply Corrugated Box for packing Kit contents. 2. Cleaning cloth (1 No.) 3. Core cleaning solvent (1 Ampoule) 4. Backup ring for Armour (Steel support ring) of suitable size. 5. PVC Adhesive Tape 6. Ferrule 7. Heat shrinkable Insulating tubing for providing insulation over ferrule. 8. Earthing shall be of material tinned Copper. The conductor/braid shall be supplied with suitable clamps. 9. Galvanized steel wire mesh- To cover the 4 cores from armour to armour. 10. Outer sleeve- The maximum length of outer sleeve shall be 500 mm for 25 sq.mm & shall be 1000 mm for 300 sq.mm.
4.2	Heat Shrinkable Components General properties	Components shall be capable of being stored without deterioration within temperature range of 10 Deg C to 45 Deg. C and shall have unlimited shelf life. Sealant activated by heat shall be used in conjunction with heat shrinkable components to provide an environmental seal to the completed joint.
4.3	Properties Of Heat Shrinkable Components	
	Property	Requirement
a	Electric Strength	>= 8 kV/mm
b	Heat shock 250 °C for 15 Min.	No splitting, dripping or flowing.
c	Tensile Strength	>= 12 Mpa (120 kg/sq.mm)
d	Elongation After Thermal Ageing at 120°C for 500Hrs.	>= 200%
e	Tensile Strength	>= 10 Mpa (100 kg/sq.mm)
f	Elongation	>= 100%
4.4	Insulation	The reinstated insulation of each core over conductor connector (Ferrule) shall have a single length of heat shrinkable tubing, recovered over the connector with a final minimum overlap of 30 mm on each core. The minimum recovered thickness of insulation shall be 1.5 mm.

4.5	Armour Continuity	A flexible tinned cooper conductor of braided construction shall provide electrical continuity of steel wire armour. The conductor shall be bonded to the armour wires by a combination of a galvanized steel ring inserted under the wires and stainless steel horse clips (steel grade SS 304). The arrangement shall ensure that temperature rise at bonding point is limited to 160 °C.
	Cable Size	Tinned Copper Conductor/strip/braid
a	25 sq.mm	16 sq.mm
b	50 sq.mm	30 sq.mm
c	120, 150,240 & 300 sq.mm	50 sq.mm
4.6	Mechanical Protection:	The joint shall incorporate a steel screen surrounding the insulated core for full length of the joint. The metallic screen shall be in electrical contact with steel wire armour, but shall not be considered as forming part of armour continuity bond. The steel screen in combination with external heat shrinkable tube shall provide protection to the insulated cores from damages by impacts.
4.7	Covering over the Joints:	The Joint shall be protected from corrosion by heat shrinkable tubes internally coated with mastic or heat activated sealant to provide an environmental seal to the joint. One or two tubes shall be provided.
4.8	Identification:	Heat shrinkable tubing shall be printed with batch no./Date/Shrinkage ratio/size etc.

5.0.0 Polyurethane Compound

4.1	Content	Resin & Hardener combination
4.2	Curing	On curing shall produce homogenous & void free mass Gel Time: 30 - 45 Minutes Solidify Time: 60 - 75 Minutes
4.3	Compound Properties	Colour & Appearance – Red / Brown filled liquid Viscosity at 25 ° C - 5000-15000 Cps Density - 1.52 ± 0.10 g/cc
4.4	Hardener Properties	Colour & Appearance - Dark Brown filled liquid Viscosity at 25 ° C - 180 ± 105 Cps. Density - 1.23 ± 0.05 g/cc

4.5	Compound to Hardener ratio	100:16 ± 2 Parts by weight 100:19 ± 2 Parts by volume
4.6	Properties of Cured Compound	Tensile Strength - 50 Kg/cm² Min. Ultimate Elongation - 25 to 35 % Un-notched Impact Strength - > 25 Kg.cm/cm² Hardness - 85-90 Shore A Water Absorption - 0.5 % Max. Dielectric Strength - 10 KV/mm Minimum Volume Resistivity - 1014 Ohm.cm
4.7	Shelf Life	Minimum 1 Year Balance shelf life at the time of receipt of material at stores >= 9 months
4.8	Packing	In Air tight container
4.9	Quantity	As in Bill of Material (BOM)
4.1	Marking	Type of System (Resin or Hardener) Quantity in weight (gms) & Volume (cc) Batch Number Date of Packing Date of Expiry Manufacturer's Name

6.0.0 Mould

5.1	Material	High impact polystyrene (HIP)/ Polypropylene(PP)
5.2	Requirement	Shall be capable of sustaining the weight of the compound without deformation up to the maximum temperature developed during exothermic reaction. Shall be with pouring gates & risers.
5.3	Each half of the mould shall be embossed with-	Manufacturer's Name or Trademark Mould size(S3/S4/S5/S6) Year of manufacturing
5.4	Colour	White/ Transparent
5.5	Dimensions	As per the attached drawing

7.0.0 Connector Insulation

6.1	Material	EPR - Self Bonding Tape (Min Thickness 0.75 mm)
6.2	Requirement	Shall be compatible with polyurethane compound. Shall not get affected during Gel time & hardening time which is an exothermic reaction. Mastic layer shall be covered with silicone release paper.

6.3	Properties	Dielectric Strength- 15 KV/mm Minimum Continuous operating temperature-90 º C Emergency operating temperature- 130 º C for 4 hrs.
6.4	Dimensions	EPR - As per Bill of Material
6.5	Make	EPR - 3M Scotch 23, Scapa 2517, Bishop W963

8.0.0 Aluminium Braid

7.1	Purpose	Armour to Armour earthing continuity
7.2	Requirement	50% of braid shall be insulated with heat shrinkable cross-linked black tube to ensure the insulated earth at ferrule region. Thickness of the tube on full recovery to 8 mm shall be 2.5 ± 0.2 mm
7.3	Dimensions & Size	As per Bill of Material (BOM)

9.0.0 Aluminium Ferrule

8.1	Requirement	Long barrel ferrule suitable for use in medium voltage distribution system. Corrosive inhibition paste (M/s Jainson or equivalent) inside the ferrule with plastic end caps.
8.2	Ferrule Type	S3 & S4 - Normal Dimensions S5 STRT- Phase Conductor -150 sqmm Neutral Conductor - 70 sqmm S5 TRJ- Phase Conductor -120-150 sqmm Neutral Conductor -70 sqmm S6 STRT- Phase Conductor -300 sqmm Neutral Conductor - 150 sqmm S5 TRJ- Phase Conductor -240-300 sqmm Neutral Conductor -120-150 sqmm Transition type ferrule shall have same outer diameter. Inner diameter shall be adjusted as per cable conductor size. Inner edge of ferrules should be chamfered for easy insertion of cable core.
8.3	Dimensions & Size	As per Bill of Material (BOM)/ Drawing

10.0.0 Inspection & Testing

9.1	Type test	Type test on complete joint from CPRI / ERDA / NABL accredited labs as per IS 13573 -Part1. Randomly selected sample shall also be type tested without any commercial implication.

9.2	Acceptance test	As per IS 10333 1.0 Verification of BOM 2.0 Compound (Resin + Hardener)test: Freshly mixed sample: 2.1.1 Gel time 2.1.2 Setting time Cured compound: 2.2.1 Tensile strength 2.2.2 Ultimate elongation 2.2.3 Dielectric strength 2.2.4 Volume Resistively 2.2.5 Water absorption 2.2.6 Hardness 3.0 Epoxy putty hardening time
9.3	Type test report validity	valid for last 5 years
9.4	Prototype Approval	Kit components & Bill of Material shall be approved by purchaser before proceeding to manufacturing
9.5	Inspection test witness by purchaser	On samples selected from lot
9.6	Inspection call to Purchaser	By 15 days in advance intimation
9.7	Acceptance test results submission	Along with inspection call
9.8	Guaranteed Life	Joint shall be guaranteed for a period of 5 years against defective design & material & shall be replaced free of cost to BSES if failed due to design / material defect.

11.0.0 Container Printing

10.1	Resin	Instructions for use: Pour all the contents of hardener bottle into the Compound tin. Mix the components for 3- 5 minutes & pour the mixed compound into the mold immediately thereafter. Wash hands with soap and water after the use. Caution: Destroy the empty tin after the use. Do not use it for storing any animal feed, water or food stuff.

10.2	Hardner	Instructions for use: Pour all the contents of the bottle into the compound tin and continue as per the instructions provided on the resin container. Caution: Keep away from children. Do not breathe vapors. Avoid contact with skin & eyes. Wear suitable protective clothing, safety goggles & gloves. In case of contact with eyes rinse immediately at least for 15 minutes with plenty of water and seek medical attention immediately. After contact with skin, wash immediately with plenty of water and soap. Do not release the container to environment. Store away from heat or direct sun light. Keep the container tightly closed, away from oxidizing agents. This material and/ or its container must be disposed of as hazardous waste. Do not use the empty bottles for storing animal feed, water or food stuff.

11.0 Packing and Delivery

11.1	Packing	In 7 Ply corrugated box made out of 150 GSM Virgin Kraft Paper. Protection against shocks & vibration
11.2	Packing identification labels	Manufacturer Name, Number of items, Month & Year of manufacturing, Shelf life of Kit, Property of BSES
11.3	Corrugated Box contents	Kit components in proper packing with label indicating component name, quantity & shelf life. Bill of material sheet Instruction sheet for step by step jointing in English & Hindi Mould shall be part of kit except S6

12.0 Deviations

a) Deviations from this specification shall be listed by bidder clause wise along with optional offer and has to submit the list along with bid./quotation. BSES will review the deviations and if BSES is agreed with the deviation, seller has to take written confirmation from BSES on deviation during tender evaluation..
b) In the absence of any list of deviations from the Seller with bid as well as written confirmation from BSES on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully.
c) Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BSES old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not consider as a deviation from this tech spec at any stage of contract.

13.0 Inspection Expenses

Inspection (i.e. routing test, acceptance test, type test, factory visit etc.) shall be done any time by BSES on the basis of PO or may involve 3rd party as per BSES requirement. Inspection expenses like accommodation, fooding, local transport, air fair, train fair, taxi (NCR) etc shall borne by seller.

Any kind of test (routine/type test/acceptance test if any) at 3rd lab (i.e. CPRI/ERDA/NABL approved lab) shall be carried out by seller at their own cost. BSES may witness the test and the expenses like accommodation, fooding, local transport, air fair, train, taxi etc. shall borne by seller.

Above expenses shall be applied at each and every inspection and shall stand till closing of PO/WO/Rate contracts etc.

14.0.0 Failure Analysis and Penalty

Failure of joint shall be analyzed by BSES and Vendor jointly. Joint failure in regards to poor quality joint, poor work man ship, etc. shall be in the account of vendors. Losses due to failure shall be recovered from vendor in case of warranty.

Annexure A - Bill of Material (BOM) for JNT KIT

Annexure A.1 - Bill of Material (BOM) for JNT KIT N-HS STRT 1.1KV 300MM2 MOULD S6

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (10 Nos)	2No
3	Epoxy Putty	Sealing of Mould	Resin - 200 gm Hardener - 200 gm Hardening time - 20+/- 5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.541 kg	6Nos
4.1.2	Resin		P Pack = 1.275 kg	1No
4.2.1	Hardener		N Pack = 0.421 kg	6Nos
4.2.2	Hardener		P Pack = 0.215 kg	1No
5	Worm drive clip	Tighten the braid	NO. 3 (SS 304) (Refer Drawing)	2Nos

6	G. i. Solid Collet	Support for the Armour	Dia. 55 (Refer Drawing)	2Nos
7	Aluminum Braid 35 Sq.mm.	Earth connection	Length 900 mm	2Nos
8	Insulating Tube(Insulated on earthing braid)	Insulate the earth braid	Size 25/8, Length 450mm	2Nos
9	EPR Tape	Provide insulation on the Ferrule	600 mm (W 38 mm)	8Nos
10	Ferrule	Joining of main conductor cores		
i)	Al. Crimping Ferrules 300mm²		Refer Drawing	3Nos
ii)	Al. Crimping Ferrules 150mm²		Refer Drawing	1No
11	Epoxy Cast Spacer	Separate the cores	Dia 75 (Refer Drawing)	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	60ml	1No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No
15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

Annexure A.2 - Bill of Material (BOM) for JNT KIT N-HS TRANSN 1.1KV 240/300 MLD S6

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (10 Nos)	2No
3	Epoxy Putty	Sealing of Mould	Resin - 200 gm Hardener - 200 gm Hardening time - 20+/- 5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.541 kg	6Nos
4.1.2	Resin		P Pack = 1.275 kg	1No
4.2.1	Hardener		N Pack = 0.421 kg	6Nos
4.2.2	Hardener		P Pack = 0.215 kg	1No
5	Worm drive clip	Tighten the braid	NO. 3 (SS 304) (Refer Drawing)	2Nos
6	G. i. Solid Collet	Support for the Armour	Dia. 55 (Refer Drawing)	2Nos

7	Aluminum Braid 35 Sq.mm.	Earth connection	Length 900 mm	2Nos
8	Insulating Tube(Insulated on earthing braid)	Insulate the earth braid	Size 25/8, Length 450mm	2Nos
9	EPR Tape	Provide insulation on the Ferrule	600 mm (W 38 mm)	8Nos
10	Ferrule	Joining of main conductor cores		
i)	Al. Crimping Ferrules 300mm²		Refer Drawing	3Nos
ii)	Al. Crimping Ferrules 150mm²		Refer Drawing	1No
11	Epoxy Cast Spacer	Separate the cores	Dia 75 (Refer Drawing)	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	60ml	1No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No
15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

Annexure A.3 - Bill of Material (BOM) for JNT KIT N-HS STRT 1.1KV 150MM2 MOULD S5

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (10 Nos)	2No
3	Epoxy Putty	Sealing of Mould	Resin - 200 gm Hardener - 200 gm Hardening time - 20+/-5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.541 kg	2Nos
4.2.1	Hardener		N Pack = 0.421 kg	2Nos
5	Worm drive clip	Tighten the braid	NO. 3 (SS 304) (Refer Drawing)	2Nos
6	G. i. Solid Collet	Support for the Armour	Dia. 55 (Refer Drawing)	2Nos
7	Aluminum Braid 25 Sq.mm.	Earth connection	Length 900 mm	2Nos

8	Insulating Tube(Insulated on earthing braid)	Insulate the earth braid	Size 25/8, Length 450mm	2Nos
9	EPR Tape	Provide insulation on the Ferrule	600 mm (W 38 mm)	8Nos
10	Ferrule	Joining of main conductor cores		
i)	Al. Crimping Ferrules 150mm²		Refer Drawing	3Nos
ii)	Al. Crimping Ferrules 70mm²		Refer Drawing	1No
11	Epoxy Cast Spacer	Separate the cores	Dia 75 (Refer Drawing)	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	60ml	1No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No
15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

Annexure A.4 - Bill of Material (BOM) for JNT KIT N-HS TRANSN 1.1KV 120/150 MLD S5

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (6 Nos)	2No
3	Epoxy Putty	Sealing of Mould	Resin - 200 gm Hardener - 200 gm Hardening time - 20+/-5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.541 kg	2Nos
4.2.1	Hardener		N Pack = 0.421 kg	2Nos
5	Worm drive clip	Tighten the braid	NO. 2 (SS 304) (Refer Drawing)	2Nos
6	G. i. Solid Collet	Support for the Armour	Dia. 40 (Refer Drawing)	2Nos
7	Aluminum Braid 25 Sq.mm.	Earth connection	Length 670 mm	2Nos
8	Insulating Tube(Insulated on	Insulate the earth braid	Size 25/8, Length 335mm	2Nos

	earthing braid)			
9	EPR Tape	Provide insulation on the Ferrule	400 mm (W 38 mm)	4Nos
10	Ferrule	Joining of main conductor cores		
i)	Al. Crimping Ferrules 120 - 150mm²		Refer Drawing	3Nos
ii)	Al. Crimping Ferrules 70mm²		Refer Drawing	1No
11	Epoxy Cast Spacer	Separate the cores	Dia 75 (Refer Drawing)	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	60ml	1No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No
15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

Annexure A.5 - Bill of Material (BOM) for JNT KIT N-HS STRT 1.1KV 50MM2 MOULD S4

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (6 Nos)	2No
3	Epoxy Putty	Sealing of Mould	Resin - 100 gm Hardener - 100 gm Hardening time - 20+/-5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.235 kg	2Nos
4.2.1	Hardener		N Pack = 0.375 kg	2Nos
5	Worm drive clip	Tighten the braid	NO. 1 (SS 304) (Refer Drawing)	2Nos
6	G. i. Solid Collet	Support for the Armour	Dia. 26 (Refer Drawing)	2Nos
7	Aluminum Braid 25 Sq.mm.	Earth connection	Length 630 mm	1Nos
8	Insulating Tube(Insulated on earthing braid)	Insulate the earth braid	Size 25/8, Length 315mm	1Nos
9	EPR Tape	Provide insulation on the Ferrule	250 mm (W 38 mm)	8Nos

10	Al. Crimping Ferrules 50mm²	Joining of main conductor cores	Refer Drawing	4Nos
11	Epoxy Cast Spacer	Separate the cores	Dia 50	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	Cleaning Tissue dipped in 6 ml Isopropyl Alcohol	3No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No
15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

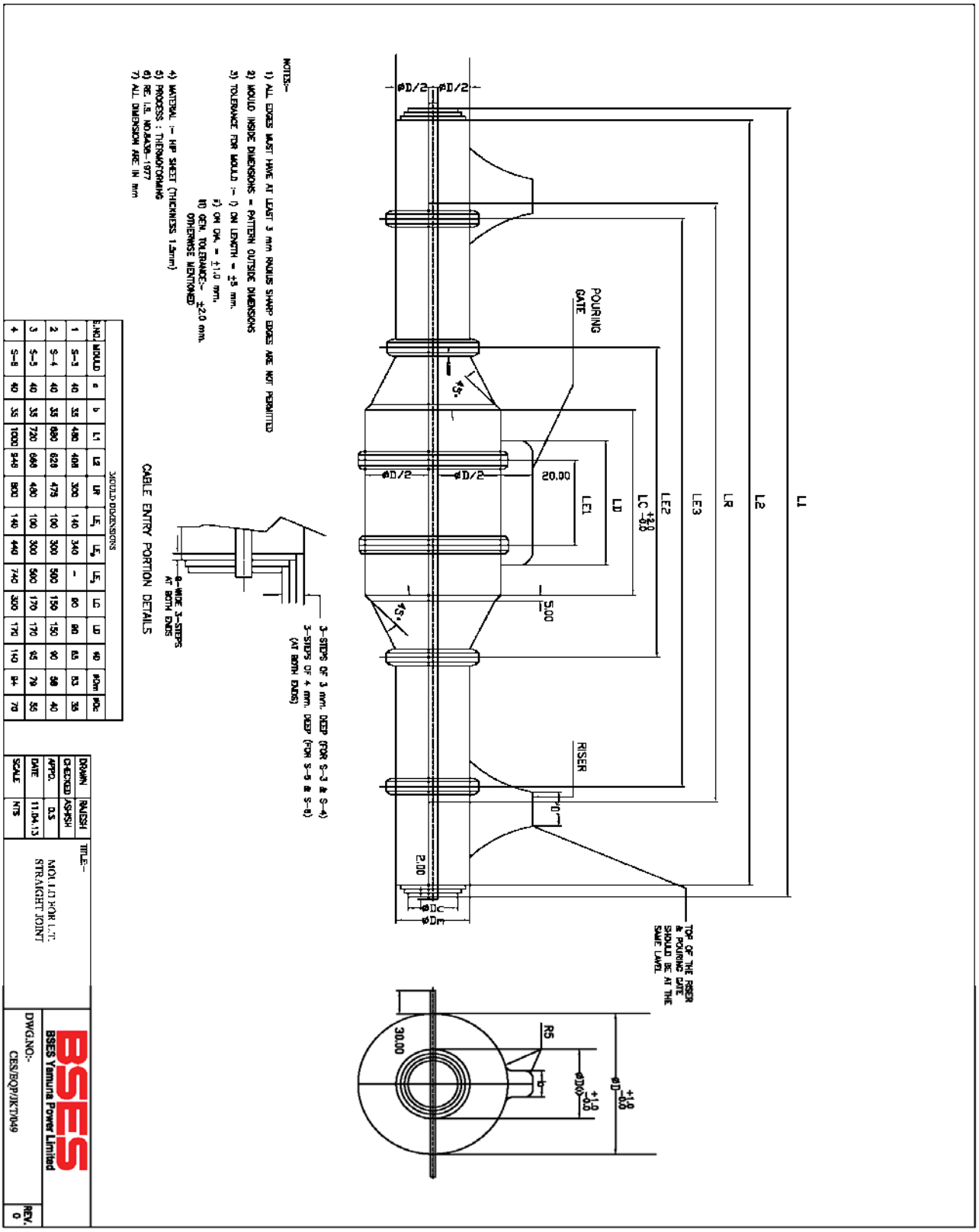
Annexure A.6 - Bill of Material (BOM) for JNT KIT N-HS STRT 1.1KV 25MM2 MOULD S3

S No.	Item Description	Function	Size / dimensions / rating (as applicable)	Qty/Kit
1	Mould	Insulation & environmental sealing	Refer Drawing	1Pair
2	Mould Holding Clip	To hold the mould	21 x 75mm (10 Nos)	1No
3	Epoxy Putty	Sealing of Mould	Resin - 100 gm Hardener - 100 gm Hardening time - 20+/-5 Min.	1No
4	Compound	Mechanical protection to joint		
4.1.1	Resin		N Pack = 2.235 kg	1Nos
4.2.1	Hardener		N Pack = 0.375 kg	1Nos
5	Worm drive clip	Tighten the braid	NO. 1 (SS 304) (Refer Drawing)	2Nos
6	G. i. Solid Collet	Support for the Armour	Dia. 22 (Refer Drawing)	2Nos
7	Aluminum Braid 25 Sq.mm.	Earth connection	Length 420 mm	1Nos
8	Insulating Tube(Insulated on earthing braid)	Insulate the earth braid	Size 25/8, Length 210mm	1Nos
9	EPR Tape	Provide insulation on the Ferrule	400 mm (W 19 mm)	8Nos
10	Al. Crimping Ferrules 25mm²	Joining of main conductor cores	Refer Drawing	4Nos
11	Epoxy Cast Spacer	Separate the cores	Dia 50	2Nos
12	PVC NA Tape	For binding of spacer	3/4" x 5mtrs	1No
13	Cleaning Liquid	Clean the cores	60ml	1No
14	Al oxide Paper (P80)	Removal of burs on crimped ferrule	40 cm x 25 mm	1 No

15	Instruction Sheet	Installation method in English & Hindi		1No

* Note: Expiry date of all the kit contents shall be 1 year only.

Annexure B: Drawing of Mould for Joint

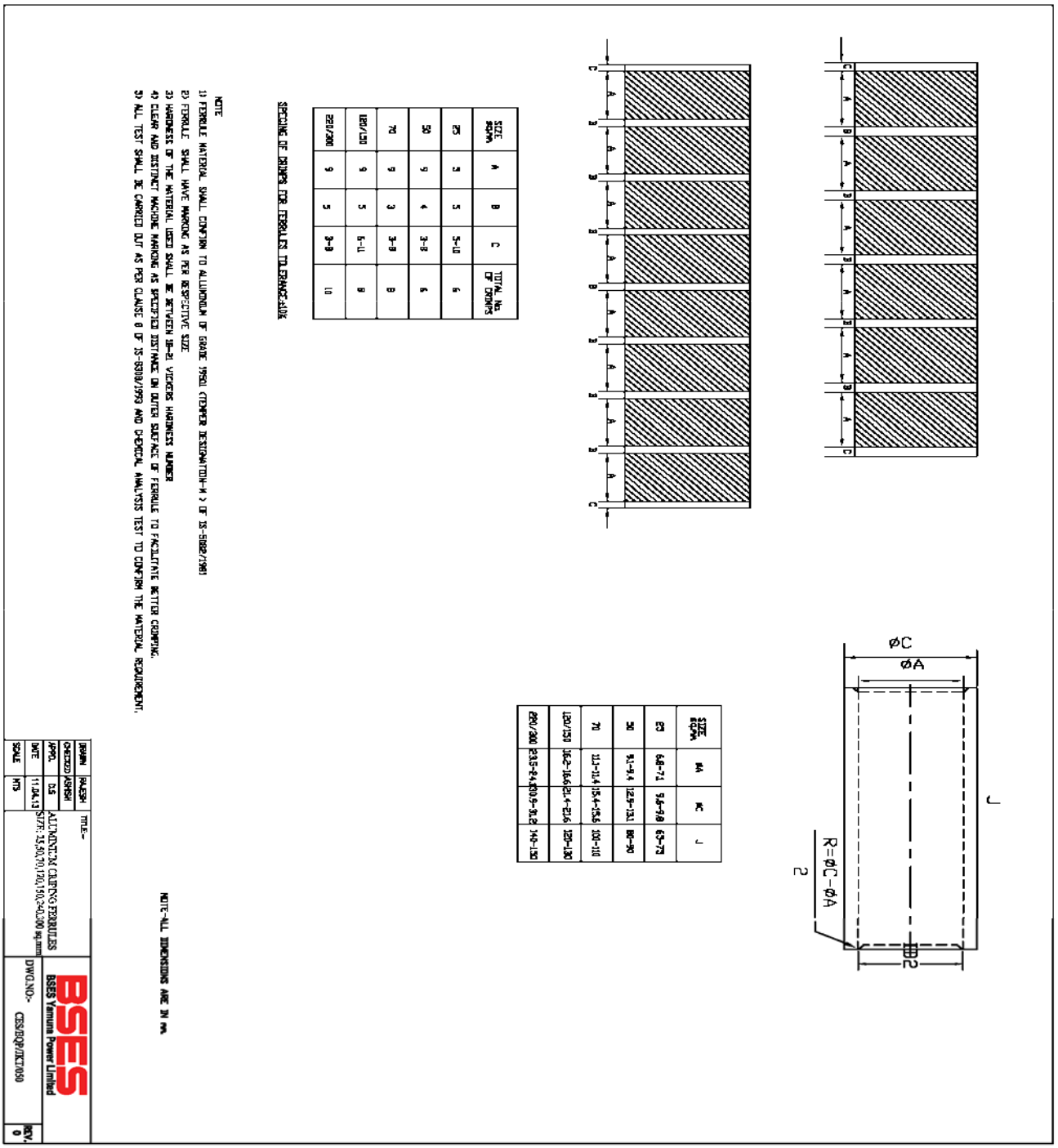


S.NO.	MOULD	a	b	L1	L2	LR	L_{E_1}	L_{E_2}	L_{E_3}	LD	ØDm	ØDc
1	S-3	40	35	480	408	300	140	340	-	90	83	35
2	S-4	40	35	680	628	478	100	300	500	150	90	58
3	S-5	40	35	720	668	490	100	300	560	170	95	78
4	S-8	40	35	1000	948	800	140	440	740	300	170	140

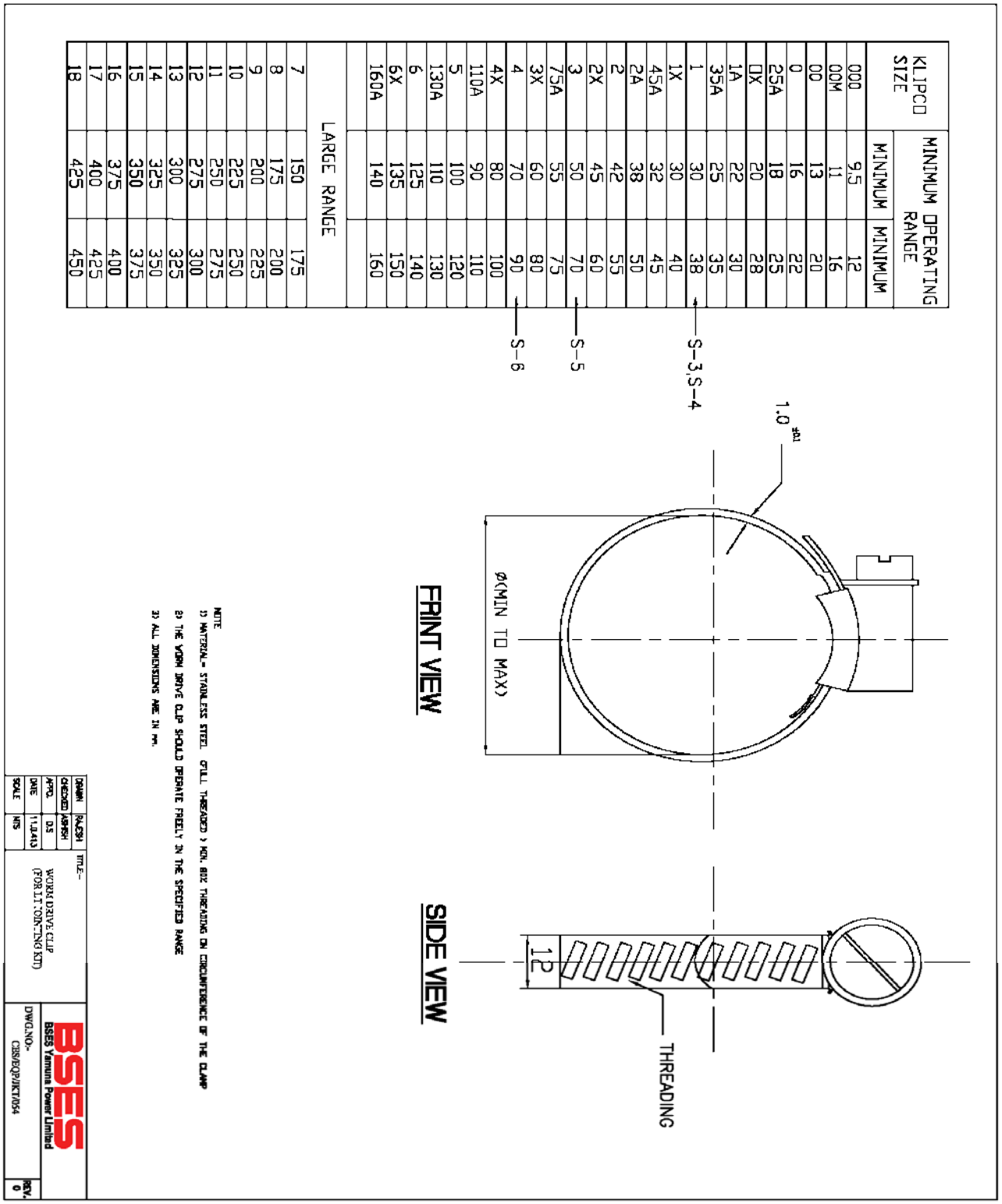
MOULD DIMENSIONS

Technical Specification For Heat Shrinkable And Cold Shrinkable Straight Through Jointing Kit (1.1kV XLPE Insulated Cables)

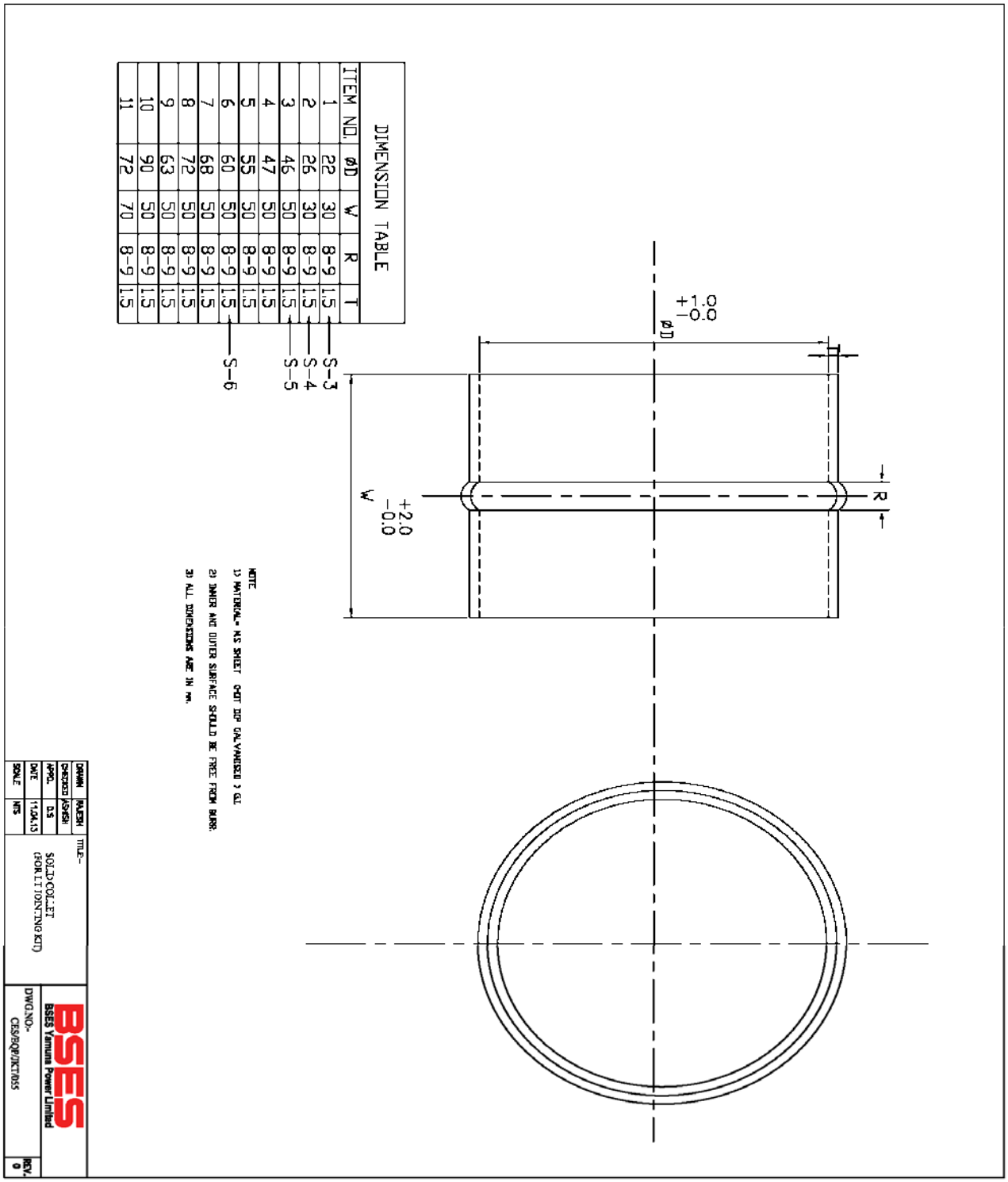
Annexure C: Drawing of Al Crimping Ferrule



Annexure D: Drawing of Worm Drive Clip



Annexure E: Drawing of Solid Collet



Annexure-F

BSES Rajdhani Power Ltd.

Job Card For Cable Jointing Work

Job Card No | Date | Fault ID

Division | Purpose: Project / Scheme | O&M

Contractor

Voltage Grade: 11kv | 33kv | 66kv | 1.1 KV/LT

No. of cores: 1 | 3 | 3.5/4

Cable Size: 1000 /800 /630 /500 /400 /300 /240/225/ 185 / 120 / 95 / 70 / 50/25 sqmm

Jointing Details

Type of Joints	No. of Joints		Docate No.	IR Ref.
	Single	Double		
XLPE/XLPE(or PVC/PVC) Straight Through Joints				
XLPE/PILCA Transition Joint				
PILCA/PILCA Straight Through Joints				
XLPE Indoor Termination				
XLPE Outdoor Termination				
PILC Indoor Termination				
PILC Outdoor Termination				

Feeder Details: From | To

Location: From | To

Landmark: _____

Fault Occurance Date: _____

Job Allocated By: _____ PWT Ref: _____

Date and Time of Spiking: Date | Time

Work Completed On: Date | Time

Digging Details (In Meter): Length | Wedth | Depth

Details of cable laid: Size | Length (In Meter) | Docate Ref.:

Contractor Supervisor : _____ Signature : _____ Date : _____

Jointer Details: _____

Stage Verification ie : Digging / Jointing etc.

Stage/Work Verification	Name & Signature	Date & Time

Scrap Details including Qty: _____

New Kit Details: _____

Old Kit Details: _____

Type of Fault: _____

Remark If any : _____

Job Certified By :

Shift Incharge	Name	Signature	Date

1 COPY - BILLING COPY*

Annexure-G

SOP FOR REPAIRING OF CABLE FAULT (Shall be part of PO)		
SI. No.	Activity	Responsibility
Initiation		
1	Identify and isolate fault and inform GNIIT in case of cable fault	Break down team
2	Updation of the details in OMS against respective feeder tripping event.	GNIIT
Fault Location		
1	Information sent to FLC team and SDO.	GNIIT
2	Mobilize FLC team and cable jointing contractor.	SDO
3	Identification of fault location	FLC Team
Preparation for Jointing		
1	Seeking permission from road owning agency	SDO
2	Payment of RR charges to Road owning agency	Finance
3	Digging	Cable jointing contractor
4	Cut faulty section and Pre-test (HV test) cable for multiple fault	Cable jointing contractor
5	BOQ estimation for jointing work (type, size and length of cable, type of jointing kit)	Cable jointing contractor
6	Filling material reservation slip (MRS) in SAP	SDO
7	Issuing and transporting material from store.	Cable jointing contractor
Jointing		
1	Cable preparation (overlap length of cable, slide of armour, build up with inner sheath etc)	Cable jointing contractor (for jointing details refer to manufacturer instruction manual)
2	Copper tape shields	
3	Core preparation	
4	Location of parts in completed joints	
5	Earthing of connection	
6	Completion of joints	
7	Take Photographs before, during and after jointing and send to CES	SDO
8	Supervision during jointing	SDO
9	Sending failed joint to Division store	Cable jointing contractor
Completion and reporting		
1	Intimate to breakdown team about joint completion.	Cable jointing contractor
2	Conduct HV test	Break down team
3	Restore of Supply through jointed cable	Break down team
4	Backfilling and compaction of excavated soil	Cable jointing contractor
5	Completion information in Job Card (Details	Cable jointing contractor

	of work done, material consumption, location, feeder name and joint tag no., date, supervisor name, jointer name) sent to SDO	
6	Above information sent to GNIIT	SDO
7	Send information about GPS location of Cable fault to GIS	SDO
8	daily report of cable jointing to CES	Division Head
9	Updation of information in OMS including supervisor name, jointer name, feeder name	GNIIT
10	Information to include GPS location of cable fault.	GNIIT

Special Note-

1) Joints to be done preferably during day. In case of constraints, DGM (O&M) to authorize for night time jointing with supervisor
2) Daily joint report to be shared with CES
3) Bi-monthly analysis of faulty joint for ensuring warranty compliance to be organized at circle level by contractor in presence of DGM (O&M) and CES
4) Certification of job card for payment by DGM (O&M) subject to OMS compliance CES to check any gaps.

Specification for Heat Shrinkable Transition Jointing Kit (For 11 kV & 33 kV Cables)

Specification no – SP-HSTJK-05-R2

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Pronab Bairagi		Amit Tomar	26.04.17	Vijay Panpalia	26/4/17	R2	26/04/2017

Index

Record of Revision

Item/Clause No.	Change in Specification	Approved By	Rev
4.1.20	GPS Coordination		01
4.1.21	Hydraulic Crimping		01
4.1.22	Coffin for completed joint		01
5.1.1b	Type Test		01
Annexure H	Job Card		01
Annexure I	SOP		01
7.0.0	Deviations		02
9.0.0	Inspection Expenses		02
Annexure J	Joint Marker		02
10.0.0	Joint Failure Analysis and Penalty		02
11.0.0	Plumbing method for Transition joint		02

1.0.0 Scope of work

A. Heat Shrinkable Transition Joint Kits (hereinafter briefly referred to as “TRJ Kits”); suitable for 11 kV/33 kV XLPE - PILC cables, shall be designed, manufactured, tested, packed and delivered by the Vendor, as per Purchaser’s requirements.

B. Supervision during installation of joints at site if mentioned in the order.

C. During post-installation period, if a joint fails at site, the vendor shall depute a technical team to site for a root-cause analysis of the failure of the joint, in the presence of BSES officials. An Analysis Report shall then be submitted for BSES’s review and approval. If this report concludes the cause of failure as due to a design/manufacturing defect in a component, then vendor shall replace all such components in the entire stock available with BSES.

2.0.0 Codes & standards

2.1.0 National Standards:

S No.	Standard Number	Title
2.1.1	IS- 13573: 2011	Joints & Terminations of Polymeric Cables for working voltages from 6.6 kV up to and including 33 kV Performance Requirements and Type Tests
2.1.2	IS—7098: Part 2 : 1985	Cross-linked Polyethylene (XLPE) Insulated PVC sheathed cables : Part 2 : For working voltages from 3.3 kV up to and including 33 kV
2.1.3	IS - 692: 1994	Paper insulated lead-sheathed cables (PILC) for rated voltages up to and including 33 kV specification
2.1.4	IS - 10810: 1984	Methods of test for cables

2.2.0 International Standards:

S No.	Standard Number	Title
2.2.1	EA TS - 09-13	Electricity Association - Technical Specification -09-13 Material component for use in Electric Power Cable Termination & Joints for System voltage above 1000 V up to 36 kV
2.2.2	IEEE - 48	Standards Test Procedures and requirements for high voltage alternating current cable termination
2.2.3	IEC - 60183	Guide to the selection of high voltage cables
2.2.4	IEC - 885 Part 1 to 3	Electric test methods for electric cables

3.0.0 Cable Construction

Normal sizes of XLPE cables used in BSES system and the construction features of these cables are indicated below:

XLPE type Cables: 11kV, 3-core x 150 sq mm AL
11kV, 3-core x 300 sq mm AL
33kV, 3-core x 400 sq mm AL

A. PILC-Belted cable: (APLySTY)

6.35/11kV (E), 3 core, sector-shaped, Paper insulated, mass impregnated non draining type (PILC), belted, lead alloy 'E' sheathed with bedding over the lead sheath, double G.S. steel tape armoured, overall PVC served with stranded shaped Aluminium conductor (APLySTY) of sizes 120 & 240mm2 as detailed in this specification confirming to IS:692.

11kV, 3-core x 120 sq mm AL
11kV, 3-core x 240 sq mm AL

B. PILC- Screened Cable (APLySWY) 19/33kV(E), 12.7/22kV(E) 3 core, 300mm2 shaped, Paper insulated, mass impregnated non-draining type (PILC), screened, lead alloy 'E' sheathed with bedding over the lead sheath, round steel wire armoured, overall PVC served with stranded shaped Aluminium conductor (APLySWY) of size 300mm2 as detailed in this specification.

22kV, 3-core x 300 sq mm AL
33kV, 3-core x 300 sq mm AL

3.1.0 Cross link polyethylene (XLPE) cable detail:

3.1.1	Conductor	a) Electrolytic Grade stranded Aluminium Conductor / Annealed Copper Conductor b) Grade: H2/ H4 as per IS: 8130/84 (For Al) c) Shape: Compacted Circular d) Class 2 e) Longitudinal "Water-Blocking Arrangement" (or water-tight construction or water barrier protection)
3.1.2	Conductor Screen	Extruded Semi Conducting material

3.1.3	Insulation	Extruded XLPE Insulation, with water-tree retardant property
3.1.4	Insulation Screen	Freely strippable Semi Conducting (without application of heat)
3.1.5	Water Swellable Tape	Semi-conducting Water Swellable Tape under the copper tape on each core.
3.1.6	Copper Tap	Copper Tape applied helically over the layer formed by application of insulation screen, water-swellable tape and identification strip
3.1.7	Filler	All interstices, including center interstices filled by PP filler.
3.1.8	Over all three cores	Binder tape
3.1.9	Inner Sheath	Extruded Inner Sheath of Black PVC type ST-2.
3.1.10	Armour	a) Galvanised Steel round Wires/ Galvanised steel flat strip armour (For 3 core cables) b) Hard drawn Aluminium Wire (For 1 core cables)
3.1.11	Binder Tape	Rubberised cotton tape
3.1.12	Outer Sheath	Extruded outer sheath of PVC (ST-2) with termite- repellent and anti rodent properties.

3.2.0 Paper insulated lead sheathed (PILC-Belted and Screened) cable detail:

3.2.1	Conductor	a) Electrolytic Grade stranded Aluminium Conductor / Copper Conductor b) Grade: H2/ H4 as per IS: 8130/84 (For Al) c) Stranded, compacted and sector in shape d) Class 2 e) Free from sharp corners or projection
3.2.2	Insulation	a) Kraft paper impregnated with non-draining Compound. b) Applied helically with controlled lay and tension c) Uniform in texture free from impurities and defects
3.2.3	Identification of cable cores	a)The cable cores shall have the identified numbers (1, 2 & 3) corresponding to R, Y & B phases respectively b) The printing shall be preferably in a white in a dark background.
3.2.4	Belt Paper	Additional (belt) paper insulation layer

3.2.5	Filler	Crushed paper to fill the gaps between cores
3.2.6	Metallic screen	a) Lead Alloy “E sheath a) Sheath shall be extruded directly on the cable in the form of a seamless tube. b) It shall be reasonably close-fitting, impervious to moisture and free from pin-holes, joints, mended
3.2.7	Bedding	Bedding shall be of lapped type and shall consists of two layers of impregnated paper tapes applied over coating of waterproof compound over lead alloy sheath without overlap but breaking joints, covered with a layer of compound and followed by two layers of Hussein tapes.
3.2.8	Armour	Galvanized Steel (flat/round)strip armour
3.2.9	Outer Sheath	Extruded outer sheath of PVC (ST-2) with termite repellant and anti-rodent properties.

3.3.0 Paper insulated lead sheathed (only Screened) cable detail

	Conductor Screening	Two layers of semi conducting carbon paper tape applied helically c conductor
	Insulation Screening	Each individual core shall be provided with metallic screening over the insulation,

4.0.0 Transition Joints (TRJ)

General Technical Requirements for Transition Joints (TRJ) for XLPE-PILC Cables are as follows:

Scope: Design, manufacture, testing and supply of Transition Joint Kits for 11 KV & 33 KV Power Cables.

Functional requirements for Heat Shrinkable TRJ joints are given below:

4.1.1	Cable preparation	a) Cable preparation shall be as per installation instruction sheet. b) Manufacturer shall be provided Installation instruction sheet in every kit.
Connector		

4.1.2	Conductor Connection	For 11kV a) Conductors to be jointed by crimping connectors b) Annular CSA (cross-sectional area) of the ferrule shall not be less than CSA of the conductor of the cable. Length of the ferrule shall be sufficient to allow adequate number of crimps, to limit temperature rise at the joint. (Vendor to furnish dimensional drawing for ferrule, indicating crimp marks.) c) For aluminum cable, the crimped ferrule shall be of aluminum d) Refer annexure F for GA drawing for crimping ferrule For 33kV a) Shear bolt type mechanical connector b) Approved make: Tyco Electronics (BSM-185/400-U) Pfisterer (332617010) Or equivalent make (Manufacturer shall take prior approval from CES) c) Maintain smooth surface over connector after cut the shear head bolt d) Vendor to furnish drawing for the mechanical connector
4.1.3	Screening of belted PILC cable	a) Transparent tube over each core providing oil barrier and for restoring belt paper Insulation. b) Semi conductive tube over each core providing a screen over each core (similar to semicon screen of XLPE cable) c) Yellow mastic fill-up air voids at the crutch. d) A semi conductive breakout, which has been packed with insulating mastic prevent trap of air. e) The fingers overlap the semi conductive tube and establish continuity of lead sheath up to end of the semi conductive tube.
4.1.4	Void filling and stress relief over crimped connector and cut point of the insulation screen.	By means of High permittivity mastic tapes / Lubricant.
4.1.5	Metal screen continuity	a) By means of Tinned copper wire mesh, wrap individual core from cu screen with 50 % overlap and continue on other side metal sheath (lead Sheath) b) Cu wire mesh connect both the side by solder tack
4.1.6	Stress Control System	a) The earthed insulation screen of an XLPE cable is terminated at a suitable distance from the connector (Ferrule). b) The stress control tube is in electrical contact with insulation screen. c) Impedance of the tube shall be constant up to an operating temperature and shall be within the range 1 x 108 ohm-cm to 8x108 ohm-cm. d) The physical and electrical properties shall conform to EA TS 09-13.

4.1.7	Insulation build-up	a) Maximum three layers of insulation tubes shall be used. Total thickness of the insulation being provided in the joint shall not be less than 1.2 times the insulation of the cable being jointed. b) Outer-most tube shall be screened insulating tube (dual wall tube). This tube shall be manufactured by extrusion process. c) Physical and Electrical properties shall conform to EA TS 09-13.
4.1.8	Core end sealing	By means of Core end sealing sleeve with coating
4.1.9	Mechanical Protection	By means of a rollable steel mat (with required protective coating against corrosion) Refer drawing
4.1.10	Corrosion Protection	By means of semi-rigid tubes, internally coated with water blocking sealant. Thick wall Insulating tube
Armour / Earthing Continuity		
4.1.11	Armour bond	1) For XLPE cable: a) By means of a combination of steel (G.I.) support ring and two nos. of stainless steel hose clips. b) GI Support Ring shall be 'zinc-sprayed with central bulge/bump'. 2) For PILC cable: Solder and flux to plumb the earthing braid to lead sheath
4.1.12	Armour continuity	By means of two nos. of tinned copper braided conductor of 25 sq. mm. for 11 kV and 35 sq. mm. for 22 or 33kV.
Accessories		
4.1.13	Vinyl tape	Oil sealing for PILC cable
4.1.14	Suppression of electrical discharges over XLPE insulation	Cleaning solvent /equivalent, for manual application.
4.1.15	Installation Instruction Sheet	Shall be provided in English and Hindi and shall be inside every kit.
4.1.16	Paper Tape	Paper tape, required for measurements during jointing, shall be provided inside every kit.

4.1.17	Identification Tag (for traceability)	a) An aluminum pouch with paper tag & sealing arrangement at one end shall be provided. b) This tag is required to be tied over the cable at one side of the joint. c) The paper tag shall give following information 1) Vendor kit designation 2) Cable section/Division 3) Type of joint 4) Size of Joint 5) Make of joint 6) Voltage class 7) Serial no. of kit 8) Vendor lot & batch no 9) Month & year of manufacturing 10) Date of installation 11) Name of jointer 12) Name of vendor supervisor 13) Name of BSES supervisor 14) Remarks
4.1.18	Printing on each Heat/cold shrinkable or Moulded component	Month and year of manufacturing, batch no. /lot no., size, make, type etc.
4.1.19	Technical Particulars	Vendor shall submit Guaranteed Technical Particulars (GTP) as per Annexure A.
4.1.20	GPS Coordinate	Vendor to capture GPS coordinates and shall include in job card of each joint at their own cost.
4.1.21	Hydraulic Crimping	Using of Hydraulic crimping tool is mandatory for crimping purpose
4.1.22	Coffin for completed joint	After successfully completion of joint, Coffin shall be made by bidder for completed joint. Drawing shall be provided by BSES. Excluding drawing, everything shall be in the scope of bidder.

5.0.0 Inspection and Testing:

5.1.1	Type Tests	a) Straight-Through Joint shall be of type-tested quality from CPRI/ERDA. b) In addition to this, in case of rate contact, vendor will be required to conduct type-testing on heat/cold -shrinkable and moulded components, stress grading mastic, etc., in line with EA TS 09-13 standard, at third party test laboratory once in 6 months on randomly selected sample of each voltage rating without any commercial implication to BSES. Also special test shall be done as per IS 13573.2.2011, Table-7 without any cost implication to BSES. Cable for type test may be provided by buyer at the cost of

		bidders. C) If product is not type tested or test report is more than 5 years old from CPRI/ERDA, same shall be carried out by seller, sample shall be selected randomly by BSES, test cost to be borne by seller. For new vendor, type test is mandatory from CPRI/ERDA of BSES sample at their own cost. All the cost of inspector shall be borne by seller as mentioned in inspection expenses clause
5.1.2	Routine & acceptance Tests	I)All the routine and acceptance tests shall be carried out as per EA TS 09-13 guidelines, refer Annexure C II)H. V. Test shall be carried out on a randomly selected and installed Transition Joint, in the presence of Purchaser's representative, at manufacturer's works. III)The joint shall withstand a test of 4Uo voltage for 4 hours.
5.1.3	b) Inspection	I) Purchaser reserves the right to inspect /witness all tests on the TRJ Kits at Seller's works at any time, prior to dispatch, to verify compliance with the specification. II) In-process and / or final inspection call intimation shall be given in advance to purchaser.
5.1.4	c) Test Certificates	i) Three sets of complete Test Certificates (Routine & Acceptance tests) shall be submitted along with the delivery of TRJ Kits. ii) Bought-out Items: Vendor shall submit Test Certificates, lot/batch number-wise, from their sub-suppliers / principal. TC's should clearly indicate the measured technical parameters, in accordance with sub-supplier's specification. (Also refer Annexure — C)
5.1.5	Documents	"Documents" refer to Documents, Data, Manuals, etc. (Scanned copy of signed documents also shall be part of entire soft file (e-file) or CD.)
5.1.6	Along with the Bid	Vendor shall submit signed 3 sets (plus 1 set of soft copy) of following documents a) GTP (duly filled-in) (as per Annexure — A) b) Cross-sectional drawings for components! Assembly c) Type Test Certificates d) Complete Catalogue and Installation Instructions. e) Any other document.
5.1.7	After Award of Contract	Vendor shall submit signed 2 sets (plus 1 set of soft copy) of above-mentioned documents within 15 days, for Purchaser's approval.
5.1..8	"As-Built" documents	Final signed "As-built" documents for the equipment in 3 sets (hard copy), 1 no. soft copy and 1 no. CD. These documents shall include signed Routine & Acceptance Test Certificates also.

5.1.9	Packing, Marking, Shipping, Handling and Storage	a) Every component / kit / box shall be properly sealed / packed for protection against damage. Stress grading mastic shall be packed in air-tight / air-sealed packing. b) All tubings should be nested as per application sequence nad packed in separate polythene bags. c) Separate packings (sub-kits) shall be provided, for components (given below) used in crotch area and connector area. These sub-kits, labeled as “CROTCH KIT” and “CONNECTOR KIT’, shall be placed inside every kit box. i) Crotch Kit Components -- Semi conducting break-out (PILC side) -- Insulating cable break-out (XLPE side) -- Yellow moulded wedge -- Break-out end sealing tube -- Break-out finger sealing tube -- Stress grading mastic -- Vinyle mastic tape ii) Connector Kit : Components -- Ferrule (connector) -- Void Filling mastic (yellow)
5.1.10	a) Identification Label	Markings / Labels shall be on both sides of every packed box. 1) Identification number/type designation (as per manufacturer’s standard) 2) Voltage grade, size, description of the Kit (including the voltage grade, size, type of the cables, for which it is to be used) 3) Batch no., lot no., etc. 4) Quantity 5) a) Purchase Order no. & date b) Purchaser’s name c) R-INFRA’s SAP code number 6) Weight (kg) of each Cable Termination Kit and of each box containing kits. 7) Manufacturer’s name 8) Month & Year of Manufacturing 9) Date of packing, shelf life (if applicable)
5.1.11	b) Transit damage	The seller shall be responsible for any transit damage due to improper packing.

6.0.0 Quality Assurance (QA)

6.1.1	Vendor's Quality Plan (QP)	To be submitted for Purchaser's approval.
6.1.2	Sampling Method	Sampling Method for quality checks shall be as per manufacturer's standard practice / ESI guidelines and Purchaser's prior approval shall be taken for the same.
6.1.3	Inspection Hold-Points	To be mutually identified, agreed and approved in Quality Plan.

7.0.0 Deviations

7.1.0	Deviations	a) Deviations from this specification shall be listed by bidder clause wise along with optional offer and has to submit the list along with bid./quotation. BSES will review the deviations and if BSES is agreed with the deviation, seller has to take written confirmation from BSES on deviation during tender evaluation.. b) In the absence of any list of deviations from the Seller with bid as well as written confirmation from BSES on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully. c) Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BSES old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not be considered as a deviation from this tech spec at any stage of contract.

8.0.0 Delivery

8.1.0.	Delivery	Despatch of Material: Vendor shall despatch the material, only after the Routine Tests/Final Acceptance Tests (FAT) of the material witnessed/waived by the Purchaser, and after receiving written Material Despatch Clearance (MDC) from the Purchaser.

9.0.0 Inspection Expenses

Inspection (i.e. routing test, acceptance test, type test , factory visit etc.) shall be done any time by BSES on the basis of PO or may involve 3rd party as per BSES requirement. Inspection expenses like accommodation, fooding, local transport, air fair, train fair, taxi (NCR) etc shall borne by seller.

Any kind of test (routine/type test/acceptance test if any) at 3rd lab (i.e. CPRI/ERDA/NABL approved lab) shall be carried out by seller at their own cost. BSES may witness the test and the expenses like accommodation, fooding, local transport, air fair, train, taxi etc. shall borne by seller.

Above expenses shall be applied at each and every inspection and shall stand till closing of PO/WO/Rate contracts etc.

10.0.0 Failure Analysis and Penalty

Failure of joint shall be analyzed by BSES and Vendor jointly. Joint failure in regards to poor quality joint, poor work man ship, etc. shall be in the account of vendors. Losses due to failure shall be recovered from vendor in case of warranty

11.0.0 Plumbing method shall be used in Transition joints, additional lead is to be required for this process and same shall be provided by bidder.

Annexure - A: Guaranteed Technical Particulars (GTP)

The Seller is deemed to have examined all parts of the Specification documents and to have been fully informed, as to the nature of work and the conditions related to its performance.

SL	Description	Purchase requirement	Vendor's data
1.0	Manufacturer's name		
2.0	Purchase Order no. & date		
3.0	Guarantee Period (minimum)	60 Months (from date of commissioning) / 66 Months (from date of receipt at Purchaser's store), whichever is earlier	
4.0	Applicable IS / IEC Standard followed by Vendor (incl. type test standard)		
5.0	Voltage Grade (kV)		
5.1	Lightning Impulse Voltage Withstand Test		
5.2	4Uo AC voltage withstand test for 4 hours	To be conducted on Installed joint at works	
6.0	Continuous operating temperature	90 deg. C	
7.0	Functional Requirements		
7.1	Method of Stress Control and Discharge Suppression		
7.2	Method of Insulation build-up and screening		
7.3	Method of earth bond a) Size and no. of braids b) Size of armour support c) No. of hose clips		
7.4	Method of mechanical protection a) for 3-core Cable b) for 1-core Cable		
7.5	Method of protection against corrosion (type & coating thickness of protective layer on steel mat)		
7.6	Method of conductor continuity a) For crimping connector b) For mechanical connector		

8.0	Description of items in the Kit, which are imported /sourced From Principal /Sub-suppliers		
9.0	Names of items in the Kit and their respective shelf life (months I years)		
10.0	Kit Content Table (KCT) enclosed? (Refer Annexure — B)	Yes / No	
11.0	Drawing for connector (ferrule) enclosed	Yes / No (If yes, mention the document reference)	
12.0	Is Annexure — D (Technical Deviation Sheet) duly filled-in ?		
13.0	Packing (Qty) i) Packing of every Kit h) Group Packing	1 no. --No. of Kits per Box --No. of Boxes Yes / No (If yes, mention the document reference)	
14.0	Installation Procedure enclosed?		
15.0	Quality Assurance Programme (QAP for raw materials, in-process inspection, factory testing) is enclosed?	Yes / No	
16.0	Whether all heat-shrinkable and moulded components of the kit meet the requirements of and have been tested in accordance with EA TS -09-1 3. (for heat-shrinkable joints)	Yes / No (If yes, details of test report no./Date /name of test laboratory to be mentioned.)	
17.0	Type Test Reports (TTR) (Relevant test report no. & date, With type, size, other details of each type of Kit.) a) Prepared Joint: CPRI TTR as per BIS / IEC enclosed? b) Loose Components: CPRI TTR as per EA TS 09-13 enclosed?	Yes/No Yes/No	
18.0	Printing details on each of the Heat-shrinkable and Moulded components	(Mention the text, presently printed on each of the component)	

Annexure – B: Kit Content Table (KCT)

Vendor shall submit KCT as a consolidated table, consisting of all data, such as:

A. Heading

1. Voltage grade, size, description of the Kit
(Including the voltage grade, size, type of the cables, for which it is to be used)

2. Type designation (as per manufacturer's standard)

B. Details / Parameters

(For each component/item of the KCT)

1. Lot no. /Batch no., etc.
2. Item number (manufacturer's standard)
3. Description
a) Material, type, make and grade
b) Dimensions cross sectional area
c) Colour,
d) Other description, if any
4. Function of the item
5. Quantity
6. Make/Name/Location of manufacturer/sub-vendor
7. a) Minimum supplied (or in expanded form) diameter
   b) Maximum freely recovered diameter
8. a) Minimum supplied (or in expanded form) thickness
   b) Maximum freely recovered thickness

C. Notes on the KCT

Markings, printings, other details for individual/group of components are to be mentioned on KCT. For example:
a) Printing of item code, size, batch no., etc.
b) Printing on components
c) Other embossing or engraving, it any.

(Note: Vendor may attach an Annexure, for any additional information, if required.)

Annexure – C: Routine and Acceptance Test

A. Visual Examination

Condition of selected items / components, as per sampling method, shall be recorded.
Some of the normal check-points can be as follows:

1. Every component shall be verified in quantity and description as per KCT.
2. All items shall be free from any defects, pin holes, cracks, etc.
3. Metallic components to be free from sharp edges.

B. Measurements of Dimensions

(Required / observed dimension — length, diameter, etc.)

1. Supplied dimensions
2. Recovered dimensions

C. Destructive Testing

On various heat-shrinkable / moulded components of ready Kits
(Items 3 and 4 are applicable only for heat-shrinkable components)

1. Tensile Strength
2. Wall Thickness Ratio
3. Heat Shock
4. Longitudinal Change, after full recovery
5. Ultimate Elongation
6. Low Temperature Flexibility
7. Dielectric Strength
8. Volume Resistivity

Routine Test Reports (RTR)

(Typical)

Each RTR shall clearly indicate P.O. no. & date and also BSES's SAP code no. RTR shall record the serial numbers of the kits selected, as per vendor's sampling method. Following details, besides vendor's/manufacturers standard check-points, shall appear in every RTR.

Annexure - D: Deviation Sheet

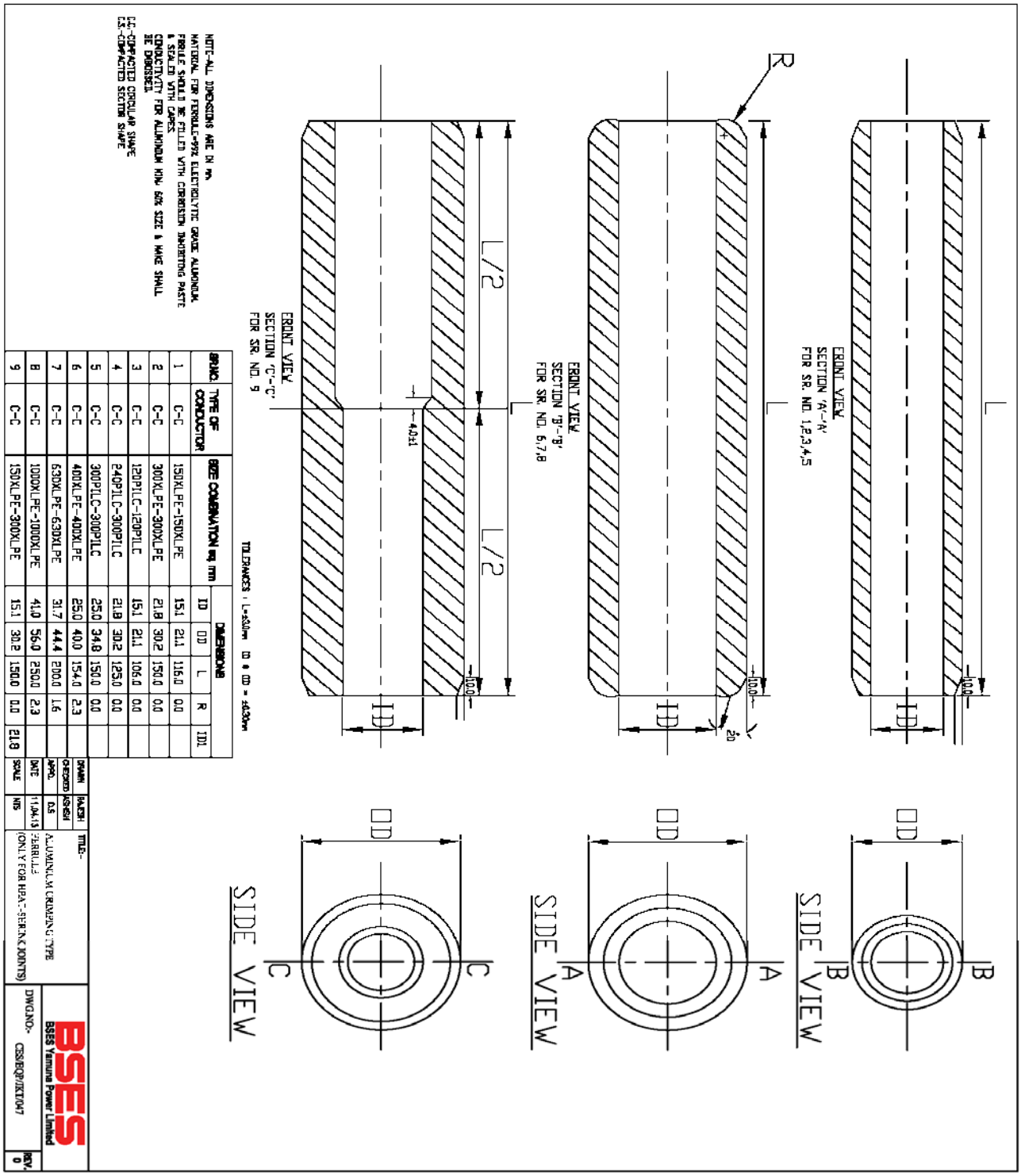
Sr No.	Clause No.	Deviation

Annexure – E: Service Conditions

(Atmospheric conditions at Site)

1	Delhi	
a)	Average grade Soil Condition:	Highly Polluted, Dry
b)	Maximum altitude above sea level	1000 M
c)	Ambient Air temperature	Highest 50 deg C, Average 40 deg C
d)	Minimum ambient air temperature	0 deg C
e)	Relative Humidity	90 % Max
f)	Thermal Resistivity of Soil	150 Deg. C cm/W
g)	Seismic Zone	4
h)	Rainfall	750 mm concentrated in four months

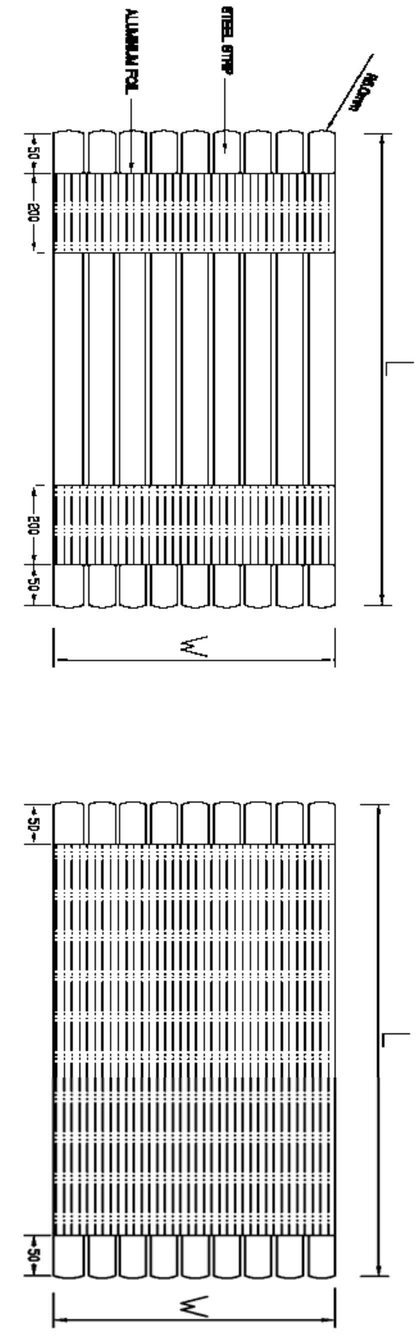
Annexure – F: Aluminium crimping-type Ferrule for compacted circular conductor only for Heat Shrink joints



SR.NO.	TYPE OF CONDUCTOR	SIZE COMBINATION sq. mm	DIMENSIONS ID	OD	L	R	2b
1	C-C	150XLPE-150XLPE	15.1	21.1	116.0	0.0	
2	C-C	300XLPE-300XLPE	21.8	30.2	150.0	0.0	
3	C-C	120PILC-120PILC	15.1	21.1	106.0	0.0	
4	C-C	240PILC-300PILC	21.8	30.2	125.0	0.0	
5	C-C	300PILC-300PILC	25.0	34.8	150.0	0.0	
6	C-C	400XLPE-400XLPE	25.0	40.0	154.0	2.3	
7	C-C	630XLPE-630XLPE	31.7	44.4	200.0	1.6	
8	C-C	1000XLPE-1000XLPE	41.0	56.0	250.0	2.3	
9	C-C	150XLPE-300XLPE	15.1	30.2	150.0	0.0	21.8

DRAWN	RAJESH	
CHECKED	AGARWAL	
APPD.	D.S	
DATE	11.04.13	
SCALE	NTS	

Annexure – G: Strip type GI canister (V.B. Can) for joint protection only for Heat- Shrink Joints



SIDE-A-WHICH IS WITH TWO SMALL ALUMINIUM FOIL STRIPS. IT SHOULD BE INSTALLED UPWARD.
SIDE-B-WITH ALMOST COMLETE ALUMINIUM FOIL. IT SHALL BE RESTING OVER THE JOINT.

NOTE-ALL DIMENSIONS ARE IN mm.

1) MATERIAL-STEEL STRIPS
THICKNESS 1mm +0.2mm
WIDTH 10mm +0.2mm
COATING-SUITABLE ANTI-CORROSIVE
GAP BETWEEN STEEL STRIPS-1mm MINIMUM & 2mm MAXIMUM

2) ADHESIVE TAPE-3 PLY LAMINATE MIDDLE ALUMINIUM FOIL WITH POLYESTER FILM

DIMENSIONS FOR STIP TYPE GI CANNISTER

SR.NO.	VOLTAGE	JOINT SIZE	NO. OF STRIPS	LENGTH(L)	WIDTH (W)
1	11KV	120PILC-120PILC	40	1450	400
2	11KV	240PILC-240PILC	46	1550	460
3	11KV	120PILC-150XLPE	40	1450	400
4	11KV	240PILC-300XLPE	46	1550	460
5	11KV	120PILC-300XLPE	46	1550	460
6	11KV	70PILC-300XLPE	46	1550	460
7	11KV	150XLPE-150XLPE	34	1260	340
8	11KV	300XLPE-300XLPE	36	1360	360
9	11KV	150XLPE-300XLPE	36	1360	360
10	33KV	300PILC-300PILC	50	1850	500
11	33KV	300PILC-400PILC	50	1850	500

DRAWN	RAJESH	TITLE:- STRIP TYPE GI CANNISTER (V.B. CAN) FOR JOINT PROTECTION (GENERAL ARRANGEMENT)	BSES Yamuna Power Limited
CHECKED	ASHISH		DWG.NO:- CES/BQP/JKT/048
APPD.	D.S		REV. 0
DATE	11.04.13		
SCALE	NTS		

Annexure-H

BSES Rajdhani Power Ltd.

Job Card For Cable Jointing Work

Job Card No | Date | Fault ID

Division | Purpose: Project / Scheme | O&M

Contractor

Voltage Grade: 11kv | 33kv | 66kv | 1.1 KV/LT

No. of cores: 1 | 3 | 3.5/4

Cable Size: 1000 /800 /630 /500 /400 /300 /240/225/ 185 / 120 / 95 / 70 / 50/25 sqmm

Jointing Details

Type of Joints	No. of Joints		Docate No.	IR Ref.
	Single	Double		
XLPE/XLPE(or PVC/PVC) Straight Through Joints				
XLPE/PILCA Transition Joint				
PILCA/PILCA Straight Through Joints				
XLPE Indoor Termination				
XLPE Outdoor Termination				
PILC Indoor Termination				
PILC Outdoor Termination				

Feeder Details: From | To

Location: From | To

Landmark: _____

Fault Occurance Date: _____

Job Allocated By: _____ PWT Ref: _____

Date and Time of Spiking: Date | Time

Work Completed On: Date | Time

Digging Details (In Meter): Length | Wedth | Depth

Details of cable laid: Size | Length (In Meter) | Docate Ref.:

Contractor Supervisor : _____ Signature : _____ Date : _____

Jointer Details: _____

Stage Verification ie : Digging / Jointing etc.

Stage/Work Verification	Name & Signature	Date & Time

Scrap Details including Qty: _____

New Kit Details: _____

Old Kit Details: _____

Type of Fault: _____

Remark If any : _____

Job Certified By :

Shift Incharge	Name	Signature	Date

1 COPY - BILLING COPY*

Annexure-I

SOP FOR REPAIRING OF CABLE FAULT (Shall be part of PO)		
SI. No.	Activity	Responsibility
Initiation		
1	Identify and isolate fault and inform GNIIT in case of cable fault	Break down team
2	Updation of the details in OMS against respective feeder tripping event.	GNIIT
Fault Location		
1	Information sent to FLC team and SDO.	GNIIT
2	Mobilize FLC team and cable jointing contractor.	SDO
3	Identification of fault location	FLC Team
Preparation for Jointing		
1	Seeking permission from road owning agency	SDO
2	Payment of RR charges to Road owning agency	Finance
3	Digging	Cable jointing contractor
4	Cut faulty section and Pre-test (HV test) cable for multiple fault	Cable jointing contractor
5	BOQ estimation for jointing work (type, size and length of cable, type of jointing kit)	Cable jointing contractor
6	Filling material reservation slip (MRS) in SAP	SDO
7	Issuing and transporting material from store.	Cable jointing contractor
Jointing		
1	Cable preparation (overlap length of cable, slide of armour, build up with inner sheath etc)	Cable jointing contractor (for jointing details refer to manufacturer instruction manual)
2	Copper tape shields	
3	Core preparation	
4	Location of parts in completed joints	
5	Earthing of connection	
6	Completion of joints	
7	Take Photographs before, during and after jointing and send to CES	SDO
8	Supervision during jointing	SDO
9	Sending failed joint to Division store	Cable jointing contractor
Completion and reporting		
1	Intimate to breakdown team about joint completion.	Cable jointing contractor
2	Conduct HV test	Break down team
3	Restore of Supply through jointed cable	Break down team
4	Backfilling and compaction of excavated soil	Cable jointing contractor
5	Completion information in Job Card (Details	Cable jointing contractor

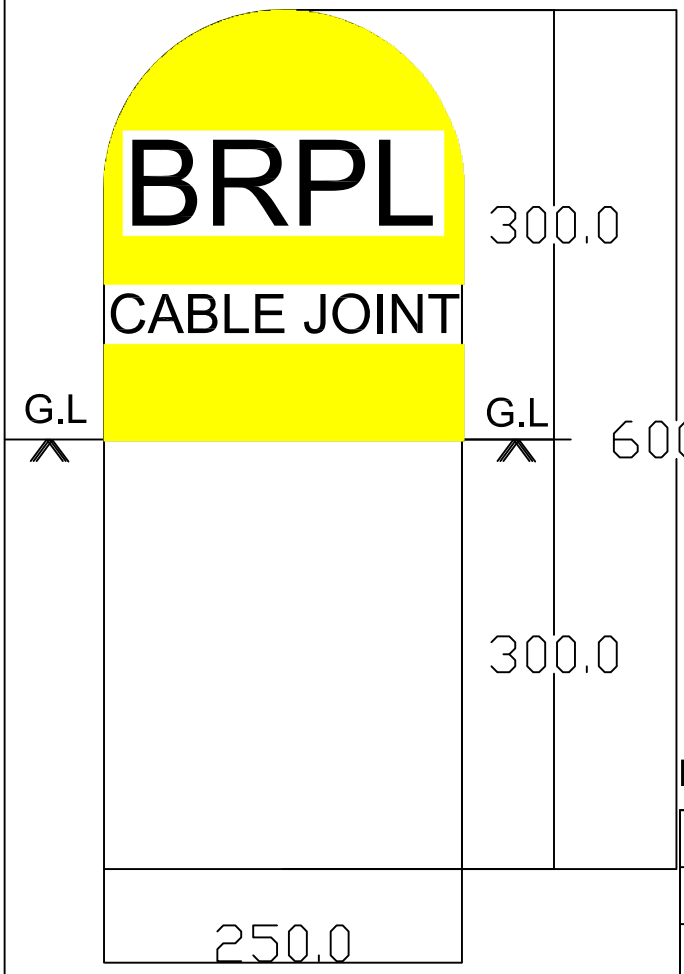
Annexure-I

	of work done, material consumption, location, feeder name and joint tag no., date, supervisor name, jointer name) sent to SDO	
6	Above information sent to GNIIT	SDO
7	Send information about GPS location of Cable fault to GIS	SDO
8	daily report of cable jointing to CES	Division Head
9	Updation of information in OMS including supervisor name, jointer name, feeder name	GNIIT
10	Information to include GPS location of cable fault.	GNIIT

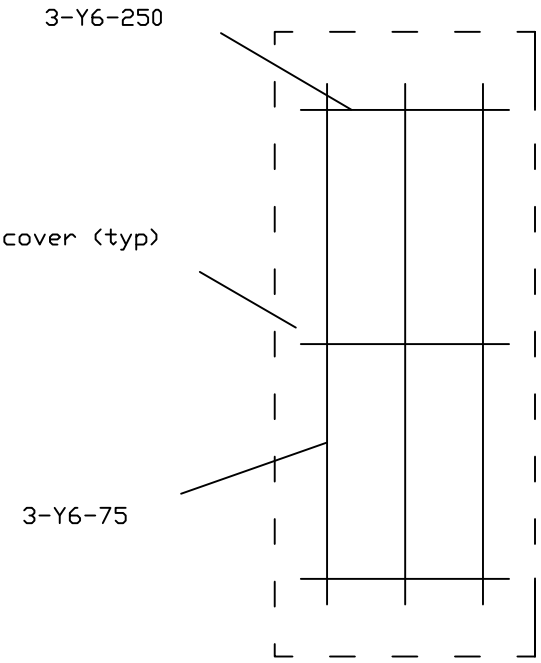
Special Note-

1) Joints to be done preferably during day. In case of constraints, DGM (O&M) to authorize for night time jointing with supervisor
2) Daily joint report to be shared with CES
3) Bi-monthly analysis of faulty joint for ensuring warranty compliance to be organized at circle level by contractor in presence of DGM (O&M) and CES
4) Certification of job card for payment by DGM (O&M) subject to OMS compliance CES to check any gaps.

ANNEXURE- J-DETAIL OF CABEL JOINT MARKER (RCC) -BSES



Reinforcement Detail



Notes:-

1	RCC Cable Joint marker with 6 mm Dia. Rod and M25 concrete grade.
2	The letter/word shall be engraved on both the side route marker.
3	All dimentions are in mm unless specified.
4	Thickness of RCC shall be 75mm.
5	Yellow colour shall be visible above ground level above ground.
6	Each Cable Joint marker to be placed at each joint location
7	All kind of paint on route marker shall be in the scope of manufacturer.

DRAWN	R.K.JANA	TITLE:-	
CHECKED	P.B	DETAIL OF CABLE JOINT MAKER (RCC).	BSES Rajdhani Power Ltd.
REVIEWED	A.T		DWG. NO.
APPO.	V.P.		BSES-JM-RCC-01, R0
DATE	25-04-2017		

Technical Specification

For Heat Shrinkable and GIS Cable Termination Kit (For 11 kV, 33 kV & 66 kV Cables)

Specification no – SP-HSGTK-04-R3

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Gautam Deka/Pronab Bairagi	03/09/21 03/09/21	Amit Tomar	03/01/21	Vijay Panpalia		R3	02/09/2021

Index

Record of Revision

Item/Clause No.	Change in Specification	Approved By	Rev
3.14	HTAB Cable Jointing and Termination Kit	VP	02
4.2.1e	GIS Termination kit-Plug in Type	VP	02
4.2.1a	Hydraulic Crimping	VP	02
4.5d	Type Test	VP	02
Annexure-H	Job Card	VP	02
Annexure-I	SOP	VP	02
3.0.0	66kV , 3CX300 Cable, 33kV, 3CX400 sqmm and 11kV, 3CX400 sqmm Termination (Including OFC kit)	VP	03
4.2.1(e)	Tinned copper with long barrel	VP	03
4.2.1(f)	Top corners of all lugs shall be circular shape not rectangular	VP	03
4.2.3	Insulation Tube length for termination kit shall be 650 mm for both indoor and outdoor kit (only for all type of 11kV Termination kits)	VP	03
4.4.0	Type test clause modified	VP	03
8.0.0	Inspection Expenses-Deleted	VP	03
9.0.0	Penalty	VP	03

1.0.0 Scope of work

Heat Shrinkable & GIS Termination Kits, suitable for 11 kV & 33 kV, 66 kV XLPE / PILC cables, shall be designed, manufactured, tested, packed and delivered by the Vendor, as per Purchaser's requirements.

2.0.0 Codes & standards

2.1.0 National Standards:

SL	Standard Number	Title
2.1.1	IS – 13573: 2011	Joints & Terminations of Polymeric Cables for working voltages from 6.6 kV up to and including 33 kV Performance Requirements and Type Tests
2.1.2	IS – 7098 Part 2 : 1985	Cross-linked Polyethylene (XLPE) Insulated PVC sheathed cables : Part 2 : For working voltages from 3.3 kV up to and including 33 kV
2.1.3	IS – 692: 1994	Paper insulated lead-sheathed cables (PILC) for rated voltages up to and including 33 kV specification
2.1.3	IS – 10810: 1984	Methods of test for cables

2.1.1 International Standards:

S No.	Standard Number	Title
2.2.1	EA TS – 09 – 13	Electricity Association – Technical Specification -09-13 Material component for use in Electric Power Cable Termination & Joints for System voltage above 1000 V up to 36 kV
2.2.2	IEEE – 48	Standards Test Procedures and requirements for high voltage alternating current cable termination
2.2.3	IEC – 60183	Guide to the selection of high voltage cables
2.2.4	IEC – 885 Part 1-3	Electric test methods for electric cables
2.2.5	IEC – 60840	Power cable with extruded insulation and their accessories for rated voltage above 30 Kv (Um=36 kV) up to 150 KV (Um=170 kV) – test methods and requirements.

3.0.0 Cable Construction

Normal sizes of XLPE cables used in BRPL system and the construction features of these cables are indicated below:

11Kv, 3-core x 150 sq mm AL
11Kv, 3-core x 300 sq mm AL
11Kv, 3-core x 400 sq mm AL
11Kv, 1-core x 1000 sq mm AL
11Kv, 1-core x 150 sq mm AL HTAB
11Kv, 1-core x 95 sq mm AL HTAB
33Kv, 3-core x 400 sq mm AL
66Kv, 1-core x 630 sq mm AL
66Kv, 1 core x 1000 sq mm AL
66Kv, 3-core x 300 sq mm AL

PILC type Cables:

3-core 240 or 300 sq. Mm. Al

3.1.0	Conductor	For XLPE : a) Electrolytic Grade stranded Aluminium Conductor / Annealed Copper Conductor b) Grade: H2/ H4 as per IS: 8130/84 (For Al) c) Shape: Compacted Circular d) Class 2 For PILC : a) 11 kV : sector-shaped b) 33Kv: oval-shaped
3.2.0	Conductor Screen	For XLPE : Extruded Semi Conducting material For PILC : 11 kV : no conductor screen 33 kV : carbon paper
3.3.0	Insulation	For XLPE: Extruded XLPE up for 11 kV and TR XLPE for 33 kV, 66 kV and HTAB cable Insulation For PILC: Layers of impregnated papers
3.4.0	Insulation Screen	For XLPE : a) Freely strippable Semi Conducting (without application of heat) for 66kV firmly bonded b) Copper Tape (Not applicable for HTAB) For PILC : a) 11 kV : absent (Belted) b) 33kV: metallised paper tape
3.5.0	Water Swellable Tape	For XLPE: Semi-conducting Water Swellable Tape shall be provided under the copper tape on each core. For PILC : not applicable

3.6.0	Filler	For XLPE: All interstices, including centre interstices filled by PP filler. Special Note- for 66kV 3CX300 sqmm, 33kV, 3CX400 and 11kV 3CX400 cable -36 nos. Single mode and 12 nos. Multi modes OFC are also inbuilt as filler. For PILC : a) 11 kV : Crushed paper filler b) 33kV: Jute twine
3.7.0	Over all three cores	XLPE : Binder tape PILCA : 11 kV : belt paper 33kV: Copper Woven Fabric tape
3.8.0	Inner Sheath	For XLPE: Extruded Inner Sheath of Black PVC type ST-2. For PILC : Lead alloy sheath
3.9.0	Bedding Tape	For XLPE: not applicable For PILC: two layers of paper, followed by compounded (bituminized) cotton tape.
3.10.0	Copper Woven Fabric Tape (CWF tape)	For XLPE : not applicable For PILC : a) 11 kV : absent (Belted cable) b) 33 kV : applicable for screened cable
3.11.0	Armour	For XLPE : a) Galvanised Steel round Wires/ Galvanised steel flat strip armour (For 3 core cables) b) Hard drawn Aluminium Wire (For 1 core cables) c) Aluminium or lead sheathed for 1Core 66kV cables For PILC : a) 11 kV double steel tape armour
3.12.0	Binder Tape	For XLPE: Rubberised cotton tape
3.13.0	Outer Sheath	For XLPE: Extruded outer sheath of PVC (ST-2) for 11 kV/ 33 KV and HDPE for 66KV Cable with termite- repellent. For 66Kv, 3CX300 Cable- HDPE extruded semicon layer or HDPE with graphite layer. For PILC : compounded (bituminised) Jute/PVC
3.14.0	HTAB Cable (1CX150 and 1CX95)	AB cable- conductor-conductor semicon screen- TR XPLE-insulation s Water Swallowable tape –Round wire armour (in the place of copper t Water Swallowable tape-outer sheath+ messenger wire

4.0.0 Cable Termination Kits

General Technical Requirements for Cable Termination Kits are as follows:

4.1.0	Scope	Design, manufacture, testing and supply of Cable Termination Kits for H. T. Power Cables.
4.2.0	Functional Requirements	
4.2.1	Conductor Connection	a) Lug connection by crimping using hydraulic crimping tools, plug in type shall be for GIS. Using Hydraulic crimping tools is mandatory. b) Sizes of lugs are standardised as follows: 1. For 120 sq. Mm. PILC cable and 150 sq. Mm. XLPE cable, the lug suitable for 150 sq. Mm. XLPE cable shall be used. 2. For 240 sq. Mm. PILC cable and 300 sq. Mm. XLPE cable, the lug suitable for 300 sq. Mm. XLPE cable shall be used. 3. For 11kV, 3CX400 lug shall be 400 sqmm. . c) For GIS cable termination kits: Plug in type, Conductor connection assembly shall be by standard method of split, silver-plated copper cone and pressure-fit contact assembly or as per manufacturer's standard. d) For 66kV 1Cx1000 or 630sqmm, 66kV, 3CX300 sqmm and 33kV 3CX400 sqmm aluminium lugs shall be used with appropriate size. e) All the lugs for all type and size of 11kV termination kits shall be tinned copper with long barrel . Refer Annexure F for details f) Top corners of all lugs shall be circular shape not rectangular. . Refer Annexure F for details.(Except GIS kit)
4.2.2	Stress Control System	a) The earthed insulation screen of an XLPE cable is terminated at a suitable distance from the conductor. b) The tube is in electrical contact with insulation screen. c) Impedance of the tube shall be constant up to an operating temperature and shall be within the range $1x10^{08}$ ohm-cm to $8x10^{08}$ ohm-cm. d) Length of stress control tube for 11 kV and 33 kV shall be 130 mm and 260 mm respectively or according to insulation tube length. For 66kV termination kits, stress control tube shall be as per type tested design. e) The physical and electrical properties shall conform to ESI 09: 13. f) For GIS cable termination kits Stress control shall be by means of a polymeric stress cone. External profile of the cone shall match inner profile of GIS epoxy bushing. Vendor shall specify the material (EPDM / Silicone) of the cone.
4.2.3	Insulation Protection	a) XLPE insulation shall be protected by means of an outer tube, resistant to tracking and weathering. b) One end of the tube shall be coated internally with red sealant mastic for a length of 50 mm. c) Physical and Electrical properties shall conform to ESI 09: 13. d) Insulation Tube length for termination- shall be 650 mm for both Indoor and Outdoor Termination kits of 11kV, 3CX150, 3CX300 and 3CX400 sqmm cable. All other accessories related to

		termination shall be according to 650mm insulation tube length.
4.2.3.1	Outer Anti-tracking Tube	Outer length of the tube shall be controlled by providing creepage Extension Shed having the same material composition as the tube. These lengths are given in the table below: Creepage distance shall be 31mm/kV minimum.
4.2.3.1	OFC (66kV, 3CX300 sqmm , 33kV, 3Cx400 sqmm and 11kV, 3Cx400 sqmm cable)	Termination kit for OFC (36 single mode and 12 nos. Multi mode) shall be supplied along with termination kit.

Cable System		Length of tube (mm)		Creepage Extension Shed (No.)	
Voltage	Cores	Indoor	Outdoor	Indoor	Outdoor
11 kV	3 – core	650	650	Nil	2
	1 – core	340	340	NIL	2
33 kV	3 – core	800	1200	2	5
	1 – core	600	600	2	5

4.2.3.3	Oil Barrier Tube (applicable for PILC cable termination)	a) Transparent tube is used for restoring the insulation provided by belt paper, which is terminated at the crotch. b) 33 kV PILC Termination: The oil barrier tube provides an oil-resistant layer to contain impregnating compound within, thus preventing anti-tracking tube coming in contact with the impregnating compound.
4.2.4	Environmental Sealing System	a) Red Sealant Mastic Tape: This tape, used for sealing at ends, shall be synthetic rubber-based and resistant to tracking and weathering. Sufficient quantity of this tape shall be provided. b) Lug-sealing Sleeve: It shall have the same material composition as outer anti-tracking tube. The sleeve shall be fully coated internally with red sealant mastic tape. Length of the sleeve shall be so as to cover half length of the lug barrel and an equal length of track-resistant tube. c) Conductive Break-out: It shall be provided over the crotch for 3-core cables. The break-out base shall overlap PVC outer sheath by a 50 mm. Minimum. d) For GIS termination kits : Environmental sealing of cores below the switchgear shall be by means of a trifurcation kit, consisting of heat shrinkable conductive break-out and heat-shrinkable conductive tube of total length of 6 metres supplied in one roll.

4.2.5	Earth Bond System	a) Earth Bond Assembly shall comprise of copper braided conductors as earthing conductors, GI armour support ring (non-split type) and two stainless steel hose clips. b) For GIS termination kit The earthing arrangement for 3-core cables shall be the same as stated under 'a' above. c) Two nos. Copper braided conductors shall be of size: 25 sq. Mm. For 11 kV cables, 35 sq. Mm. For 33 kV cables and 50 sq. Mm. d) Length of the copper braided conductor shall be 750 mm. e) Each copper braided conductor shall be supplied with copper lug, crimped at one end. Size of lug : 70 sq. Mm. For 11 kV and 120 sq. Mm. For 33 kV.
4.2.6	Suppression of electrical discharges	Following materials are required for use during cable termination : a) Silicone-based compound Required for filling-in minute services/ surface cracks over XLPE insulation. b) Polymeric mastic Required for application over semicon screen, for, eliminating any air-entrapment at any cut point on the surface. It should have sufficient elongation and electrical properties compatible with stress control tube.
4.2.7	Installation. Instruction Sheet	It shall be in English and Hindi language and shall be provided inside every kit.
4.2.8	Paper Measuring Tap	Required for use during cable preparation / terminations.
4.3.0	Technical Particulars	Vendor shall submit Guaranteed Technical Particulars (GTP) as per Annexure A.
4.4.0	Type Tests	i. Termination Kit shall be of type-tested quality from CPRI/ERDA/KEMA/CESI as per the BIS/IEC/IEEE within last 5 years. ii. In case of type test is more than 5 years old but less than 10 years old, bidder has to give undertaking that there is no changes in design. iii. In case of type test report is more than 10 years old, bidder has to conduct type test from CPRI/ERDA/KEMA/CESI as per the BIS/IEC/IEEE without any cost implications to BRPL
4.5.0	Testing & Inspection	
	a) Tests	All the routine and acceptance tests shall be carried out as per ESI guidelines. (Also refer Annexure -C)
	b) Inspection	1) Buyer reserves the right to witness all tests specified on individual H. S. components, Moulded components or completed Cable Termination Kit. 2)Buyer reserves the right to inspect Cable Termination Kit at the Seller's works at any time, prior to dispatch, to verify compliance with the specification. 3) In-process and final inspection call intimation shall be given in 10 days advance to purchaser.

	c) Test Certificates	Three sets of complete Test Certificates (Routine & Acceptance tests) shall be submitted along with the delivery of Cable Termination Kits.
4.6.0	Documents	"Documents" refer to Documents, Data, Manuals, etc. (Scanned copy of signed documents also shall be part of entire soft file (e-file) or CD.)
4.6.1	Along with the Bid	Vendor shall submit signed 3 sets (plus 1 set of soft copy) of following documents: a) GTP (duly filled-in) (as per Annexure - A). b) Cross-sectional drawings for components Assembly c) Type Test Certificates d) Complete Catalogue and Instructions. e) Any other document.
4.6.2	After Award of Contract	Vendor shall submit signed 2 sets (plus 1 set of soft copy) of above mentioned documents within 15 days, for Purchaser's approval.
4.6.3	"As-Built" documents	Final signed "As-built" documents for the equipment in 3 sets (hard copy), 1 no. soft copy and 1 no. CD. These documents shall include signed Routine & Acceptance Test Certificates also.
4.7.0	Packing, Marking, Shipping, Handling and Storage	Every component/kit/box shall be properly sealed/ packed for protection against damage.
a)	Identification Labels:	Markings / Labels shall be on both sides of every packed box. 1) Identification number/type designation (as per manufacturer's standard) 2) Voltage grade, size, description of the Kit (including the voltage grade, size, type of the cables, for which it is to be used) 3) Batch no., lot no., etc. 4) Quantity 5) a) Purchase Order no. & date b) Purchaser's name c) BRPL's SAP code number 6) Weight (kg) of each Cable Termination Kit and of each box containing kits. 7) Manufacturer's name 8) Month & Year of Manufacturing 9) Date of packing, Shelf life (if applicable) 10) In case, the termination kit is for RMU, following text shall be written in bold letters, with higher font size : "For RMU Application".
b)	Transit damage	The seller shall be responsible for any transit damage due to improper packing.

5.0.0 Quality Assurance (QA)

5.1.0	Vendor's Quality Plan (QP)	To be submitted for Purchaser's approval.

5.2.0	Sampling Method	Sampling Method for quality checks shall be as per manufacturer's standard practice / ESI guidelines and Purchaser's prior approval shall be taken for the same.
5.3.0	Inspection Hold-Points	To be mutually identified, agreed and approved in Quality Plan.

6.0.0 Deviations

6.1.0.	Deviations	a) Deviations from this specification shall be listed by bidder clause wise along with optional offer and has to submit the list along with bid./quotation. BRPL will review the deviations and if BRPL is agreed with the deviation, seller has to take written confirmation from BRPL on deviation during tender evaluation.. b) In the absence of any list of deviations from the Seller with bid as well as written confirmation from BRPL on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully. c) Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BRPL old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not consider as a deviation from this tech spec at any stage of contract.

7.0.0 Delivery

7.1.0.	Delivery	Despatch of Material: Vendor shall despatch the material, only after the Routine Tests/Final Acceptance Tests (FAT) of the material witnessed/waived by the Purchaser, and after receiving written Material Despatch Clearance (MDC) from the Purchaser.

8.0.0 Inspection Expenses

Not Applicable

9.0.0 Penalty

Joint/Termination failure under warranty in regards to poor quality joint, poor work man ship, etc. shall be in the account of vendors. All kind of losses due to Joint/Termination failure shall be recovered from vendor.

Annexure – A: Guaranteed Technical Particulars (GTP)

The Seller is deemed to have examined all parts of the Specification documents and to have been fully informed, as to the nature of work and the conditions related to its performance.

S No.	Description	Purchase requirement	Vendor's data

1	Manufacturer's name		
2	Purchase Order no. & date		
3	Guarantee Period (minimum)	60 Months (from date of commissioning) / 66 Months (from date of receipt at Purchaser's store), whichever is earlier	
4	Applicable IS / IEC Standard followed by Vendor (incl. type test standard)		
5	Voltage Grade (kV)		
5.1	Lightning Impulse Voltage Withstand Test		
5.2	4Uo AC voltage withstand test for 4 hours	To be conducted on Installed joint at works	
6	Continuous operating temperature	90 deg. C	
7	Functional Requirements		
7.1	Method of Stress Control and Discharge Suppression		
7.2	Method of Insulation build-up and screening		
7.3	Method of earth bond a) Size and no. of braids b) Size of armour support c) No. of hose clips		
7.4	Method of mechanical protection a) for 3-core Cable b) for 1-core Cable		
7.5	Method of protection against corrosion (type & coating thickness of protective layer on steel mat)		
7.6	Method of conductor continuity a) For crimping connector b) For mechanical connector		
8	Description of items in the Kit, which are imported /sourced From Principal /Sub-suppliers		
9	Names of items in the Kit and their respective shelf life (months I years)		
10	Kit Content Table (KCT) enclosed? (Refer Annexure — B)	Yes / No	

11	Drawing for connector (ferrule) enclosed	Yes / No (If yes, mention the document reference)	
12	Is Annexure - D (Technical Deviation Sheet) duly filled-in?		
13	Packing (Qty) i) Packing of every Kit h) Group Packing	1 no -- No. of Kits per Box -- No. of Boxes	
14	Installation Procedure enclosed?	Yes / No (If yes, mention the document reference)	
15	Quality Assurance Plan (QAP for raw materials, in-process inspection, factory testing) is enclosed?	Yes / No	
16	Whether all heat-shrinkable and moulded components of the kit meet the requirements of and have been tested in accordance with EA TS -09-1 3.(for heat-shrinkable joints)	Yes / No (If yes, details of test report no. /Date /name of test laboratory to be mentioned.)	
17	Type Test Reports (TTR) (Relevant test report no. & date, With type, size, other details of each type of Kit.) a) Prepared Joint: CPRI TTR as per BIS / IEC enclosed? b) Loose Components: CPRI TTR as per EA TS 09-13 enclosed?	 Yes/No Yes/No	
18	Printing details on each of the Heat- shrinkable and Moulded components	(Mention the text, presently printed on each of the component)	
19	OFC kit (66Kv, 3CX300 sqmm , 33Kv, 3cx400 sqmm and 11kv, 3cx400 sqmm)	Yes/no	

Annexure – B: Kit Content Table (KCT)

Vendor shall submit KCT as a consolidated table, consisting of all data, such as:

A. Heading

1. Voltage grade, size, description of the Kit
(Including the voltage grade, size, type of the cables, for which it is to be used)

2. Type designation (as per manufacturer's standard)

B. Details / Parameters

(For each component/item of the KCT)
1. Lot no. /Batch no., etc.
2. Item number (manufacturer's standard)
3. Description
a) Material, type, make and grade
b) Dimensions cross sectional area
c) Colour,
d) Other description, if any
4. Function of the item
5. Quantity
6. Make/Name/Location of manufacturer/sub-vendor
7. a) Minimum supplied (or in expanded form) diameter
   b) Maximum freely recovered diameter
8. a) Minimum supplied (or in expanded form) thickness
   b) Maximum freely recovered thickness

C. Notes on the KCT

Markings, printings, other details for individual/group of components are to be mentioned on KCT. For example:
a) Printing of item code, size, batch no., etc.
b) Printing on components
c) Other embossing or engraving, it any.

(Note: Vendor may attach an Annexure, for any additional information, if required.)

Annexure – C: Routine and Acceptance Test

A. Visual Examination

Condition of selected items / components, as per sampling method, shall be recorded. Some of the normal check-points can be as follows:
1. Every component shall be verified in quantity and description as per KCT.
2. All items shall be free from any defects, pin holes, cracks, etc.

3. Metallic components to be free from sharp edges.

B. Measurements of Dimensions
(Required / observed dimension — length, diameter, etc.)
1. Supplied dimensions
2. Recovered dimensions

C. Destructive Testing
On various heat-shrinkable / moulded components of ready Kits
(Items 3 and 4 are applicable only for heat-shrinkable components)
1. Tensile Strength
2. Wall Thickness Ratio
3. Heat Shock
4. Longitudinal Change, after full recovery
5. Ultimate Elongation
6. Low Temperature Flexibility
7. Dielectric Strength
8. Volume Resistivity

D. Routine Test Reports (RTR)
(Typical)
Each RTR shall clearly indicate P.O. no. & date and also BRPL's SAP code no. RTR shall record the serial numbers of the kits selected, as per vendor's sampling method. Following details, besides vendor's/manufacturers standard check-points, shall appear in every RTR.

Annexure – D: Technical Deviation Sheet

Sr No.	Clause No.	Deviation

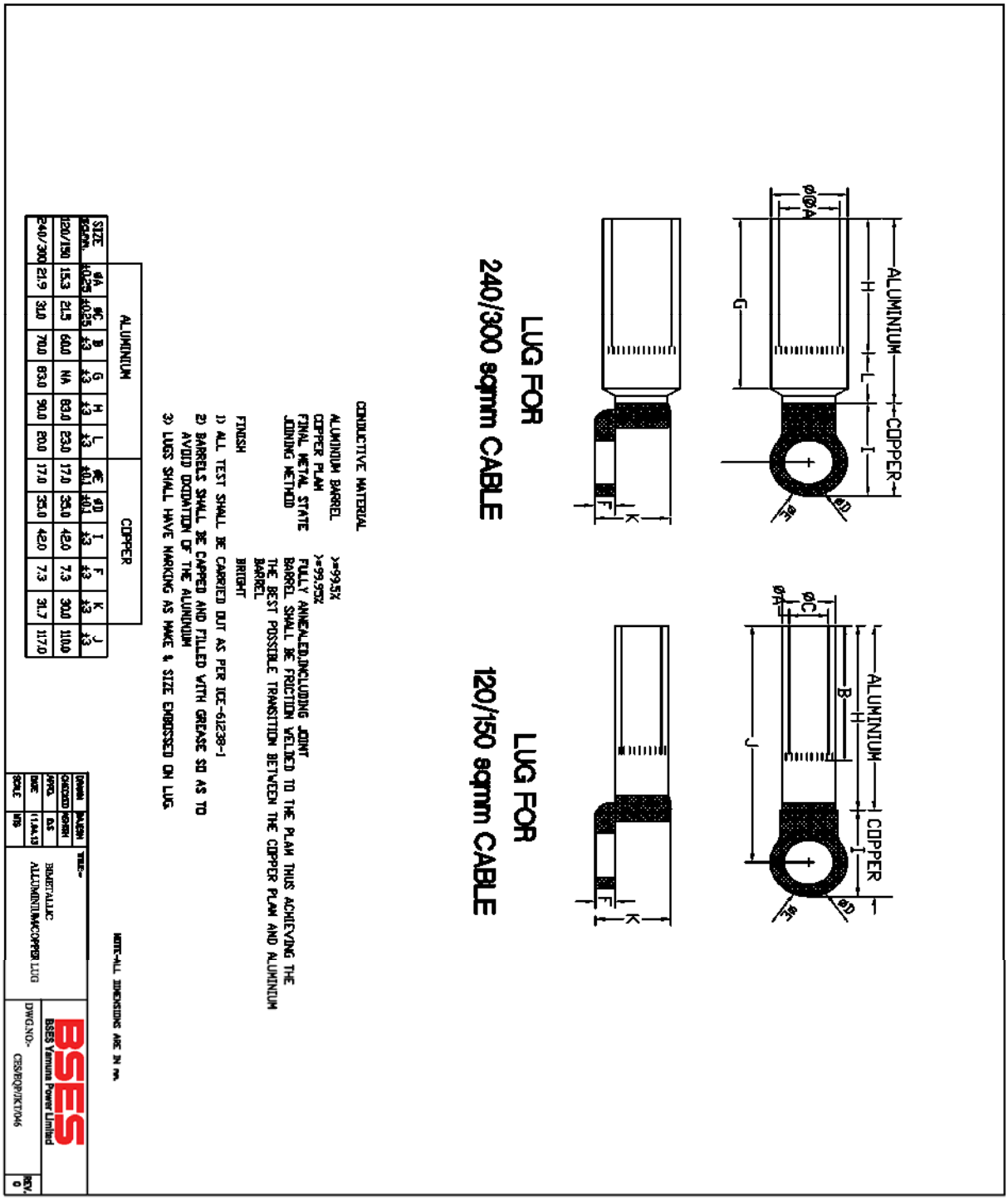
Annexure – E: Service Conditions

(Atmospheric conditions at Site)

1	Delhi	
a)	Average grade Atmospheric Condition:	Heavily Polluted, Dry
b)	Maximum altitude above sea level	1000 M
c)	Ambient Air temperature	Highest 50 deg C, Average 40 deg C

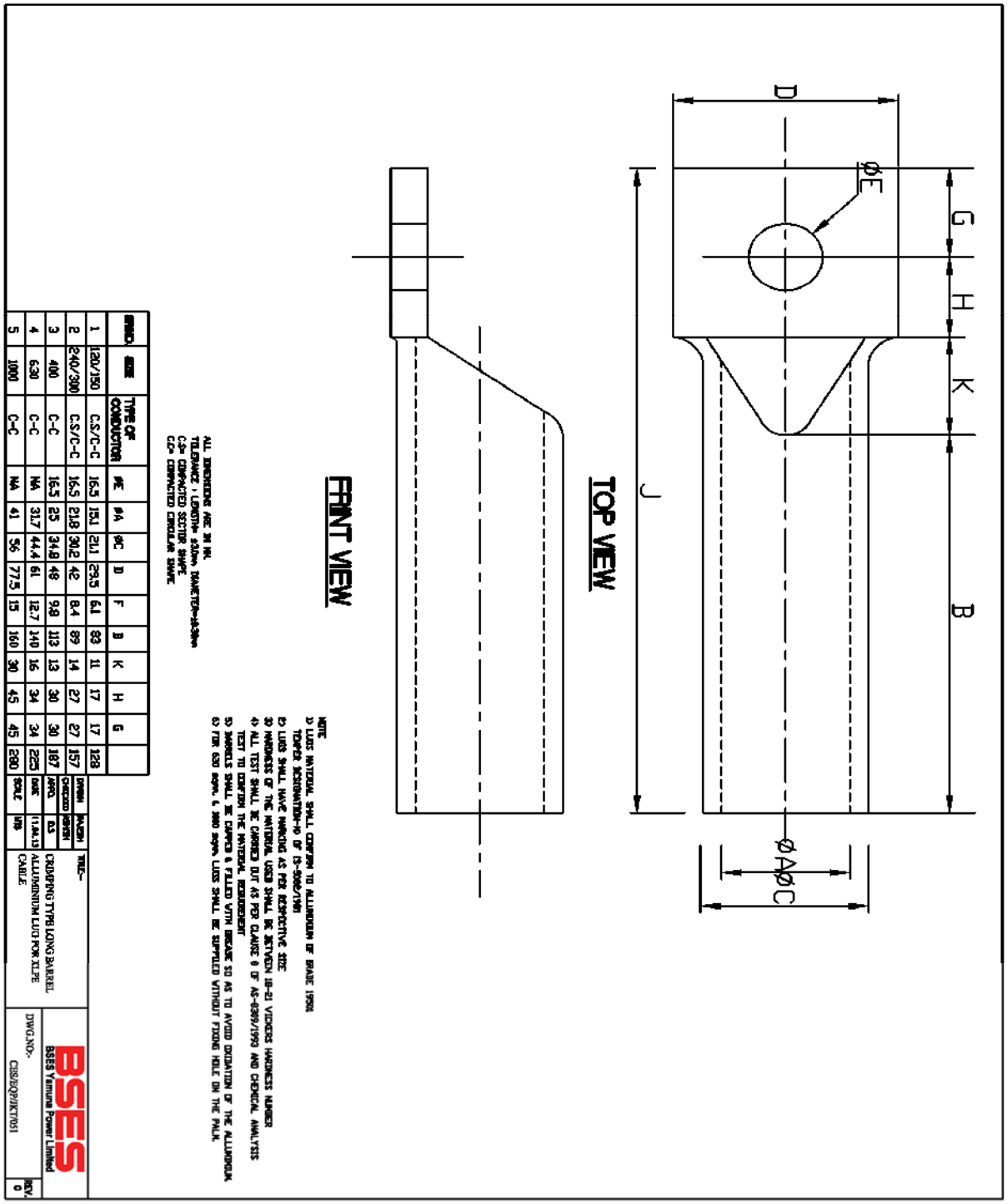
d)	Minimum ambient air temperature	0 deg C
e)	Relative Humidity	90 % Max
f)	Thermal Resistivity of Soil	150 Deg. C cmm
g)	Seismic Zone	4
h)	Rainfall	750 mm concentrated in four months

Annexure – F: Bimetallic Aluminium / Copper Lug



SIZE	ALUMINIUM						COPPER				
	ØA ±0.25	ØC ±0.25	B ±3	G ±3	H ±3	L ±3	ØE ±0.1	ØD ±0.1	I ±3	F ±3	K ±3	J ±3
120/150	15.3	21.5	600	NA	83.0	23.0	17.0	35.0	42.0	7.3	30.0	110.0
240/300	21.9	31.0	700	83.0	90.0	20.0	17.0	35.0	42.0	7.3	31.7	117.0

Annexure – G: Aluminum/Copper Lug For XLPE Cable



SYMBOL	SIZE	TYPE OF CONDUCTOR	ØE	ØA	ØC	D	F	B	K	H	G
1	120/150	C.S/C-C	16.5	15.1	21.1	29.5	6.4	83	11	17	17	128
2	240/300	C.S/C-C	16.5	21.8	30.2	42	8.4	89	14	27	27	157
3	400	C-C	16.5	25	34.8	48	9.8	113	13	30	30	187
4	630	C-C	NA	31.7	44.4	61	12.7	140	16	34	34	225
5	1000	C-C	NA	41	56	77.5	15	160	30	45	45	280

DRAWN	RAJEEV
CHECKED	ASHISH
APPD.	DJS
DATE	11.04.13
SCALE	NTS

TITLE:- CRIMPING TYPE LONG BARREL ALLUMINIUM LUG FOR XLPE CABLE

BSES Yamuna Power Limited

DWG.NO:- CSS/SQP/ELT/051

REV. 0

Annexure-I

SOP FOR REPAIRING OF CABLE FAULT (Shall be part of PO)		
Sl. No.	Activity	Responsibility
Initiation		
1	Identify and isolate fault and inform GNIIT in case of cable fault	Break down team
2	Updation of the details in OMS against respective feeder tripping event.	GNIIT
Fault Location		
1	Information sent to FLC team and SDO.	GNIIT
2	Mobilize FLC team and cable jointing contractor.	SDO
3	Identification of fault location	FLC Team
Preparation for Jointing		
1	Seeking permission from road owning agency	SDO
2	Payment of RR charges to Road owning agency	Finance
3	Digging	Cable jointing contractor
4	Cut faulty section and Pre-test (HV test) cable for multiple fault	Cable jointing contractor
5	BOQ estimation for jointing work (type, size and length of cable, type of jointing kit)	Cable jointing contractor
6	Filling material reservation slip (MRS) in SAP	SDO
7	Issuing and transporting material from store.	Cable jointing contractor
Jointing		
1	Cable preparation (overlap length of cable, slide of armour, build up with inner sheath etc)	Cable jointing contractor (for jointing details refer to manufacturer instruction manual)
2	Copper tape shields	
3	Core preparation	
4	Location of parts in completed joints	
5	Earthing of connection	
6	Completion of joints	
7	Take Photographs before, during and after jointing and send to CES	SDO
8	Supervision during jointing	SDO
9	Sending failed joint to Division store	Cable jointing contractor
Completion and reporting		
1	Intimate to breakdown team about joint completion.	Cable jointing contractor
2	Conduct HV test	Break down team
3	Restore of Supply through jointed cable	Break down team
4	Backfilling, compaction of excavated soil and	Cable jointing contractor

	removing of excess earth from the site	
5	Completion information in Job Card (Details of work done, material consumption, location, feeder name and joint tag no., date, supervisor name, jointer name) sent to SDO	Cable jointing contractor
6	Above information sent to GNIIT	SDO
7	Send information about GPS location of Cable fault to GIS	SDO
8	Daily report of cable jointing to CES	Division Head
9	Updating of information in OMS including supervisor name, jointer name, feeder name	GNIIT
10	Information to include GPS location of cable fault.	GNIIT

Special Note-

1) Joints to be done preferably during day. In case of constraints, DGM (O&M) to authorize for night time jointing with supervisor
2) Daily joint report to be shared with CES
3) Bi-monthly analysis of faulty joint for ensuring warranty compliance to be organized at circle level by contractor in presence of DGM (O&M) and CES
4) Certification of job card for payment by DGM (O&M) subject to OMS compliance CES to check any gaps.
5) After completion of jointing (33kV and 66kV), all the joints shall be covered with RCC coffin. Coffin shall be filled with white sand complete from the hole provided at the top of the coffin.

BSES

Technical Specification

For Heat Shrinkable And Cold Shrinkable Straight Through Jointing Kit

(11 kV, 33 kV, 66 kV XLPE Insulated Cables)

Specification no – SP-HCSTJ-03-R4

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Pronab Bairagi	09/03/21	Amit Tomar	08.03.21	K Sheshadri	09/03/21	R4	09/03/2021

	• Single core repairing long barrel repairing joint for 66kV,1CX1000 sqmm cable		
4.1.4	• Bind the copper wire mesh on copper screen with copper binding wire/CFS (Constant Force Spring)	KS	04
4.1.6	• --By means of four nos. Of tinned copper braided conductor of 70 sq mm for single core 66kV cable • --By means of three nos. Of tinned copper braided conductor of 70 sq mm for three core 66kV cable	KS	04
4.5.1	• Type test validity extended to 10 years from 5 years -- Added • All the cost of inspector shall be borne by seller as mentioned in inspection expenses clause— Deleted • Note added	KS	04
8.0.0	• Inspection Expenses- Deleted	KS	04
Annexure – H	• Job card Details- GPS Co-ordination and uploading in GIS added	KS	04
Annexure – I	• Backfilling, compaction of excavated soil and removing of excess earth from the site	KS	04
Annexure – I (Special Note-5)	• After completion of jointing (33kV and 66kV), all the joints shall be covered with RCC coffin. Coffin shall be filled with white sand complete from the hole provided at the top of the coffin	KS	04
Annexure – J	• Updated Joint Marker Drawing	KS	04

09/09/2024

Pronab Bairagi
Prepared by
CES-DGM

05.03.2024

Amit Tomar
Reviewed by
CES-GM

K Sheshadri
Approved by
Head-TSG

BSES	SP-HCSTJ-03-R4
Technical Specification For Heat Shrinkable And Cold Shrinkable Straight Through Jointing Kit (11 kV, 33 kV, 66 kV XLPE Insulated Cables)	

Record of Revision

Item/Clause No.	Change in Specification	Approved By	Rev
4.1.12	GPS Coordination	VP	01
4.5.1b	Type Test	VP	01
Annexure-H	Job Card	VP	01
Annexure-I	SOP	VP	01
3.1.12	HTAB Cable Jointing and Termination Kit	VP	01
4.1.13	Hydraulic Crimping	VP	01
4.1.14	Coffin for completed joint and Joint Marker	VP	02
3.0.0	66kV , 3CX300 Cable Joint (Including OFC Joint)	VP	02
4.1.15	Electronic Ball Marker for 33kV and 66kV Cable Joint	VP	02
8.0.0	Inspection Expenses	VP	02
9.0.0	Failure Analysis and Penalty	VP	02
Annexure-K	BOM-11kV 3CX300/400 sqmm Single Core Repairing Joint	KS	03
3.0.0	11kV, 3-core x 300/400 sq mm AL (Single Core Repairing Joint)	KS	03
3.0.0, 3.1.6, 4.1.16, 19.0	11kV , 3CX400 Cable and 33kV 3CX400 sqmm cable Jointing kit- OFC embedded added	KS	03
4.1.2 (e)	For single core and Three core repairing joint-long barrel mechanical connector/ferrule shall be provided (middle part of ferrule shall be solid for better connectivity)	KS	03
4.2.1(d)	For single phase repairing joint-stress control tube shall be suitable for long barrel mechanical connector/ferrule	KS	03
4.2.1.1 (d)	For single phase repairing joint-insulation build up shall be suitable for long barrel mechanical connector/ferrule	KS	03
3.0	• Single and three core repairing long barrel repairing joint for 33kV, 3CX400 sqmm	KS	04

1.0.0 Scope of work

A. Heat Shrinkable / Cold shrinkable Straight Joint Kits (hereinafter briefly referred to as “STJ Kits”), suitable for 11 kV, 33 & 66kV XLPE cables, shall be designed, manufactured, tested, packed and delivered by the Vendor, as per Purchaser’s requirements.

B. Supervision, during installation of joints at site if mentioned in the order.

C. During post-installation period, if a joint fails at site, the vendor shall depute a technical team to site for a root-cause analysis of the failure of the joint, in the presence of BSES officials. An Analysis Report shall then be submitted for BSES’s review and approval. If this report concludes the cause of failure as due to a design/manufacturing defect in a component, then vendor shall replace all such components in the entire stock available with BSES.

2.0.0 Codes & standards

2.1.0 National Standards:

S No.	Standard Number	Title
2.1.1	IS- 13573: 2011	Joints & Terminations of Polymeric Cables for working voltages from 6.6 kV up to and including 33 kV Performance Requirements and Type Tests
2.1.2	IS- 7098: Part 2:1985	Cross-linked Polyethylene (XLPE) Insulated PVC sheathed cables: Part 2 - For working voltages from 3.3 kV up to and including 33 kV
	IS- 7098: Part 3:1993	Cross-linked polyethylene insulated thermoplastic sheathed Cables specification: Part 3 - For working voltages from 66 kV up to and including 220 KV
2.1.3	IS- 10810: 1984	Methods of test for cables

2.1.1 International Standards:

S No.	Standard Number	Title
2.2.1	EA TS - 09-13	Electricity Association - Technical Specification – 09 – 13 Material component for use in Electric Power Cable Termination & Joints for System voltage above 1kV up to 36 kV
2.2.2	IEC - 60183	Guide to the selection of high voltage cables
2.2.3	IEC - 885 Part 1 to 3	Electric test methods for electric cables
2.2.4	IEC - 60502 - 4	Power Cable Accessories for XLPE Cables above 3kV & up to 30 kV Test methods
2.2.5	IEC - 60840	Power cable with extruded insulation and their accessories for rated voltage above 30 kV (Um=36 kV) up to 150 kV (Um=170 kV) - test methods and requirements.

3.0.0 Cable Construction

Normal sizes of XLPE cables used in BSES system and the construction features of these cables are indicated below:

11kV, 3-core x 150 sq mm AL
11kV, 3-core x 300 sq mm AL
11kV, 3-core x 300/400 sq mm AL (For Single and three core long barrel Repairing Joint) **{R4}**
11kV, 3-core x 400 sq mm AL (OFC embedded) **{R3}**
11kV, 1-core x 1000 sq mm AL
11kV, 1-core x 150 sq mm AL HTAB
11kV, 1-core x 95 sq mm AL HTAB
33kV, 3-core x 400 sq mm AL
33kV, 3-core x 400 sq mm AL (OFC embedded) **{R3}**
33kV, 3-core x 400 sq mm AL (For Single and three core long barrel Repairing Joint) **{R4}**
66kV, 1-core x 630 sq mm AL
66kV, 1 core x 1000 sq mm AL
66kV, 1 core x 1000 sq mm AL (For Single and three core long barrel Repairing Joint) **{R4}**
66kV, 3-core x 300 sq mm AL (OFC Embedded)

3.1.0	Conductor	a) Electrolytic Grade Stranded Aluminum Conductor b) Grade: H2 / H4 as per IS: 8130 / 1984 (For Al) c) Stranded, compacted and circular in shape d) Class 2 e) Longitudinal "Water-Blocking Arrangement" (or water-tight construction or water barrier protection)
3.1.1	Conductor Screen	Extruded Semi Conducting material
3.1.2	Insulation	Extruded XLPE Insulation for 11 kV and Extruded TR-XLPE Insulation for 33 kV and 66 kV
3.1.3	Insulation Screen	Freely strippable Semi Conducting (without application of heat) for 66kV firmly bonded.
3.1.4	Water Swell able Tape	Semi-conducting Water Swell able Tape under the copper tape on each core.
3.1.5	Copper Tape	Copper Tape applied helically over the layer formed by application of insulation screen, water swell able tape and identification strip
3.1.6	Filler	All interstices, including center interstices filled by PP filler.48 no OFC (36 single mode and 12 no multi mode) as a filler in 11kV 3CX400 sqmm cable, 33kV 3CX400 and 66 kV 3CX300 sqmm cable only.**{R3}**
3.1.7	Over all three cores	Binder tape
3.1.8	Inner Sheath	Extruded Inner Sheath of Black PVC type ST-2.
3.1.9	Armour	a) For 11 kV 3-core Cables : Galvanized Steel flat strip armour b) For 1-core Cables : Non-Magnetic, Hard drawn Aluminium wire (flat/round) c) Corrugated aluminium or lead sheathed for 1core 66kV Cable 6) For 66 kV 3-core cable- Round wire AL.

3.1.10	Binder Tape	Rubberized cotton tape
3.1.11	Outer Sheath	Extruded outer sheath of PVC (ST-2) for 11 kV and 33 kV and HDPE ST 7 for 66kV with termite- repellant and anti-rodent properties. For 66kV, 3Cx300 extra extruded semicon/graphait layer over HDPE ST7.
3.1.12	HTAB Cable (1CX150 and 1CX95)	AB cable- conductor-conductor semicon screen- TR XPLE-insulation screen-- Water Swallowable tape -Round wire armour (in the place of copper tape), Water Swallowable tape-outer sheath+massenger wire
3.1.13	OFC	For 11kV 3CX400 sqmm cable, 33kV 3CX400 and 66 kV 3CX300 sqmm cable - Single Mode-36 Nos. Multi Mode- 12 nos. All the OFC cable is placed as filler inside the cable. **{R3}**

4.0.0 Straight-Through Joints (STJ)

General Technical Requirements for Straight-Through Joints (STJ) for XLPE cables are as follows:

Scope: Design, manufacture, testing and supply of Straight-Through Joint Kits for 11 kV, 33 kV & 66kV Power Cables.
Functional requirements for Heat Shrinkable / Cold Shrinkable STJ joints are given below:

4.1.0 Heat Shrinkable / Cold Shrinkable STJ joints		
4.1.1	Cable preparation	Cable preparation shall be as per installation instruction sheet. Manufacturer shall be provide Installation instruction sheet in every kit
Connector		

4.1.2	Conductor Screen	For 11kV a) Conductors to be jointed by crimping connectors b) Annular CSA (cross-sectional area) of the ferrule shall not be less than CSA of the conductor of the cable. Length of the ferrule shall be sufficient to allow adequate number of crimps, to limit temperature rise at the joint. (Vendor to furnish dimensional drawing for ferrule, indicating crimp marks.) c) For aluminium cable, the crimped ferrule shall be of aluminium d) Refer annexure F for GA drawing of crimping ferrule e) For single core repairing joint- long barrel mechanical connector/ferrule shall be provided (middle part of ferrule/connector shall be solid for better connectivity) **{R3}** For 33kV and 66kV a) Shear bolt type mechanical connector b) Approved make: • Tyco Electronics (BSM-185/400-U) • Pfisterer (332617010) • Or equivalent type tested make (Manufacturer shall take prior approval from CES) d) Maintain smooth surface over connector after cut the shear head bolt e) Vendor to furnish drawing for the mechanical connector **Note:** In all voltage grade- For single core long barrel repairing joint, one long barrel connector/ferrule and for three core long barrel repairing joint, three long barrel connector/ferrule shall be provided along with all kind of accessories. **{R4}**
4.1.3	Void filling and stress relief over crimped connector and cut point of the insulation screen.	By means of High permittivity mastic tapes / Lubricant.
4.1.4	Metal screen continuity	By means of Tinned copper wire mesh, wrap individual core from cu screen with 50 % overlap and continue on other side cu screen. Bind the copper wire mesh on copper screen with copper binding wire/CFS {R4)
Armour / Earthing Continuity		
4.1.5	Armour bond	a) By means of a combination of steel (G.I.) support ring (for 3 - core Cable) or Aluminium support ring (for 1 - core Cable) and two nos. of stainless steel hose clips. b) GI Support Ring shall be 'zinc-sprayed with central bulge / bump'.

4.1.6	Armour continuity	By means of two nos. Of tinned copper braided conductor of 25 sq. mm. for 11 kV cable 35 sq. mm. for 33kV cable By means of four nos. Of tinned copper braided conductor of 70 sq mm for single core 66kV cable {**R4}** By means of three nos. Of tinned copper braided conductor of 70 sq mm for three core 66kV cable {**R4}**
4.1.6	OFC	For 11kV 3CX400, 33kV 3CX400 and 66kV, 3CX300 sqmm cables are OFC embedded. - Single Mode-36 Nos. Multi Mode- 12 OFC Cable shall be jointed separately. OFC joint shall not place inside main cable joint. {**R3}**
Accessories		
4.1.7	Suppression of electrical discharges over XLPE insulation	Cleaning solvent /equivalent, for manual application.
4.1.8	Installation Instruction	Shall be provided in English and Hindi and shall be inside every kit.
4.1.9	Sheet paper Tap	Paper tape, required for measurements during jointing, shall be provided inside every kit.
4.1.10	Identification Tag (for traceability)	a) An aluminum pouch with paper tag & sealing arrangement at one end shall be provided. b) This tag is required to be tied over the cable at one side of the joint. c) The paper tag shall give following information 1) Vendor kit designation 2) Cable section/Division 3) Type of joint 4) Size of Joint 5) Make of joint 6) Voltage class 7) Serial no. of kit 8) Vendor lot & batch no 9) Month & year of manufacturing 10) Date of installation 11) Name of jointer 12) Name of vendor supervisor 13) Name of BSES supervisor 14) Remarks
4.1.11	Printing on each Heat/cold shrinkable or Moulded component	Month and year of manufacturing, batch no. /lot no., size, make, type etc.
4.1.12	GPS Coordination	Vendor to capture GPS coordinates and shall include in job card of each joint at their own cost.
4.1.13	Hydraulic Crimping	Using of Hydraulic crimping tool is mandatory for crimping purpose

4.1.14	Coffin for completed joint and Joint Marker	After successfully completion of joint, Coffin shall be made by bidder for completed joint. Drawing shall be provided by BSES. Excluding drawing, everything shall be in the scope of bidder. After back filling a joint marker shall be fixed by bidder above ground to mark the joint location. Drawing is enclosed with this tech spec.
4.1.15	Electronic Ball Marker for 33kV and 66kV Cable Joint.	Passive and Active ball shall be supplied and placed at each and every joint to mark the joint electronically. Data shall be filled by bidder as per BSES requirement.
4.1.16	OFC	11kV 3CX400, 33kV 3CX400 and 66kV, 3CX300 sqmm cables are OFC embedded. OFC joint shall be supplied along with main cable joint. (36 single mode and 12 nos. multi mode OFC inbuilt inside cable). OFC joint shall be made separately from main cable joint**. {R3}**

4.2.0 Only for Heat Shrinkable STJ joints		
4.2.1	Stress Control System	a) The earthed insulation screen of an XLPE cable is terminated at a suitable distance from the connector (Ferrule). b) The stress control tube is in electrical contact with insulation screen. c) Impedance of the tube shall be constant up to an operating temperature and shall be within the range 1 x 10^8 ohm-cm to 8x10^8 ohm-cm. d) The physical and electrical properties shall conform to EA TS 09-13. d) For single phase repairing joint-stress control tube shall be suitable for long barrel mechanical connector/ferrule **{R3}**
4.2.1.1	Insulation build-up	a) Maximum three layers of insulation tubes shall be used. Total thickness of the insulation being provided in the joint shall not be less than 1.2 times the insulation of the cable being jointed. b) Outer-most tube shall be screened insulating tube (dual wall tube). This tube shall be manufactured by extrusion process. c) Physical and Electrical properties shall conform to EA TS 09-13. d) For single phase repairing joint-insulation build up shall be suitable for long barrel mechanical connector/ferrule **{R3}**
4.2.2	Sealing end of tube	By means of Core end sealing sleeve with red mastic coating
4.2.3	Mechanical Protection	a) For 3-core cable: By means of a rollable steel mat (with required protective coating against corrosion) b) For 1-core cable: i) Copper wire mesh ii) Adhesive coated medium wall tube iii) One more layer of copper wire mesh iv) Medium wall tube

4.2.4	Corrosion Protection	By means of semi-rigid tubes, internally coated with water blocking sealant. Thick wall Insulating tube

4.3.0 Only for Cold Shrinkable ST joints Scope: The term cold shrink applies to materials, which are capable of shrinking without raising the material above the ambient temperature of its immediate surroundings. The material of the rubber insulator used in the Cold Shrink assembly shall be silicone which is factory expanded and placed on a removable core. The removing of the core causes the cold shrink assembly to shrink. The cold shrink assembly shall maintain a compressive force on the cable continuously throughout the life of the product. This pressure will ensure a complete moisture seal.		
4.3.1	Stress Control System	By means of one piece body (splice assembly) providing stress control, insulation and screen continuity.
4.3.2	Mechanical Protection	By application of mastic coated vinyl tape and armor cast structural material. The taped armor cast layer may also be sprayed with water to hasten the curing.

4.4.0	Technical Particulars	Vendor shall submit Guaranteed Technical Particulars (GTP) as per Annexure A.
4.5.0 Testing & Inspection		
4.5.1	Type Tests (CPRI/ERDA)	a) Straight-Through Joint shall be of type-tested quality from CPRI/ERDA. Type Test report shall not be more than 5 years old. b) In addition to this, in case of rate contact, vendor will be required to conduct type-testing on heat/cold -shrinkable and moulded components, stress grading mastic, etc., in line with EA TS 09-13 standard, at third party test laboratory once in 6 months on randomly selected sample of each voltage rating without any commercial implication to BRPL. Also special test shall be done as per IS 13573.2.2011, Table-7 without any cost implication to BRPL. Cable for type test may be provided by buyer at the cost of bidders. C) If product is not type tested or test report is more than 10 years old from CPRI/ERDA (subject to no change in the relevant IS/IEC.IEEE) **{R4},** same shall be carried out by seller, sample shall be selected randomly by BRPL, test cost to be borne by seller. For new vendor, type test is mandatory from CPRI/ERDA of BRPL sample at their own cost.

4.5.2	Routine & acceptance Tests	I) All the routine and acceptance tests shall be carried out as per EA TS 09-13 guidelines, refer Annexure C. II) H.V. Test shall be carried out on a randomly selected and installed Straight-Through Joint, in the presence of Purchaser's representative, at manufacturer's works. III) The joint shall withstand a test of 4Uo voltage for 4 hours.
4.5.6	Inspection	I) Purchaser reserves the right to inspect /witness all tests on the STJ Kits at Seller's works at any time, prior to dispatch, to verify compliance with the specification. II) In-process and / or final inspection call intimation shall be given in advance to purchaser.
4.5.7	Test Certificates	i) Three sets of complete Test Certificates (Routine & Acceptance tests) shall be submitted along with the delivery of STJ Kits. ii) Bought-out Items: Vendor shall submit Test Certificates, lot/batch number-wise, from their sub- suppliers / principal. TC's should clearly indicate the measured technical parameters, in accordance with sub-supplier's specification. (Also refer Annexure - C)
4.6.0	Documents	"Documents" refer to Documents, Data, Manuals, etc. (Scanned copy of signed documents also shall be part of entire soft file (e-file) or CD.
4.7.0	Along with the Bid	Vendor shall submit signed 3 sets (plus 1 set of soft copy) of following documents a) GTP (duly filled-in) (as per Annexure — A) b) Cross-sectional drawings for components Assembly. c) Type Test Certificates d) Complete Catalogue and Installation Instructions. e) Any other document.
4.8.0	After Award Contract	Vendor shall submit signed 2 sets (plus 1 set of soft copy) of above-mentioned documents within 15 days, for Purchaser's approval.
4.8.0	"As-Built" documents	Final signed "As-built" documents for the equipment in 3 sets (hard copy), 1 no. soft copy and 1 no. CD. These documents shall include signed Routine & Acceptance Test Certificates also.

4.9.0	Packing, Marking, Shipping, Handling and Storage	a). Every component / kit / box shall be properly sealed/ packed for protection against damage. Stress grading mastic shall be packed in air-tight / air-sealed packing. b). Every kit box shall be wrapped in polythene covers. c. Separate packing (sub-kits) shall be provided, for components (given below) used in crotch area and connector area. These sub-kits, labeled as “CROTCH KIT” and “CONNECTOR KIT’, shall be placed inside every kit box. i) Crotch Kit Components --Conductive cable break-out -- Yellow moulded wedge -- Break-out end sealing tube -- Break-out finger sealing tube -- Stress grading mastic ii) Connector Kit : Components -- Ferrule (connector) -- Void Filling mastic (yellow)
4.9.1	Identification Label	Markings / Labels shall be on both sides of every packed box. 1) Identification number/type designation (as per manufacturer’s standard) 2) Voltage grade, size, description of the Kit (including the voltage grade, size, type of the cables, for which it is to be used) 3) Batch no., lot no., etc. 4) Quantity 5) a) Purchase Order no. & date b) Purchaser’s name c) BSES’s SAP code number 6) Weights (kg) of each Cable Termination Kit and of each box containing kits. 7) Manufacturer’s name 8) Month & Year of Manufacturing 9) Date of packing, shelf life (if applicable)
4.9.2	Transit damage	The seller shall be responsible for any transit damage due to improper packing.

5.0.0 Quality Assurance Plan (QAP)

5.1.0	Vendor’s Quality Assurance Plan (QAP)	To be submitted for Purchaser’s approval.
5.2.0	Sampling Method	Sampling Method for quality checks shall be as per manufacturer’s standard practice / ESI guidelines and Purchaser’s prior approval shall be taken for the same.
5.3.0	Inspection Hold-Points	To be mutually identified, agreed and approved in Quality Plan.

6.0.0 Deviations

6.1.0	Deviations	a) Deviations from this specification shall be listed by bidder clause wise along with optional offer and has to submit the list along with bid./quotation. BSES will review the deviations and if BSES is agreed with the deviation, seller has to take written confirmation from BSES on deviation during tender evaluation.. b) In the absence of any list of deviations from the Seller with bid as well as written confirmation from BSES on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully. c) Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BSES old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not be considered as a deviation from this tech spec at any stage of contract.

7.0.0 Delivery

7.1.0	Delivery	Dispatch of Material: Vendor shall dispatch the material, only after the Routine Tests /Final Acceptance Tests (FAT) of the material witnessed/waived by the Purchaser, and after receiving written Material Dispatch Clearance Certificate (MDCC) from the Purchaser.

8.0.0 Inspection Expenses

NA

9.0.0 Failure Analysis and Penalty

Failure of joint shall be analyzed by BSES and Vendor jointly. Joint failure in regards to poor quality joint, poor work man ship, etc. shall be in the account of vendors. Losses due to failure shall be recovered from vendor in case of warranty.

Annexure - A: Guaranteed Technical Particulars (GTP)

The Vendor is deemed to have examined all parts of the Specification documents and to have been fully informed, as to the nature of work and the conditions related to its performance.

S No.	Description	Purchase requirement	Vendor's data
1	Manufacturer's name		
2	Purchase Order no. & date		

3	Guarantee Period (minimum)	60 Months (from date of commissioning) / 66 Months (from date of receipt at Purchaser's store),whichever is earlier	
4	Applicable IS / IEC Standard followed by Vendor (incl. type test standard)		
5	Voltage Grade (kV)		
5.1	Lightning Impulse Voltage Withstand Test		
5.2	4Uo AC voltage withstand test for 4 hours	To be conducted on Installed joint at works	
6	Continuous operating temperature	90 deg. C	
7	Functional Requirements		
7.1	Method of Stress Control and Discharge Suppression		
7.2	Method of Insulation build-up and screening		
7.3	Method of earth bond a) Size and no. of braids b) Size of armour support c) No. of hose clips		
7.4	Method of mechanical protection a) for 3-core Cable b) for 1-core Cable		
7.5	Method of protection against corrosion (type & coating thickness of protective layer on steel mat)		
7.6	Method of conductor continuity a) For crimping connector b) For mechanical connector		
8	Description of items in the Kit, which are imported /sourced From Principal /Sub-suppliers		
9	Names of items in the Kit and their respective shelf life (months I years)		
10	Kit Content Table (KCT) enclosed? (Refer Annexure — B)	Yes / No	

11	Drawing for connector (ferrule) enclosed	Yes / No (If yes, mention the document reference)	
12	Is Annexure - D (Technical Deviation Sheet) duly filled-in?		
13	Packing (Qty) i) Packing of every Kit h) Group Packing	1 no -- No. of Kits per Box -- No. of Boxes	
14	Installation Procedure enclosed?	Yes / No (If yes, mention the document reference)	
15	Quality Assurance Program (QAP for raw materials, in-process inspection, factory testing) is enclosed?	Yes / No	
16	Whether all heat-shrinkable and moulded components of the kit meet the requirements of and have been tested in accordance with EA TS -09-1 3.(for heat-shrinkable joints)	Yes / No (If yes, details of test report no. /Date /name of test laboratory to be mentioned.)	
17	Type Test Reports (TTR) (Relevant test report no. & date, With type, size, other details of each type of Kit.) a) Prepared Joint: CPRI TTR as per BIS / IEC enclosed? b) Loose Components: CPRI TTR as per EA TS 09-13 enclosed?	Yes/No Yes/No	
18	Printing details on each of the Heat- shrinkable and Moulded components	(Mention the text, presently printed on each of the component)	
19	OFC kit (11kV 3CX400, 33kV 3CX400 and 66kV, 3CX300 sqmm cable)**{R3}**	Yes/no	

Annexure - B: Kit Content Table (KCT)

Vendor shall submit KCT as a consolidated table, consisting of all data, such as:

A. Heading

1. Voltage grade, size, description of the Kit
(Including the voltage grade, size, type of the cables, for which it is to be used)
2. Type designation (as per manufacturer's standard)

B. Details / Parameters (For each component/item of the KCT)

1. Lot no. /Batch no., etc.
2. Item number (manufacturer's standard)
3. Description
   a) Material, type, make and grade
   b) Dimensions cross sectional area
   c) Colour,
   d) Other description, if any
4. Function of the item
5. Quantity
6. Make/Name/Location of manufacturer/sub-vendor
   a) Minimum supplied (or in expanded form) diameter
   b) Maximum freely recovered diameter
7. a) Minimum supplied (or in expanded form) thickness
   b) Maximum freely recovered thickness

C. Notes on the KCT

Markings, printings and other details for individual/group of components is to be mentioned on KCT. For example:
a) Printing of item code, size, batch no., etc.
b) Printing on components
c) Other embossing or engraving, it any.

(Note: Vendor may attach an Annexure, for any additional information, if required.)

Annexure - C: Routine and Acceptance Test

A. Visual Examination

Condition of selected items / components, as per sampling method, shall be recorded. Some of the normal check-points can be as follows:
1. Every component shall be verified in quantity and description as per KCT.
2. All items shall be free from any defects, pin holes, cracks, etc.
3. Metallic components to be free from sharp edges.

B. Measurements of Dimensions

(Required / observed dimension — length, diameter, etc.)

1. Supplied dimensions
2. Recovered dimensions

C. Destructive Testing

On various heat-shrinkable / moulded components of ready Kits (items 3 and 4 are applicable only for heat-shrinkable components)

1. Tensile Strength
2. Wall Thickness Ratio
3. Heat Shock
4. Longitudinal Change, after full recovery
5. Ultimate Elongation
6. Low Temperature Flexibility
7. Dielectric Strength
8. Volume Resistivity

Routine Test Reports (RTR) (Typical)

Each RTR shall clearly indicate P.O. no. & date and also BSES's SAP code no. RTR shall record the serial numbers of the kits selected, as per vendor's sampling method. Following details, besides vendor's/manufacturers standard check-points, shall appear in every RTR.

Annexure - D: Deviation Sheet

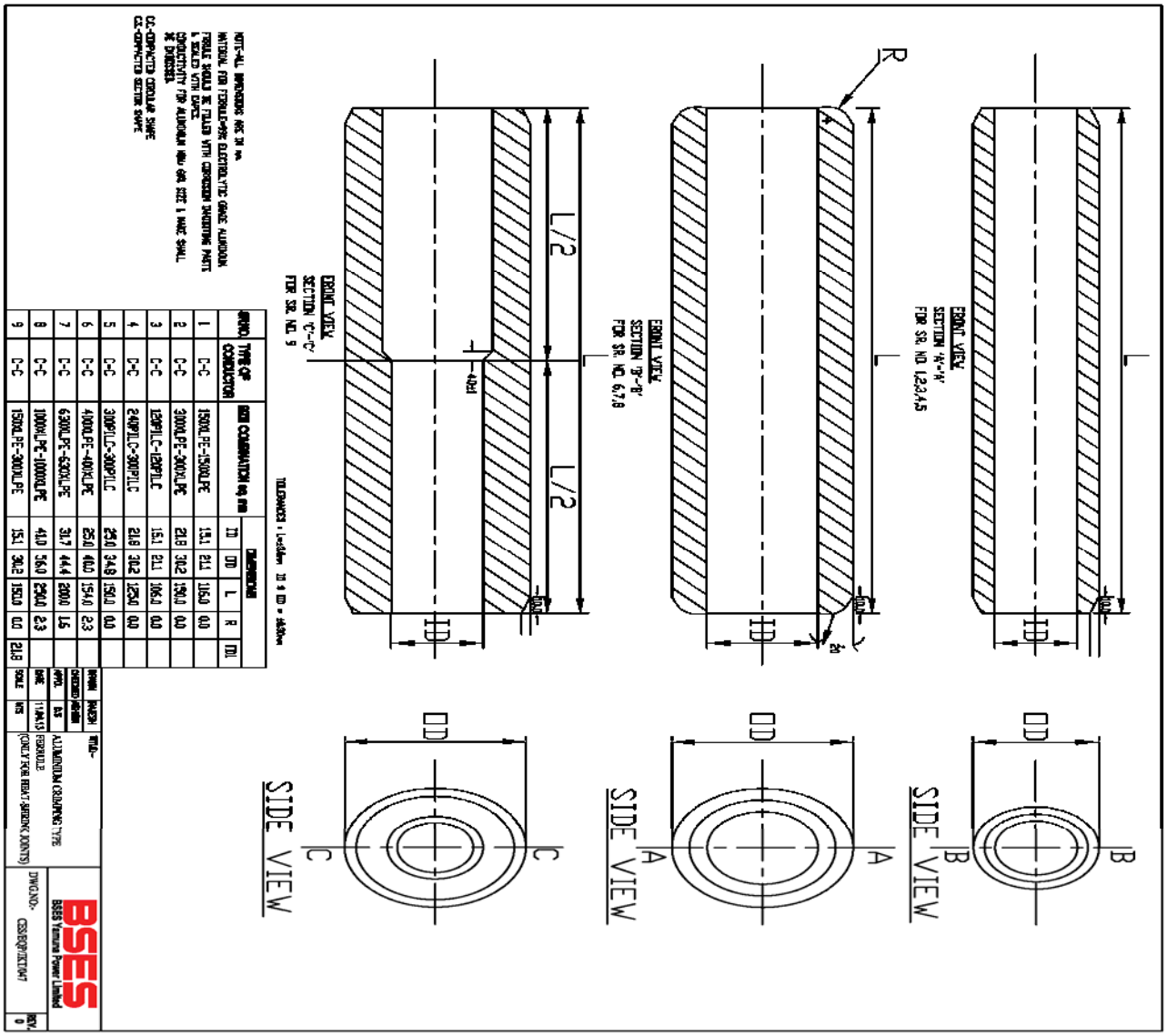
Sr No.	Clause No.	Deviation

Annexure - E: Service Conditions

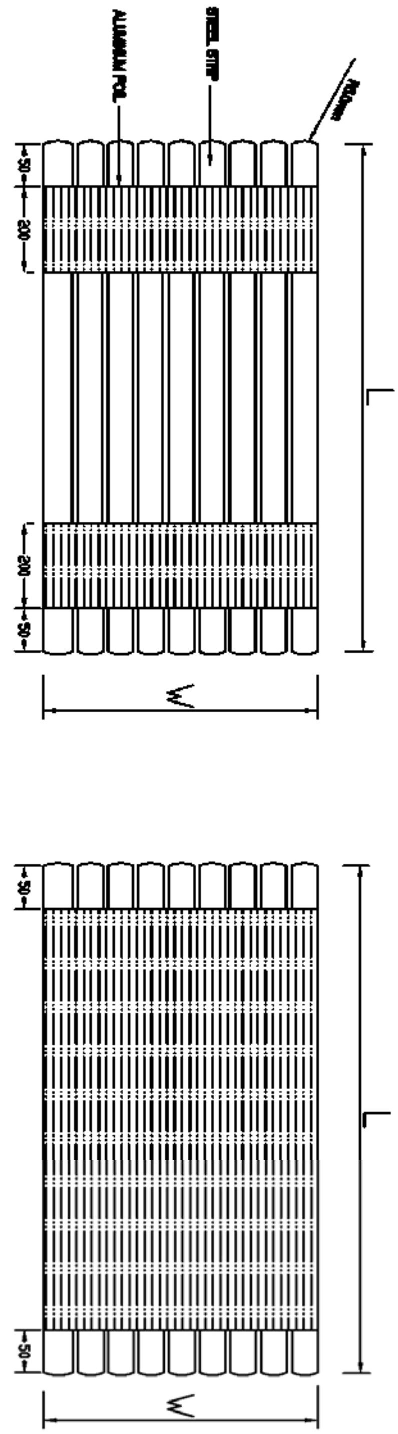
(Atmospheric conditions in Delhi)

a)	Average grade Soil Condition	
b)	Maximum altitude above sea level	1000 M
c)	Ambient Air temperature	Highest 50 Deg C, Average 40 Deg C
d)	Minimum ambient air temperature	0 Deg C
e)	Relative Humidity	100 % Max
f)	Thermal Resistivity of Soil	150 Deg C cm/W
g)	Seismic Zone	4
h)	Rainfall	750 mm concentrated in four months

Annexure - F: Aluminium crimping-type Ferrule for compacted circular conductor only for Heat Shrink joints



Annexure – G: Strip type GI canister (V.B. Can) for joint protection only for Heat Shrink Joint



SIDE-B

SIDE-B

SIDE-A-WHICH IS WITH TWO SMALL ALUMINIUM FOIL STRIPS. IT SHOULD BE INSTALLED UPWARD.
SIDE-B-WITH ALMOST COMPLETE ALUMINIUM FOIL. IT SHALL BE RESTING OVER THE JOINT.

NOTE-ALL DIMENSIONS ARE IN mm.

1) MATERIAL-STEEL STRIPS
THICKNESS 1mm +0.2mm
WIDTH 10mm +0.2mm
COATING-SUITABLE ANTI-CORROSIVE
GAP BETWEEN STEEL STRIPS-1mm MINIMUM & 2mm MAXIMUM

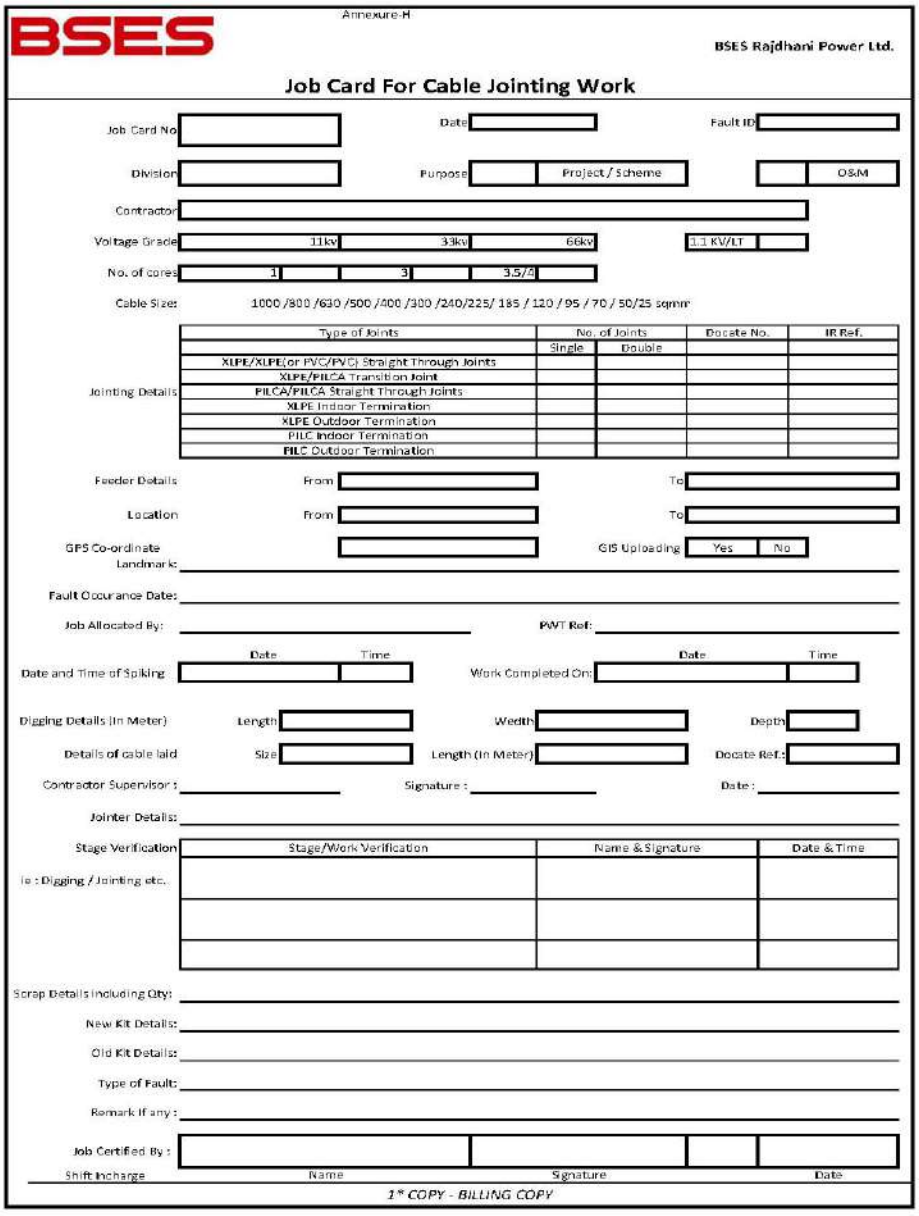
2) ADHESIVE TAPE-3 PLY LAMINATE MIDDLE ALUMINIUM FOIL WITH POLYESTER FILM

DIMENSIONS FOR STIP TYPE GI CANNISTER

SR.NO.	VOLTAGE	JOINT SIZE	NO. OF STRIPS	LENGTH(L)	WIDTH (W)
1	11KV	120PILC-120PILC	40	1450	400
2	11KV	240PILC-240PILC	46	1550	460
3	11KV	120PILC-150XLPE	40	1450	400
4	11KV	240PILC-300XLPE	46	1550	460
5	11KV	120PILC-300XLPE	46	1550	460
6	11KV	70PILC-300XLPE	46	1550	460
7	11KV	150XLPE-150XLPE	34	1260	340
8	11KV	300XLPE-300XLPE	36	1360	360
9	11KV	150XLPE-300XLPE	36	1360	360
10	33KV	300PILC-300PILC	50	1850	500
11	33KV	300PILC-400PILC	50	1850	500

DRAWN	RAJESH	TITLE:-	BSES BSES Yamuna Power Limited
CHECKED	ASHISH	STRIP TYPE GI CANNISTER (V.B. CAN) FOR JOINT PROTECTION (GENERAL ARRANGEMENT)	
APPD.	D.S		DWG.NO:- CES/BQP/JKT/048
DATE	11.04.13		REV. 0
SCALE	NTS		

Annexure – H : Job card Details {R4}



Annexure-H

BSES

BSES Rajdhani Power Ltd.

Job Card For Cable Jointing Work

Job Card No | Date | Fault ID

Division | Purpose | Project / Scheme | O&M

Contractor

Voltage Grade | 11kv | 33kv | 66kv | 1.1 KV/LT

No. of cores | 1 | 3 | 3.5/4

Cable Size: 1000 /800 /630 /500 /400 /300 /240/225/ 185 / 120 / 95 / 70 / 50/25 sqmm

Jointing Details

Type of Joints	No. of Joints		Docate No.	IR Ref.
	Single	Double		
XLPE/XLPE(or PVC/PVC) Straight Through Joints				
XLPE/PILCA Transition Joint				
PILCA/PILCA Straight Through Joints				
XLPE Indoor Termination				
XLPE Outdoor Termination				
PILC Indoor Termination				
PILC Outdoor Termination				

Feeder Details: From | To

Location: From | To

GPS Co-ordinate | GIS Uploading: Yes | No

Landmark:

Fault Occurance Date:

Job Allocated By: | PMT Ref:

Date and Time of Spiking: Date | Time | Work Completed On: Date | Time

Digging Details (In Meter): Length | Width | Depth

Details of cable laid: Size | Length (In Meter) | Docate Ref.:

Contractor Supervisor : | Signature : | Date :

Jointer Details:

Stage Verification (ie : Digging / Jointing etc.)

Stage/Work Verification	Name & Signature	Date & Time

Scrap Details Including Qty:

New Kit Details:

Old Kit Details:

Type of Fault:

Remark If any :

Job Certified By : | Shift Incharge | Name | Signature | Date

1st COPY - BILLING COPY

Annexure – I : SOP for jointing work

SOP FOR REPAIRING OF CABLE FAULT (Shall be part of PO)		
SI. No.	Activity	Responsibility
Initiation		
1	Identify and isolate fault and inform GNIIT in case of cable fault	Break down team
2	Updation of the details in OMS against respective feeder tripping event.	GNIIT
Fault Location		
1	Information sent to FLC team and SDO.	GNIIT
2	Mobilize FLC team and cable jointing contractor.	SDO
3	Identification of fault location	FLC Team
Preparation for Jointing		
1	Seeking permission from road owning agency	SDO
2	Payment of RR charges to Road owning agency	Finance
3	Digging	Cable jointing contractor
4	Cut faulty section and Pre-test (HV test) cable for multiple fault	Cable jointing contractor
5	BOQ estimation for jointing work (type, size and length of cable, type of jointing kit)	Cable jointing contractor
6	Filling material reservation slip (MRS) in SAP	SDO
7	Issuing and transporting material from store.	Cable jointing contractor
Jointing		
1	Cable preparation (overlap length of cable, slide of armour, build up with inner sheath etc)	Cable jointing contractor (for jointing details refer to manufacturer instruction manual)
2	Copper tape shields	
3	Core preparation	
4	Location of parts in completed joints	
5	Earthing of connection	
6	Completion of joints	
7	Take Photographs before, during and after jointing and send to CES	SDO
8	Supervision during jointing	SDO
9	Sending failed joint to Division store	Cable jointing contractor
Completion and reporting		
1	Intimate to breakdown team about joint completion.	Cable jointing contractor
2	Conduct HV test	Break down team
3	Restore of Supply through jointed cable	Break down team

4	Backfilling, compaction of excavated soil and removing of excess earth from the site **{R4}**	Cable jointing contractor
5	Completion information in Job Card (Details of work done, material consumption, location, feeder name and joint tag no., date, supervisor name, jointer name) sent to SDO	Cable jointing contractor
6	Above information sent to GNIIT	SDO
7	Send information about GPS location of Cable fault to GIS	SDO
8	Daily report of cable jointing to CES	Division Head
9	Updating of information in OMS including supervisor name, jointer name, feeder name	GNIIT
10	Information to include GPS location of cable fault.	GNIIT

Special Note-

1) Joints to be done preferably during day. In case of constraints, DGM (O&M) to authorize for night time jointing with supervisor
2) Daily joint report to be shared with CES
3) Bi-monthly analysis of faulty joint for ensuring warranty compliance to be organized at circle level by contractor in presence of DGM (O&M) and CES
4) Certification of job card for payment by DGM (O&M) subject to OMS compliance CES to check any gaps.
5) After completion of jointing (33kV and 66kV), all the joints shall be covered with RCC coffin. Coffin shall be filled with white sand complete from the hole provided at the top of the coffin**.{R4}**

Annexure – J Joint Marker {R4}