



BHARAT HEAVY ELECTRICALS LIMITED भारत हैवी इलेक्ट्रिकल्स लिमिटेड
(A GOVT. OF INDIA UNDERTAKING) (भारत सरकार का उपक्रम)
PROJECT ENGINEERING MANAGEMENT परियोजना अभियांत्रिकी प्रबंधन

निविदा आमंत्रण सूचना
NOTICE INVITING TENDER (NIT)

Enquiry No- 77/24/6063/SUM

Date -28-Feb-25

BHEL invites offers from reputed Suppliers as per following terms and conditions -

1. Tender Type	Open Tender (Domestic-Indian)		
2. Package	LT XLPE POWER CABLE		
3. Project	Framework Agreement (Rate Contract) of LT XLPE POWER CABLE		
4. Executing Agency	BHEL-PEM		
5. Mode of Enquiry	E - PROCUREMENT		
6. Nature of Package (Divisible/Non-Divisible)	Divisible		
7. Numbers of Part bid	2-Part bid (Techno-commercial and Price bid)		
8. Due Date & Time	For offer submission	11.03.2025	12:00 IST
	For P-1 bid opening	11.03.2025	16:00 IST
9. Earnest Money Deposit (EMD)	Not Applicable	EMD Amount	NA
10. Tender Cost	NIL		
11. Eligibility of Local Supplier as per MII	Only Class I Supplier (with local content 60% and above)		
12. Technical Scope	As per Technical specification No: PE-TS-999-507-E002		
13. Pre-bid Clarification	Suppliers to contact BHEL-PEM (over phone/ mail/ visit-BHEL-PEM) for any clarification (Technical or Commercial) at least 05 days before the due date of Tender opening & get it clarified well before the due date, so that offers by the Suppliers may be submitted within the due date & time.		
14. Prequalification Requirements	Financial PQR- YES		Technical PQR- YES
15. Delivery terms for Supply	FOR Despatch Station		
16. Delivery Schedule:			
A. Main Supply	150 days from the date of PO		

Notes:

- Supplier to start manufacturing/supply only after getting the applicable Primary engineering Drgs. /docs approved from BHEL/End Customer.
- Drawings /documents submission/re-submission schedule shall be as per Technical specification (PE-TS-999-507-E002) which shall be used for progress monitoring purpose and required course correction, if any.
- The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.
- The delivery conditions specified are for Contractual purposes. However, to meet project requirement, BHEL may ask for early deliveries without any compensation thereof.



2.0 Validity of Contract placed on basis of Framework Agreement (Rate Contract) for individual projects (PO rates, terms and conditions):

Vendor has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances if delay happens in providing inputs/ clearances (inputs, Engineering approvals, deputing inspector for inspection, issuance of MDCC and any hold imposed owing to site issues etc.) for which delivery time extension is admissible as per point no.3, in such situation it shall be obligatory at vendor part to execute the Contract at PO rates, terms and conditions where inputs/ clearances has been accorded within validity of Contract. Validity period for various activities shall be as defined below or as mentioned in the NIT.

2.1 Contract for main supply shall be valid for 210 ('C') days from the PO date. However, delay at vendor's end (if any) shall be added to the validity period and Contract validity shall get extended by the delay period at vendor's end.

For example: Original Delivery period for main supply: A (in days)

Delay at vendor's end: B (in days beyond "A" days)

Contract validity: C+B (in days)

Notes:

- B is the Vendor delay days beyond original Contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.
- Main supply, applicable in the Contract released/ cleared for manufacturing within Contractual validity period, to be supplied by vendor/supplier at PO rates, terms and conditions.
- Execution of the Contract quantities released beyond Contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.

3.0 Delivery Extension: Extension of Contractual delivery time:

Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the vendor and review/approval of the same by the BHEL/End customer), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the vendor to ensure timely completion of engineering and supply.

During the execution of the Contract, time loss occurred owing to the reason attributable to BHEL besides force majeure shall be considered for delivery time extension to the vendor as given below: -

- Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT.
- Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the vendor (i.e. resubmission owing to end customer comments) as certified by BHEL. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re- submission time loss shall be in vendor account.
- Delay in providing engineering input/material by BHEL.
- Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC
- Any hold put by BHEL for whatever reasons during execution of Contract (within Contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional fifteen days for the purposes of mobilization and demobilization of resources shall also be admissible.

Note: Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. However, no delay analysis will be applicable if supply is completed within delivery schedule as specified in Purchase order.

17. **Liquidated Damages (LD):**

Liquidated Damages: Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half ($\frac{1}{2}$) percent of the undelivered portion of Contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of total of Contract price



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excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

All other terms and conditions of LD shall be as per GCC Rev. 07 and Corrigendum 01 & 02 to GCC Rev. 07.

18. Guarantee Terms: As per Clause No. 12.0 except Clause no. 12.2(b) of General Commercial Terms & Condition of GCC Rev. 07.

19. Validity of offer shall be as per Clause no. 7 (Instruction to Suppliers) of GCC Rev. 07.

20. PVC (Price Variation Clause) shall be applicable as per enclosed PVC Annexure to NIT. All Suppliers shall quote as per the Price Variation Formulae Annexure (Annexure-B) to NIT.

- For reference dates (base date and end date for PVC), please refer the Price Variation Formulae Annexure (Annexure-B) to NIT.
- The price variation shall be limited to + 20% of total ex-works actually supplied (cable size wise) and negative price variation shall be unlimited.

21. CIF Content Not Available

22. Integrity Pact Applicability Yes,
Following Independent External Monitors (IEMs) have been appointed by BHEL -
Shri Otem Dai, IAS (Retd.) (iem1@bhel.in)
Shri Bishwamitra Pandey, IRAS (Retd.) (iem2@bhel.in)
Shri Mukesh Mittal, IRS (Retd.) (iem3@bhel.in)

23. Tender Evaluation - Price will be finalized through RA. The evaluation currency for this tender shall be INR. Evaluation will be done on overall L1 (Total Package Price including Freight excluding taxes) basis with necessary loading as applicable.

In the course of evaluation, if more than one Supplier happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 Suppliers.

In case more than one Supplier happens to occupy the L-1 status even after soliciting discounts, the L-1 Supplier shall be decided by a toss/ draw of lots, in the presence of the respective L-1 Supplier (s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final & binding.

24. Payment Terms:

As per clause No. 9.1 of General Commercial Terms and Conditions of GCC Rev. 07 i.e.

Payment of basic price of supplied materials (as per PO/ approved billing schedule) along with freight and taxes and duties (as applicable), shall be paid against receipt of material (receipted LR) at site on pro-rata basis. 10% of basic price of materials supplied will be retained as security deposit which will be released on pro-rata basis as below:

On receipt of Material Receipt Certificate (MRC) from project site engineer of owner/Buyer and on submission of certificate of submission of all the final documents for the package (as per Annexure IX(A) of GCC Rev. 07), duly certified by Engineering Department of Buyer.

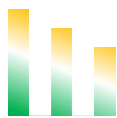
Note:

Payment will be released within days as mentioned below after submission of complete documents:

- 90 days for non MSME as per MSMED Act
- 45 days for vendors qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act
- 60 days for vendors qualified as Medium Enterprises as per MSMED Act.

25. Clause no 9.6 (excluding Notes) of GCTC of GCC Rev. 07 shall be read as-

"Suppliers shall submit billing documents for payment directly to BHEL. Payment will be released within days





as mentioned below after submission of complete documents as per clause no 9.7.2 - 9.7.5:

- 90 days for non-MSME as per MSMED Act.
- 45 days for Suppliers qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act.
- 60 days for Suppliers qualified as Medium Enterprises as per MSMED Act.

26. GST shall be payable extra at actual as per the HSN code finalized for the items during detailed BBU.

27. Reverse Auction:

BHEL shall be resorting to Reverse Auction (RA) (Guidelines for Reverse Auction - 2024, as available on www.bhel.com on "Supplier registration page") for this tender. RA shall be conducted among all the Techno-Commercially qualified Suppliers.

Price Bids of all the Techno-Commercially qualified Suppliers shall be opened and same shall be considered as initial bids of Suppliers in RA. In case any Supplier(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

"The Suppliers has to quote the Single Price (i.e. Total Cost to BHEL) in Reverse Auction. Prices are to be inclusive of Packing & Forwarding charges, all as per tender scope, Freight as applicable, including loading (if any) but excluding GST. De-loading (if any) shall be done in line with NIT terms."

28. Supplier to note that this is an Open Tender enquiry & Reverse Auction participation shall be subject to following condition:

- Qualifying Technical and Financial Pre-Qualification Requirement.
- Techno-Commercial acceptance of offer by BHEL-PEM.
- Registration in BHEL-PEM for the Tender package
- Customer Approval before Reverse Auction.

The Suppliers who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at <https://supplier.bhel.in/>. All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

29. Performance Security (PS)

PS Applicability

No Performance Security (PS) against the current enquiry for Framework Agreement (Rate Contract) for Tender package.

However, Suppliers to note that Performance Security shall be submitted for orders placed by the concerned Purchase Groups of concerned BHEL unit on the Framework Agreement (Rate Contract).

Successful Supplier/s will have to submit Performance Security for each POs (irrespective of value) which will be placed under the Framework Agreement (Rate Contract) finalized through this tender considering FA (RC) as original Contract as per the format given in GCC Rev 07.

Relevant details of the PS to be submitted on the basis of Framework Agreement (Rate Contract) are as following:

Initially 10% of the Contract value (total Ex-works price). However, 5% of the Contract value (as above) will be released after completion of Main Supply based on certification by Purchasing Department of BHEL unit.

Balance 5% of the Contract value (excluding PVC) will be released on completion of all Contractual obligations, including guarantee/warranty obligations

		based on certification by Purchasing Department of BHEL unit.
		OR
	II	5% of the Contract value (total Ex-works price). Additional 5% of the Contract value will be retained from first bill & subsequent bill(s) of the same Contract. The retention amount will be released after completion of main supply based on certification by Purchasing Department of BHEL unit. Balance 5% of the Contract value (excluding PVC) will be released on completion of all Contractual obligations, including guarantee/warranty obligations based on certification by Purchasing Department of BHEL unit.
	Validity of PS	As per clause no. 11.0 (except 11.4) of General Commercial Terms and Conditions of GCC Rev 07.
	PS Submission	PS should be in favour of concerned BHEL unit. Supplier may opt any of the following for submission of Performance Security: -
	Modes of Deposit	Performance security may be furnished in the following forms: a) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL. b) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL. c) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL). d) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL). e) Insurance Surety Bond. (Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith) Performance Security is to be furnished within 14 days from the date of PO and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all Contractual obligations of the Supplier, including warranty obligations.
	Remarks for PS:	a) The performance security will be forfeited and credited to BHEL's account in the event of a breach of



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		<p>Contract by the supplier.</p> <p>b) Performance security should be refunded to the Contractor without interest, after he duly performs and completes the Contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the Contract.</p> <p>c) However, Performance Security validity is to be extended based on the actual delivery of package.</p> <p>The Performance Security shall not carry any interest.</p>
<p>30. Breach of Contract, Remedies and Termination (Tenderer to note that this clause will supersede any clause regarding recovery amount from Tenderer due to Breach on Contract mentioned anywhere in GCC Rev. 07 and its Corrigendum)</p>	<p>In case of Breach of Contract, BHEL shall recover 10% of the Contract value from the Supplier using following instruments:</p> <p>(i) Encashment of security instruments like EMD, Performance Security with executing agency (PEM) against the said Contract.</p> <p>(ii) Balance amount (if value of security instruments is less than 10% of the Contract value) from other Financial remedies i.e. available bills of the Supplier, retention amount etc. with executing agency (PEM).</p> <p>(iii) Balance amount from security instruments like EMD, Performance Security and other Financial remedies i.e. available bills of the Supplier, retention amount etc. with other units of BHEL.</p> <p>(iv) If recovery is not possible then legal remedies shall be pursued.</p> <p>However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.</p>	
<p>31. Suppliers are requested to refer clause no 26.0 (Make in India) of instructions to Supplier of GCC Rev. 07. Further, following shall be taken into consideration for submitting bids by Suppliers:</p> <ul style="list-style-type: none">• For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local supplier/ Non-local supplier and purchase preference to class I local supplier, is as defined in Public Procurement (Preference to Make In India), Order 2017 dated 19.07.2024 issued by DPIIT. In case of subsequent orders issued by the Nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after the issue of the NIT, the same shall be applicable even if issued after the issue of tis NIT, but before opening of Part-II bids against the NIT.• Minimum Local Content prescribed for LT XLPE POWER CABLE package by Nodal Ministry is 60% and hence for this procurement, as per Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders issued by the nodal ministry, this package is reserved for only Class-I supplier having Minimum local Content 60%. Class-II and Non-Local suppliers are not eligible to quote for this enquiry.• Suppliers are requested to go through the above-mentioned orders and submit their adherence to Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders.		
<p>32. Purchase preference to MSE Supplier: Yes.</p>		
<p>33. Framework Agreement (Rate Contract) Order Splitting</p> <p>a. Framework Agreement (Rate Contract) is proposed for Two (02) years from placement of Framework Agreement (Rate Contract) Purchase Order with a provision for further extension after review on mutual consent.</p> <p>b. Framework Agreement (Rate Contract) is to be done with 3 suppliers in ratio of 45:30:25 value wise at L1 FOR Site Price (Ex-works + Freight) for this package. However, Purchase orders placed by BHEL units for a</p>		



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project on the basis of Rate Contract shall not be split. Details of Framework Agreement (Rate Contract) order splitting shall be as per following:

- GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017 shall be applicable for order splitting (in the ratio of 45:30:25) and order finalization.
- L1 Rates (Ex-works + Freight) shall be counteroffered to all techno-commercially qualified Suppliers and order splitting in ratio of 45:30:25 shall be done in line with GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017.
- In case acceptance of counteroffer is received from more than two Suppliers then acceptance shall be considered as per FINAL Reverse Auction Ranking (as applicable).
- In case acceptance of counteroffer is received from only one Supplier then splitting shall be done in the ratio of 70:30 between L1 vendor and the supplier who accepts L1 vendor rates.
- If none of the Supplier accepts counter-offered L1 rates, then Contract shall be awarded to L1 vendor for 100% value.

c. Framework Agreement (Rate Contract) will be finalized on total lump sum basis instead of item wise evaluation so that the complete requirement against one project is not split amongst various Suppliers to minimize operational difficulty.

34. GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017 shall be applicable for order splitting and order finalization.

35. The quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.

36. Overall (%) quantity variation: The variation on overall package value shall be limited to +/-30% of the Contract value.

37. Suppliers shall Quote for the entire Scope. Partial scope is not acceptable.

38. Suppliers to ensure that Third party/ Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e - mail Id etc. Offer of only those Suppliers shall be considered further, who meets the PQR criteria. Suppliers to furnish latest verification details for checking veracity of document(s) by BHEL. In case the same found not available, Buyer has right to reject such document from evaluation. Format for the same is below: -

Sl. No.	Project Name	Customer Name, Contact Address, Phone No. & Email ID	Contract/ Order No.	Value of Contract/ Order	Brief Work of	Completion Date

39. Suppliers who fulfil Technical & Financial Pre-Qualification Requirement Criteria are eligible to participate in this tender. Bids of only those Suppliers shall be evaluated who meet the Technical as well as Financial Pre-Qualifying requirements.

Note: This item/Package falls under the list of items defined in Para 3 of Ministry guideline ref no.F.20/2/214-PPD(Pt.) dated 20-09-2016 (in respect of procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence no relaxation of PQR for start-up/MSME vendors is envisaged for the NIT items/Package.



- 40.** All corrigenda, addenda, amendments, time extensions, clarifications, etc. to the tender will be hosted on BHEL website (www.bhel.com) & BHEL-PEM website (www.pem.bhel.com) and GePNIC portal. Suppliers should regularly visit websites to keep themselves updated.
- 41.** If Supplier mentions Not Applicable/ Not required/ Not Quoted in BHEL price format, the same to be substantiated by the Supplier. If such item is required to be supplied for system completion in future, same will be supplied free of cost.
- 42.** GeM Seller ID shall be mandatory before placement of order/award of Contract to the successful Supplier.
- 43.** Supplier to quote non-zero Freight charges (anywhere in India) in percentage (%) of their quoted Total Ex-Works prices of supply.
- 44.** All Suppliers to comply Govt. of India, Ministry of Power, order no-25-111612018-PG dtd 02/07/2020 regarding mandatory testing of all the imported items/equipment's/components.
- 45.** Self-declarations/ Auditor's/ Accountant's Certificates submitted by the manufacturer/ supplier may be verified randomly by the committee constituted as per MoP Order 28-07-2020. In case of false documents/misrepresentation of the facts requisite action against such manufacturer/ supplier will be taken based on the recommendation of the Committee.
- 46.** All Suppliers to declare that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Supplier(s). This applies in particular to prices, specifications, certifications, subsidiary Contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
In case, the Supplier is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.
- 47.** The offers of the Suppliers who are under suspension as also the offers of the Suppliers, who engage the services of the firms debarred across BHEL, shall be rejected. The list of firms debarred across BHEL is available on BHEL web site www.bhel.com.
- 1.0 Integrity commitment, performance of the Contract and punitive action thereof:
- 1.1 Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the Contract. BHEL will during the tender process treat all Supplier(s) in a transparent and fair manner, and with equity.
- 1.2 Commitment by Supplier/ Supplier/ Contractor:
- 1.2.1 The Supplier/ supplier/ Contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.
- 1.2.2 The Supplier/ supplier/ Contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.
- 1.2.3 The Supplier/ supplier/ Contractor will perform/ execute the Contract as per the Contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.
- If any Supplier/ supplier/ Contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in malpractices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such Supplier/ supplier/ Contractor as per extant guidelines of the company available on www.bhel.com and/or under applicable legal provisions".
- 48.** A Supplier shall not have conflict of interest with other Suppliers. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The Supplier found to have a conflict of interest shall be disqualified. A Supplier may be considered to have a conflict of interest with one or more parties in this bidding process, if:



- a) they have controlling partner (s) in common;' or
- b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- c) they have the same legal representative/agent for purposes of this bid; or
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Supplier; or
- e) Supplier participates in more than one bid in this bidding process. Participation by a Supplier in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid, or
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following:
1. The principal manufacturer directly or through one Indian agent on his behalf; and
 2. Indian/foreign agent on behalf of only one principal,'
- or
- g) A Supplier or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Contract that is the subject of the Bid, or
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Suppliers must proactively declare such sister/ common business/ management units in same/ similar line of business. "

49. All the above terms and conditions, post-bid agreements/MoMs (during Techno- Commercial evaluation) shall automatically become a part of the Order/Contract after its finalisation.

50. Suppliers to note that offers shall be submitted strictly in accordance with the requirements of tender documents. Suppliers shall upload their complete offer meeting the requirements of the tender documents on e-procurement portal <https://eprocurebhel.co.in/nicgep/app>.

Following documents need to be uploaded:

- Offer forwarding/ covering letter with Un-price bid, Deviation Sheet (Cost of Withdrawal)
- Documents required for meeting Technical PQRs (Part of Tech. Spec.)
- Documents required for meeting Financial PQR
- NTPC Main Contractor's Proposal Cum Evaluation Report
- NTPC Sub Vendor Questionnaire
- Bank Guarantee Format
- Local Content Certificate in line with Make in India circular
- Land Border Certificate
- Integrity Pact
- Price Bid on e-procurement portal - <https://eprocurebhel.co.in/nicgep/app>

51. It shall be the responsibility of the Supplier to ensure that the tender complete in all respects is uploaded on or before the due date and time. Incomplete/late offers shall not be considered.

All other correspondence thereof shall be addressed to the undersigned by name & designation and sent at the following address:

Kumar Suman Saurabh/ Mgr-CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex,

Manish Kumar Sinha / Sr. Manager-CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex,



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PROJECT ENGINEERING MANAGEMENT परियोजना अभियांत्रिकी प्रबंधन

	Plot No 25, Sector-16 A, Noida-201301 E-mail: sumansaurabh@bhel.in Contact No.: 9718771765	Plot No 25, Sector-16 A, Noida-201301 E-mail: manish.sinha@bhel.in Contact No.: 0120-6748120	
52. Terms & Conditions: - The Terms & Conditions shall be as per enclosed Special Conditions of the Contract (copy enclosed), GCC Rev. 07 and Corrigendum 01 & 02 to GCC Rev. 07 which is available on www.pem.bhel.com and other Terms and Conditions included in this Enquiry Letter.			
53. All other terms and conditions shall be as per Special Conditions of Framework Agreement (Rate Contract), and GCC Rev 07 & Corrigenda-01 and Corrigenda-02 to GCC Rev 07. In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be as mentioned in clause no. 36 of GCTC of GCC Rev 07.			
Note - In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date			

Thanking You.

For and on behalf of BHEL

Kumar Suman Saurabh
Manager/ CMM/ PEM Noida


RATE CONTRACT

TECHNICAL SPECIFICATION FOR LT XLPE POWER CABLE

SPECIFICATION No. PE-TS-999-507-E002
ISSUE NO. 01
REV NO. 00




BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA

	TECHNICAL SPECIFICATION LT XLPE POWER CABLE (RATE CONTRACT)	PE-TS-999-507-E002
		Issue No: 01
		Rev. No. 00
		Date :19.02.2025

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SCOPE

SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:

SL.NO	PARAMETERS	REQUIREMENT
1	Supply Including Design, Engineering, Manufacturing of LT XLPE Power cable	YES
a)	Main Supply	YES
b)	Commissioning Spares	NO
2	Painting	NO
3	Inspection & Testing	YES
4	Packing	YES
5	Transportation & Delivery To Site	YES
6	Erection & Commissioning	NO
7	Supervision of Erection & Commissioning	NO
8	Mandatory Spares	NO
9	O & M Service	NO
10	O & M Spares	NO

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	GENERAL TECHNICAL REQUIREMENT
1	It is not the intent to specify herein all the details of design and manufacturing. Bidder shall ensure that the offered equipment confirms in all respects to high standards of design, engineering and workmanship.
2	Bidder shall also ensure that the offered equipment shall comply with all applicable statutory and regulatory requirements.
3	In the event of any conflict between the requirements of two clauses of this specification, documents or requirements of different codes and standards specified, the more stringent requirement as per the interpretation of the owner shall apply.
4	Drawing/document submission shall be through web based Document Management System(DMS) of BHEL. Bidder would be provided access to the DMS for drawing/document submission. Bidder to ensure internet connectivity of min speed of 2Mbps at their end.
5	Drawings/ documents submitted by vendor at any stage shall be complete in all respects. Any incomplete drawing submitted shall be treated as non- submission with delays attributable to vendor. For any clarification/ discussion required to complete the drawings, the bidder shall depute his personnel to BHEL / Customer's Office as per the requirement for across the table submission/ finalizations of drawings.
6	Latest codes and standards shall be complied.
7	<p>Bidder shall furnish Type Test Certificate of specified Type Test as per quality plan which has been conducted within last 10 years from 07/10/2024 , i.e. from 08/10/2014 to 07/10/2024. These reports should be for the tests conducted on 1.1 KV LT XLPE Power cable identical in all respects to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client.</p> <p>In absence of valid Type Test report vendor to conduct the same without any commercial & delivery implication to BHEL. Type test conduction shall be as per Annexure-A to QAP.</p>
8	Bidder shall confirm compliance with the Quality Plan attached with the specification without any deviations. At contract stage, the Quality Plan as enclosed in the technical specification is to be appended with cover sheet bearing document number and description. The signed and stamped copy of the same shall be submitted to BHEL without making any changes in the contents of the document. There shall be no commercial implication to BHEL on account of minor changes in QP during contract stage.
9	Equipment must be safe, reliable and easy to maintain at all operating condition


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TECHNICAL DATA - PART - A			
SL.NO	DESCRIPTION	UOM	DETAIL
1.0	DESIGN CODES & STANDARDS		
1.1	Standard applicable in general (Latest amendment to be referred if any)		IS:7098 (Part-1)
1.2	Current rating of cables conforms to		As per IS:3961 (P-6)
1.3	Short circuit rating		IEC 60949
1.4	Conductor		IS: 8130
1.5	XLPE insulation		IS:7098 (Part-1)
1.6	Inner sheath		IS: 5831
1.7	Outer sheath		IS: 5831
2.0	DESIGN /SYSTEM PARAMETERS		
2.1	Type of Cable		LT XLPE Power Cable
2.2	Voltage Grade		1.1 kV
2.3	INSTALLATION CONDITIONS AT SITE		
2.3.1	Ambient air temperature	deg. C	50
2.3.2	Ground temperature	deg. C	40
3.0	CONSTRUCTION FEATURES		
3.1	CONDUCTOR		
3.1.1	Material type		Aluminium / Annealed Bare Copper (ABC)
3.1.2	Grade		H2 (For Al Cable) Electrolytic Grade (For Cu Cable)
3.1.3	Class		Class 2 (Stranded)
3.1.4	Shape		Circular/Shaped
3.1.5	Compaction		Compacted for AL Cable As per Table-2 of IS: 5831 for Cu cable
3.1.6	Cable Size	sq.mm	Refer BOQ
3.2	XLPE INSULATION		
3.2.1	Nominal thickness of insulation (mm)		As per IS:7098 (P-1)
3.2.2	Material type		Extruded XLPE
3.2.3	Continuous withstand temperature		90°C
3.2.4	Short-circuit withstand temperature		250°C

3.3	Extrusion		Sleeve extrusion not permitted.
3.3.1	Method of extrusion		Pressure Extruded / Vacuum Extruded
3.4	CORE IDENTIFICATION		As per IS:7098 (P-1)
3.5	INNERSHEATH		
3.5.1	Material		Extruded HRPVC Type ST-2
3.5.2	Colour		Black
3.5.3	Whether FR-LSH		No
3.5.4	Inner sheath applicable for single core cable		No
3.5.5	Material of fillers (for multicore cable)-if applicable		Same as inner sheath
3.5.6	Method of application		Extrusion
3.5.6.1	Multi-core cables:		
a)	With fillers		Pressure extruded/ Vacuum extruded
b)	Without fillers		Pressure extruded
3.5.6.2	Single-core cables:		NOT APPLICABLE
3.5.7	Thickness of inner sheath	mm	As per Table-5 of IS: 7098 (Part-1)
3.6	ARMOUR		
3.6.1	Dimension	mm	Dimension as per IS: 7098 (Part-1) Table-6 and tolerance on dimension as per IS:3975
3.6.2	Material		
3.6.2.1	Material (Single core)		Non-Magnetic hard drawn H4 grade Aluminium Single Round Wire as per IS: 8130 with maximum resistivity of 0.028264 ohm-sq mm/mtr at 20 deg C
3.6.2.2	Material (Multi core)		Galvanised steel round wire/Galvanised steel formed wire with maximum resistivity as per IS: 3975
3.6.3	Gap between armour wire / formed wires		The minimum area of coverage of armouring shall be 90%. Shall not exceed one armour wire space (No cross over / Over riding)
3.6.4	Breaking load of Joint		95% of normal armour. Zinc rich paint shall be applied on armour joint surface of G.S. wire/ formed wire.


3.7	OUTERSHEATH		
3.7.1	Material		Extruded HRPVC Type ST2
3.7.2	Colour		Black
3.7.3	Whether FR-LSH		YES
3.7.4	Method of application		Extruded
3.7.5	Thickness of outer sheath		As per Table-8 of IS: 7098 (Part-1)
3.7.6	Marking by Embossing on Outersheath		
3.7.6.1	At every 5 meters		(i) Owner's Name (project specific) (ii) Manufacturer's name and trade mark (iii) Year of manufacture (iv) Type of cable and voltage class (v) Nominal cross section area of conductor and no. of cores (vi) 'BHEL-<UNIT NAME> (vii) 'FRLS'/ FRLSH (viii) Drum no.
3.7.6.2	At every 1 meters by printing/ Embossing		Progressive Sequential length
3.7.7	FR-LSH CHARACTERISTICS		
3.7.7.1	Oxygen index		Minimum 29 as per IS 10810 (Part-58)
3.7.7.2	Temperature index		Minimum 250° C as per ASTM D 2863
3.7.7.3	Acid gas generation		Max. 20% as per IEC 60754-1
3.7.7.4	Smoke density rating		Shall not be more than 60% as per ASTM D 2843
3.7.7.5	Flame retardance test for single cable (for cable OD $\leq 35mm$)		As per IS 7098 Part 1 (IS 10810 Part 61)/ IEC-60332 (Part-1)
3.7.7.6	Flame retardance test for bunched cables		As per IEC-60332 (Part-3-23-Cat-B)
3.8	DIAMETERS		
3.8.1	Tolerance on overall diameter	mm	(\pm) 2 over the declared value

3.9	CABLE DRUM DETAILS		
3.9.1	Type of Drum		Steel
3.9.2	Standard drum length		AS per BOQ cum Un-priced schedule
3.9.3	Tolerance on drum length		(±) 5%
3.9.4	Details of marking on Drum		a) Manufacturer's name or trade make. b) Type of cable & voltage grade. c) Year of manufacture. d) Type of insulation. e) No. of core and sizes of cables. f) Cable code - FRLS. g) Single length of cable on drum. h) Direction of rotation, by arrow. i) Approx. gross mass. j) Drum no.
4.0	PERFORMANCE PARAMETERS	NA	
5.0	INSPECTION/TESTING		
5.1	TYPE TEST CONDUCTION REQUIRED	No (Refer clause no 5.2 below)	
5.2	Validity of type test report	As per Quality Plan vendor to furnish Type Test Certificate of specified Type Test which has been conducted within last 10 years from 07.10.2024 These reports should be for the tests conducted on the cable identical in all respects to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client. In absence of valid Type Test report vendor to conduct the same without any commercial & delivery implication to BHEL. Type test conduction shall be as per Annexure-A to QAP.	
5.3	Acceptance & Routine test	All acceptance and routine tests as per Quality plan (0000-999-QOE-S-041) shall be carried out. Charges for these shall be deemed to be included in the cable price.	

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TECHNICAL DATA - PART - B (SUPPLIER DATA TO BE FURNISHED AFTER AWARD OF CONTRACT)			
SL.NO		UOM	DETAIL
	The following technical data shall be submitted by the manufacturer for each type and size of the cable for Employer's approval.		
1.1	Make		
1.2	Country of manufacturer		
1.3	Type designation		
1.4	Cable size	No. of Cores x mm2	
1.5	Rated Voltage	kV	
1.6	Base current ratings (*) based on Clause No. 3.0		
1.6.1	In air (Amp)	Amps	
1.6.2	In ground (Amp)	Amps	
1.6.3	ducts (Amp)	Amps	
2.1	CONDUCTOR		
2.1.1	No. of wires (min.)	Nos.	
2.1.2	Dia of wires	mm	
2.1.3	Approximate Diameter over conductor	mm	
2.1.4	Direction of lay of stranded layers		
2.1.5	Conductor resistance (DC) At 20 deg C(max.)	Ohm/Km	
2.1.6	Conductor resistance (AC)		
2.1.6.1	at 20 deg. C (Approx.)	ohm/Km	
2.1.6.2	at 90 deg. C (Approx.)	ohm/Km	
2.1.7	Reactance per phase at 50 Hz	ohm/Km	
2.2	PVC INSULATION		
2.2.1	Nominal thickness of insulation	mm	
2.3	INNERSHEATH		
2.3.1	Thickness of sheath	mm	
2.3.2	Approximate diameter over the laid up cores	mm	
2.3.3	Thickness of sheath (Min)	mm	
2.4	ARMOUR		
2.4.1	Type of material of armour		
2.4.2	Shape (Formed wire / Round wire)		
2.4.5	Dimension of formed wire / round wire	mm	
2.4.6	No. of armour formed wires / round wires	Nos.	
2.5	OUTERSHEATH		
2.5.1	Thickness of sheath	mm	
2.6	FINISHED CABLE DETAILS		
2.6.1	Overall diameter of cable	mm	
2.6.2	Tolerance on overall diameter	mm	
2.6.5	Weight per 1000 mtrs	kg	
2.6.6	Recommended min installation bending radii	mm	
2.6.6	Safe pulling force when pulled by pulling eye on the conductor	kg	
2.7	CABLE DRUM DETAILS		
2.7.1	Dimensions (Approx.)		
2.7.1.1	Flange diameter	mm	
2.7.1.2	Barrel diameter	mm	
2.7.1.3	Traverse	mm	
2.7.2	Weight of cable drum with Cables	kgs	

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QUALITY PLAN



NTPC		STANDARD QUALITY PLAN स्टैंडर्ड क्वालिटी प्लान				TO BE FILLED IN BY NTPC							
Item (material, class, grade, rating, range, size etc.) / मद (सामग्री, वर्ग, ग्रेड, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables			CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION)			QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.:01 DATE :तिथि: 27.08.2021 Page/ पृष्ठ 1 OF/ से 12 VALID UPTO:26.08.2024		REVIEWED BY AMAN PANDEY AMAN DUBEY S K LAL SUNIL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL					
SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
					M/ एम	C/ N सी/एन				M/ एम	C/ सी	N/ एन	
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Instructions: 1) Cable manufacturer to maintain records to show co- relation of raw materials to finished cables i.e raw material batch/ lot no. should be traceable to the cable drum. 2) Cable manufacturer to maintain all quality control records identified as per all QP stages enumerated below whether it is identified for NTPC verification or witness or not.														
A	Raw material/ Brought out Items													
1.01	Aluminum	1.Make	MA	Verify	100%	--	NTPC ACCEPTED SOURCES	NTPC ACCEPTED SOURCES	QCR		V	-	--	
		2. Resistivity	MA	Elect	As per Cable Mnfr Std.	--	IS5082 / As per Rel. Std.	IS5082	-do--		P	-	--	
1.02	PVC / XLPE/compound for insulation	1. Make	MA	Verify	--do--	100%	MANUFACTURER APPROVED SOURCES	MANUFACTURER APPROVED SOURCES	--do--		V	V	V	
		2. Type/ Grade	MA	Verify	100%	100%	NTPC ADS	NTPC ADS	--do--		V	V	V	
		3. All acceptance test as per manufacturer norms including thermal stability test for PVC insulation	MA	Verify	As per manufacturer norms	As per manufacturer norms	NTPC ADS	NTPC ADS	--do--		V	V	V	Refer note 1
1.03	PVC Compound for Inner sheath	1. Make	MA	Verify	--do--	--do--	MANUFACTURER APPROVED SOURCES	MANUFACTURER APPROVED SOURCES	--do--		V	V	V	
		2. Type/ Grade	MA	Verify	--do--	--do--	NTPC ADS	NTPC ADS	--do--		V	V	V	
1.04	Steel wire / Formed Wire (As applicable)	1. Make	MA	Verify	--do--	--do--	MANUFACTURER APPROVED SOURCES	MANUFACTURER APPROVED SOURCES	--do--		V	V	V	
		2. Dimension	MA	Meas	1 sample from each size / lot	--	NTPC APPROVED DATA SHEET & IS 3975	NTPC APPROVED DATA SHEET &	--do--		P	-	--	

LEGEND:- *RECORDS, IDENTIFIED WITH "TICK" UNDER COLUMN "D" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

-M:MANUFACTURER/SUPPLIER, C:MAIN SUPPLIER, N:NTPC, P:PERFORM W:WITNESS,V:VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"



FORMAT NO:QS-01-QAI-P-10/F3-R1

		STANDARD QUALITY PLAN				TO BE FILLED IN BY NTPC							
		स्टैंडर्ड क्वालिटी प्लान											
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SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
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		3. All acceptance tests as per IS 3975	MA	Verify	As per IS 3975	--	IS 3975	IS 3975	Supplier TC		V	V	--	
1.05	PVC compound for Sheath	1. Make	MA	Verify	As per manufacturer norms	100%	MANUFACTURER APPROVED SOURCES	MANUFACTURER APPROVED SOURCES	QCR		V	V	V	
		2. Type / Grade	MA	Verify	100%	100%	NTPC ADS	NTPC ADS	QCR		V	V	V	
		3. All acceptance test as per manufacturer norms	MA	Verify	As per manufacturer norms	As per manufacturer norms	NTPC ADS	NTPC ADS	QCR		V	V	V	Refer note 1
		4. Thermal Stability	MA	Chem	One sample / Batch	--	NTPC ADS	NTPC ADS	QCR		P	-	--	
		5. Oxygen Index	MA	Chem	--do--	--	NTPC ADS/ IS 10810 Part 58	NTPC ADS/ IS 10810 Part 58	--do--		P	-	--	
		6. Acid Gas Emission	MA	Chem	One sample / Batch	--	NTPC ADS / IEC60754	NTPC ADS / IEC 60754	QCR		P	-	--	
1.06	Wooden Drum	1. Dimension	MI	Meas	Manuf. Std.	--	IS 10418	IS10418	--do--		P	-	--	
		2. Anti termite treatment	MI	Chem	Cable manuf. std	--	CABLE MANUF. STD.	CABLE MANUF. STD.	COC		V	V	V	COC from drum manuf.
1.07	Steel Drum	1. Dimension	MI	Meas	--do--	--	--do--	--do--	QCR		P	-	--	
		2. Surface finish	MI	Meas	--do--	--	--do--	--do--	--do--		P	-	--	
B Process & Stage Inspection														
2.01	Wire Drawing	1. Surface finish	MA	Visual	One sample / Setting of each	--	SHOULD BE SMOOTH & FREE FROM SCRATCHES	SHOULD BE SMOOTH & FREE FROM	QCR		P	-	--	

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					M/ एम	C/ N सी/एन				M/ एम	C/ सी	N/ एन	
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		2. Wire Diameter	MA	Meas	size	--do--	--	NTPC ADS	SCRATCHES	NTPC ADS	--do--	P	-	--	
		3. Tensile test	CR	Mech	--do--	--do--	--do--	--do--	--do--	--do--	--do--	P	V	V	Refer Sl. No.3.03(iii)
		4. Wrapping test	CR	Mech	--do--	--do--	--do--	--do--	--do--	--do--	--do--	P	V	V	--do--
2.02	Bunching / stranding	1. No. of wires	MA	Meas	--do--	--	NTPC ADS	NTPC ADS	--do--	--do--	--do--	P	-	--	
		2. Dia of wire	MA	Meas	--do--	--	--do--	--do--	--do--	--do--	--do--	P	-	--	
		3. Dimension of Conductor	MA	Meas	--do--		--do--	--do--	--do--	--do--	--do--	P	-	--	
		4. Direction of lay	MA	Visual	--do--	---	--do--	--do--	--do--	--do--	--do--	P	-	--	
		5. Records of strand breakage / welding during conductor stranding	MA	Verify	--do--	--	IS 8130	IS8130	--do--	--do--	--do--	P	-	--	
		6. Surface finish	MA	Visual	--do--	-	--do--	--do--	--do--	--do--	--do--	P	-	--	
		7. DC Resistance	CR	Meas	--do--	-	IS8130/NTPC ADS	IS8130/ NTPC ADS	--do--	--do--	--do--	P	-	--	
2.03	Insulation extrusion	1. Surface finish	MA	Visual	One sample/Settin g of each size	-	NTPC spec	SHOULD BE SMOOTH. NO POROSITY IS PERMITTED.	QCR			P	-	--	XLPE/ PVC compound shall be preferably loaded in to extruder by suction method.
		2. Colour of cores	MA	Visual	One sample/Settin g of each size	-	NTPC ADS	NTPC ADS	QCR			P	-	--	



		STANDARD QUALITY PLAN स्टैंडर्ड क्वालिटी प्लान				TO BE FILLED IN BY NTPC							
Item (material, class, grade, rating, range, size etc.) / मद (सामग्री, वर्ग, ग्रेड, रैंकिंग, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables			CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION)			QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.:01 DATE / तिथि: 27.08.2021 Page/ पृष्ठ 4 OF/ से 12 VALID UPTO:26.08.2024		REVIEWED BY AMAN PANDEY AMAN DUBEY S K LAL SUNIL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL		APPROVED BY  अनुमोदित Approved B C Roy			
SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
					M/ एम	C/N सी/एन				M/ एम	C/ सी	N/ एन	
1	2	3	4	5	6	7	8	9	D*	**	10	11	

		3.Thickness	CR	Meas	--do--	--	NTPC ADS	NTPC ADS	--do--		P	-	--	
		4.Spark Test	CR	Elect	100%	100%	CABLE MANUF. STD.	No FAILURE	--do --		P	V	V	1.Spark test failure record is to be verified. 2.Core repairing not permitted
		5. Hot Set	CR	Mech	One sample/Settin g of each size	--	IS 7098- Part I	IS 7098- Part I	--do--		P	-	--	Sample is to be taken from both top & bottom end
2.04	Laying up	1. Core sequence	MA	Visual	--do--	--	IS 1554 (Part I) & IS 7098- Part I	IS 1554 (Part I) & IS 7098- Part I	--do--		P	-	--	
		2. Direction of lay	MA	Visual	--do--	--	--do--	--do--	--do--		P	-	--	
		3. Dia over laid up core	MA	Meas	--do--	--	NTPC ADS	NTPC ADS	--do--		P	-	--	
2.05	Inner Sheath	1.Colour	MA	Visual	-do--	-	--do--	--do--	--do--		P	-	---	
		2. Surface Finish	MA	Visual	100%	-	NTPC SPECIFICATION	FISH EYE, BLOW HOLE NOT PERMITTED	--do--		P	-	-	
		3.Thickness	MA	Meas	One sample/Settin g of each size	-	NTPC ADS	NTPC ADS	--do--		P	-	--	
		4.Dia over inner sheath	MI	Meas	--do--	-	--do--	--do--	--do--		P	-	--	
2.06	Armouring (As Applicable)	1.Dimension	MA	Meas	--do--	-	--do--	--do--	--do--		P	-	--	
		2.No. of wires / strip	MA	Meas.	--do--	-	--do--	--do--	--do--		P	-	--	

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Item (material, class, grade, rating, range, size etc.) / मद (सामग्री, वर्ग, ग्रेड, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables		CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION)				QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.: 01 DATE / तिथि: 27.08.2021 Page/ पृष्ठ 5 OF/ से 12 VALID UPTO: 26.08.2024		REVIEWED BY AMAN PANDEY AMAN DUBEY S K LAL SUNIL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL		APPROVED BY  अनुमोदित Approved B C Roy			
SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
					M/ एम	C/ N सी/एन				M/ एम	C/ सी	N/ एन	
1	2	3	4	5	6		7	8	9	D*	**	10	11

		3. Direction of lay	MA	Visual	--do--	--	IS 1554 (Part 1) & IS 7098- Part I	IS 1554 (Part 1) & IS 7098- Part I	QCR		P	-	--	
		4. Coverage & Quality of armouring	MA	Meas.	100%	--	Min. area of coverage of armouring shall be 90%. The gap between amour wires / formed wires shall not exceed one amour wire/ formed wire space & there shall be no cross over/ over riding of amour wire / formed wire. Zn rich paint shall be applied on amour joint surface of G.S. Wire /formed wire. The breaking load of amour wire joint shall not be less than 95% of that amour wire / formed wire. (As per NTPC specification)		QCR		P	-	--	
		5 Dia over armouring	MA	Meas.	One sample/Settin g of each size	--	NTPC ADS		--do--		P	-	--	
.07	Outer Sheath	1. Surface finish	MA	Visual	100%	--	Pimple, Fish Eye, Burnt particles, Blow Hole not permitted. Repairing on outer sheath not permitted. (As per NTPC specification)		--do--		P	-	--	PVC FRLS compound shall be preferably loaded in to extruder by suction method.
		2.Colour of sheath	MA	Visual	One sample/Settin g of each size	--	NTPC ADS	NTPC ADS	--do--		P	-	--	
		3. Dia over outer sheath	MA	Meas	--do--	--	NTPC ADS	NTPC ADS	--do--		P	-	--	
		4.Thickness of outer sheath	CR	Meas	--do--	-	--do--	--do--	--do--		P	-	--	
		5. Embossing quality	MA	Visual	100%	-	Drum No.,IS1554-1 & IS7098-1,Cable size, Voltage grade & Words "FRLS" at every 5 meter is to be embossed. Embossing shall be automatic, in line & marking shall be legible & indelible. (As per NTPC		--do--		P	-	--	Drum No. on Cable may be embossed/printed


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SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
					M/ एम	C/ N सी/एन				M/ ए म	C/ सी	N/ एन	
1	2	3	4	5	6	7	8	9	D*	**	10	11	

		6. Sequential marking	MA	Visual	Full length	--	specification) Sequential marking of length of cable in meter at every one meter is to be embossed / printed. Embossing / printing shall be progressive, automatic, in line & marking shall be legible & indelible. (As per NTPC specification) In addition, Drum No. is also to be embossed/printed on full cable length		--do--		P	-	--	
C	Finished Cables													
3.01	Type test reports clearance from NTPC Engineering	All type tests as per NTPC specification	CR	Doc.	100%	100%	NTPC SPECIFICATION / NTPC ADS / IS 1554 (PartI) & IS 7098- Part I	NTPC SPECIFICATION / NTPC ADS / IS 1554 (PartI) & IS 7098- Part I	--do--	✓	P	V	V	
3.02	Routine Tests	1.High Voltage test at room temperature	CR	Elect	100%	100%	NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	Test certificate	✓	P	W	V	Refer note 2
		2.Conductor Resistance	CR	Elect	100%	100%	NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	Test certificate	✓	P	W	V	Refer note 2
3.03	Acceptance Tests													
3.03 (i)	Construction of finished Cable	1. OD of Cable	MA	Meas.	Each type & size of cables as per sampling plan of IS 1554 (Part I) & IS 7098- Part I		NTPC ADS	NTPC ADS	--do--	✓	P	W	W	
		2. Laying of core	CR	Visual	--do--		NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	NTPC ADS / IS 1554 (Part I) & IS 7098- Part I	--do--	✓	P	W	W	
		3. Core Identification	CR	Visual	--do--		--do--	--do--	--do--	✓	P	W	W	
		4. Colour of outer	MA	Visual	Each type & size of cables as		NTPC ADS	NTPC ADS	--do--	✓	P	W	W	

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SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां	
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1	2	3	4	5	6		7	8	9	D*	**	10	11	
3.03 (ii)	Armour wires/ Formed wires (if applicable)	sheath			per sampling plan of IS 1554 (Part 1) & IS 7098- Part I									
		5. Inner sheath thickness	CR	Meas	- do -		--do--	--do--	--do--	✓	P	W	W	
		6. Inner sheath colour	MA	Visual	- do -		- do -	- do -	--do--	✓	P	W	W	
		1. Dimensions	CR	Meas	--do--		NTPC ADS /IS1554(Part1)/IS3975	NTPC ADS /IS1554(Part1) /IS3975	--do--	✓	P	W	W	
		2. No. of wires/ formed wire	CR	Mech	-- do --		--do--	--do--	--do--	✓	P	W	W	
		3. Tensile test	CR	Mech	--do--		--do--	--do--	--do--	✓	P	V	V	
		4. Elongation test	CR	Mech	--do--		--do--	--do--	--do--	✓	P	V	V	
		5. Torsion test (for round wires only)	CR	Mech	Each type & size of cables as per sampling plan of IS 1554 (Part 1) & IS 7098- Part I		--do--	--do--	--do--	✓	P	V	V	
		6. Wrapping test	CR	Mech	--do--		--do--	--do--	--do--	✓	P	V	V	
		7. Resistance test	CR	Mech	--do--		--do--	--do--	--do--	✓	P	V	V	
		8. Mass of Zinc coating	CR	Meas	--do--		--do--	--do--	--do--	✓	P	V	V	
	Uniformity of Zinc Coating	9. Uniformity of Zinc Coating	CR	Chem.	Each type & size of cables as per sampling plan of IS 1554 (Part 1) & IS 7098- Part I		NTPC ADS /IS1554(Part1)/IS3975	NTPC ADS /IS1554(Part1) /IS3975	Test certificate	✓	P	V	V	
		10. Adhesion test	CR	Mech	--do--		--do--	--do--	--do--	✓	P	V	V	
		11. Freedom from defects	CR	Visual	--do--		--do--	--do--	--do--	✓	P	V	V	
03 (iii)	Conductor	1. Resistance Test	CR	Elect	--do--		--do--	--do--	--do--	✓	P	W	W	

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		2.Tensile test (For aluminum conductor only)	CR	Mech	Each type & size of cables as per sampling plan of IS IS 1554 (Part I)/7098(Part-1)	NTPC ADS/ IS 8130	NTPC ADS/ IS 8130	--do--	✓	P	W	W	Test report of manufacturer to be reviewed as per Sl. No. 2.01 for Tensile test & wrapping test (for Aluminum) in case this test is not applicable for cable under inspection as per IS 8130 cl. 6.2
		3.Wrapping test (For aluminum conductor only)	CR	Mech	--do--	--do--	--do--	--do--	✓	P	P	W	--do--
3.03 (iv)	PVC / XLPE Insulation & PVC Sheath	1.Thickness of insulation & sheath	CR	Meas.	--do--	NTPC ADS/ IS 1554(PartI) & IS 7098-Part I	NTPC ADS/ IS 1554(PartI) & IS 7098-Part I	--do--	✓	P	W	W	
		2.Tensile strength & elongation at break of insulation & outer sheath	CR	Mech	Each type & size of cables as per sampling plan of IS IS 1554 (Part I)/IS7098(Part-1)	NTPC ADS/ IS 1554(PartI) & IS 7098 Part I	NTPC ADS/ IS 1554(PartI) & IS 7098 Part I	Test Certificate	✓	P	W	W	
		3.Tensile strength & elongation of PVC at break of	CR	Mech	One sample per batch of offered lot (Finished Cable) irrespective of sizes	--do--	--do--	--do--	✓	P	V	V	MTR for Ageing Test of the offered lot shall be

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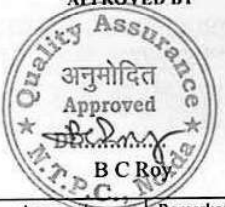
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		insulation & outer sheath (Ageing Test)											verified
		3a. Tensile strength & elongation of XLPE at break of insulation (Ageing Test)	CR	Mech	--do--	NTPC ADS/ IS 7098 Part I	NTPC ADS/ IS 7098 Part I	--do--	√	P	V	V	MTR for Ageing Test of the offered lot shall be verified
		4. Insulation resistance (Volume resistivity method)	CR	Elect	Each type & size of cables as per sampling plan of IS 1554 (Part 1) & IS 7098-Part I	--do--	NTPC ADS/ IS 1554(PartI) & IS 7098 Part I	--do--	✓	P	W	W	
		5.High voltage test at room temperature	CR	Elect	Each type & size of cables as per sampling plan of IS 1554 (Part 1) & IS 7098-Part I	--do--	--do--	--do--	✓	P	W	W	
		6.Thermal stability on PVC Insulation and outer sheath	CR	Chem	One sample of each offered lot of all offered sizes	--do--	--do--	--do--	✓	P	W	W	
		7. Hot Set Test (for XLPE Insulation only)	CR	Elect	Each type & size of cables as per sampling plan of IS 1554 (Part 1) & IS 7098-Part I	NTPC ADS/ IS 1554(PartI) & IS 7098 Part I	--do--	--do--	✓	P	W	W	
		8.Oxygen index Test on outer sheath	CR	Chem	One sample of each offered lot of all offered sizes	NTPC ADS / IS10810 Part 58	NTPC A.D.S / IS10810 Part 58	Test certificate	✓	P	W	W	Refer Note 3
		9.Smoke density rating test on outer	CR	Chem	--do--	NTPC ADS & ASTM D2843	NTPC ADS	--do--	✓	P	W	W	Refer Note 3

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		STANDARD QUALITY PLAN				TO BE FILLED IN BY NTPC							
		स्टैंडर्ड क्वालिटी प्लान											
Item (material, class, grade, rating, range, size etc.) / मद (सापग्री, वर्ग, ग्रेड, रैंकिंग, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables		CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION)				QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.:01 DATE : तिथि: 27.08.2021 Page/ पृष्ठ 10 OF/ से 12 VALID UPTO:26.08.2024		REVIEWED BY AMAN PANDEY AMAN DUBEY S K LAL SUNIL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL		 अनुमोदित Approved B C Roy			
SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां
					M/ एम	C/N सी/एन				M/ एम	C/ सी	N/ एन	
1	2	3	4	5	6		7	8	9	D*	**	10	11

		sheath	CR	Chem	--do--		NTPC ADS & IEC 60754-1	'NTPC ADS	Test Certificat	✓	P	W	W	Refer Note 3
		10.Acid gas generation test on outer sheath	CR	Chem	Refer Note 4	Refer Note 4	NTPC ADS & IEC 60332 Part-3 (Category-B)	NTPC ADS	--do--	✓	P	W	W	
		11.Flammability test on completed cable	CR	Chem	Refer Note 4	Refer Note 4	NTPC ADS & IEC 60332 Part-3 (Category-B)	NTPC ADS	--do--	✓	P	W	W	
		12.Surface finish & length measurement.	CR	Visual & Meas	100% (COC from Manufacturer to be submitted for surface finish as per specification's requirement)	one length of each offered lot of 50 drums of all sizes	(1) IS1554-I & IS7098-1, Cable size, Voltage grade & Words "FRLS" at every 5 meter is to be embossed. Embossing shall be automatic, in line & marking shall be legible & indelible. (2) Sequential marking of length of cable in meter at every one meter is to be embossed / printed. Embossing / printing shall be progressive, automatic, in line & marking shall be legible & indelible		--do--	✓	P	W	W	Pimple, Fish Eye, Burnt particles, Blow Hole etc. not permitted. Repairing on outer sheath not permitted.
		13. Sequence of cores armour coverage, gap between two consecutive armour/ formed wire	CR	Visual & Meas	One length of each size	One length of each size	Min. area of coverage of armouring shall be 90%. The gap between armour wires / formed wires shall not exceed one armour wire/ formed wire space & there shall be no cross over/ over riding of armour wire / formed wire. Zn rich paint shall be applied on armour joint surface of G.S. Wire /formed wire		--do--	✓	P	W	W	
4	Packing	1. Sealing	MA	Visual	100%	100%	(1) IS1554(Part-I) & IS 7098-Part I (2) The surface of the drum and the outer most cable layer shall be covered with water proof cover. (3) Both the ends of cables shall be properly sealed with heat shrinkable PVC/ rubber caps secured by "U" nails.	QCR	✓	P	-	-	-	

LEGEND:- *RECORDS, IDENTIFIED WITH "TICK" UNDER COLUMN "D" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

-M:MANUFACTURER/SUPPLIER, C:MAIN SUPPLIER, N:NTPC, P:PERFORM W:WITNESS,V:VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"
FORMAT NO:QS-01-QAI-P-10/F3-R1

NTPC			STANDARD QUALITY PLAN स्टैंडर्ड क्वालिटी प्लान				TO BE FILLED IN BY NTPC					
Item (material, class, grade, rating, range, size etc.) / मद (सामग्री, वर्ग, ग्रेड, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables			CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION				QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.: 01 DATE / तिथि: 27.08.2021 Page/ पृष्ठ 11 OF/ से 12 VALID UPTO: 26.08.2024		REVIEWED BY AMAN PANDEY AMAN DUBEY S K LAL SUNIL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL		APPROVED BY अनुमोदित Approved B.C Roy	
SL. NO क्र सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check M/ एम C/N सी/एन		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी	Remarks/ टिप्पणियां	
1	2	3	4	5	6	7	8	9	D*	**	10	11

4.01	Identification	NTPC Sealing	MA	Visual	100%	100%	Sealing shall be visible	QCR	√	P	V	V
------	----------------	--------------	----	--------	------	------	--------------------------	-----	---	---	---	---

Notes:

- If the compound manufacturer is carrying out Ageing test, test report of compound manufacturer is to be reviewed. If the compound manufacturer is not carrying out ageing test, then cable manufacturer is to carry out ageing test & test report is to be reviewed (quantum of ageing test sample shall be one sample /batch)
- 2(a) **In case of manufacturers / supplier who have supplied cables in the past through Corporate Centre :-** Routine Test of manufacturer internal test report are to be verified by NTPC at the time of final inspection.

2(b) **In case of manufacturers / supplier WHO HAVE NOT SUPPLIED cables in the past through Corporate Centre :-** Routine Test are to be witnessed by Main Contractor on 100% basis. This is in addition to manufacturer internal test report to be verified by NTPC at the time of final inspection. Same is to be verified by NTPC
1. For Smoke Density rating test: if the test result without conditioning is within (-)10% of the maximum specified value, then, retesting is to be carried out with conditioning of samples as per standard and the test results after conditioning shall be final for acceptance/rejection.

2. For Acid Gas Generation test: if the test result without conditioning is within (-)10% of the maximum specified value, then, retesting is to be carried out with conditioning of samples as per standard and the test results after conditioning shall be final for acceptance/rejection.

3. For Oxygen Index test: if the test result without conditioning is within (+)7% of the minimum specified value, then, retesting is to be carried out with conditioning of samples as per standard and the test results after conditioning shall be final for acceptance/rejection.


4. In case the test results without conditioning do not meet the maximum/minimum specified value, the manufacturer may exercise the option of retesting the samples after conditioning as per standard.

LEGEND:- *RECORDS, IDENTIFIED WITH "TICK" UNDER COLUMN "D" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
-M: MANUFACTURER/SUPPLIER, C: MAIN SUPPLIER, N: NTPC, P: PERFORM W: WITNESS, V: VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"

FORMAT NO: QS-01-QA1-P-10/F3-R1

STANDARD QUALITY PLAN स्टैंडर्ड क्वालिटी प्लान			TO BE FILLED IN BY NTPC														
			Item (material, class, grade, rating, range, size etc.) / मद (सामग्री, वर्ग, ग्रेड, रैंकिंग, रेंज, आकार आदि): 1.1 KV Power (XLPE & PVC) Insulated FRLS cables			CONFORMING TO CODE/ कोड के अनुरूप: IS 1554 PART 1, IS 7098 Part-I AND NTPC TECHNICAL SPECIFICATION)			QP. NO. 0000-999- QOE-S-041 क्यूपी सं.: 0000-999-क्यूओई-एस-041 REV/ संशोधित सं.: 01 DATE : तिथि: 27.08.2021 Page/ पृष्ठ 12 OF/ से 12 VALID UPTO: 26.08.2024			REVIEWED BY AMAN PANDEY AMAN DUBEY SUNIL K LAL KUMAR LAL NISHITH AGARWAL NISHITH AGRAWAL			APPROVED BY  अनुमोदित Approved B C Roy		
SL. NO क्र.सं	COMPONENT & OPERATIONS अवयव व संचालन	Characteristics/ विशेषताएं	Class /वर्ग	Type of check/जांच के प्रकार	Quantum of check		Reference Document/ संदर्भ दस्तावेज#	Acceptance Norms/ स्वीकृत मानदंड	Record Format/ रिकॉर्ड का प्रारूप	Agency / एजेंसी			Remarks/ टिप्पणियां				
					M/ एम	C/ N सी/एन				D*	M/ एम	C/ सी	N/ एन				
1	2	3	4	5	6		7	8	9	D*	**	10		11			

4)	For PVC insulated LT power cable:- For cables with OD less than equal to 30 mm, any size of cable may be clubbed together. For cables where OD is more than 30 mm, clubbing to be done for cables having similar ODs. For XLPE insulated LT Power cable: Clubbing to be done for cables having similar ODs.
LEGEND:	NTPC ADS: NTPC approved data sheet, QCR: quality control records of cable manufacturer, CABLE MANUF STD- cable manufacturer's internal plant standard, MI: minor, MA: major, CR: critical, COC- certificate of conformance

	ANNEXURE-A TO QP	CUSTOMER:	PROJECT TITLE	SPECIFICATION NUMBER:
		BIDDER/VENDOR:	QUALITY PLAN NUMBER: PE-QP-999-507-E002, R03	SPECIFICATION TITLE:
	SHEET 1 OF 4	SYSTEM: CABLE	ITEM: LT XLPE POWER CABLE	DOC. NO.

TYPE/ ACCEPTANCE/ ROUTINE TEST REQUIREMENTS

A. Type Test Conduction:

- Tests for which "T" is indicated in the 'Test Conduction Required As' column below shall be conducted as Type Test.
- Sampling:
 - Type test to be conducted on one size for each type (Al/Cu conductor) of cable.
 - FRLS & Flammability Test to be conducted only on one sample.
- Repeat type test(s) are not required, in case the requirements of note no. 2, clause no. 2.2 of IS 7098 1 (as per amendment no. 5 of 2012) are met.

B. Acceptance Test Conduction:



- Tests for which "A" is indicated in the 'Test Conduction Required As' column below shall be conducted as Acceptance tests.
- Sampling:
Sampling for acceptance tests shall be as per Appendix-B (Clause 15.2.2) of IS: 7098 Part-I.
- Flammability Test to be conducted only on one sample.

C. Routine Test Conduction:

- Tests for which "R" is indicated in the 'Test Conduction Required As' column below shall be conducted as Routine tests.


D. Tests listed in S. No-7.0 & 8.0 shall be conducted only on one sample.

<u>S. No.</u>	<u>TEST</u>	<u>APPLICABLE FOR</u>	<u>TEST CONDUCTION REQUIRED AS</u>	<u>REFERENCE STANDARD</u>	<u>REMARK S</u>
1.0	Tests for Conductor				
I.	Annealing test	For copper conductor only	T, A	IS 10810 Pt 1	Internal in process Test Report to be furnished for acceptance test



BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	VIKAS KUMAR SINGH		Checked by:		
Reviewed by:	Ayan Saha		Reviewed by:		

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			


	ANNEXURE-A TO QP	CUSTOMER:	PROJECT TITLE	SPECIFICATION NUMBER:
		BIDDER/VENDOR:	QUALITY PLAN NUMBER: PE-QP-999-507-E002, R03	SPECIFICATION TITLE:
	SHEET 2 OF 4	SYSTEM: CABLE	ITEM: LT XLPE POWER CABLE	DOC. NO.

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
II.	Tensile test	For aluminium conductor only (Not applicable for compacted circular or shaped conductor)	T, A	IS 10810 Pt 2	
III.	Wrapping test	For aluminium conductor only (Not applicable for compacted circular or shaped conductor)	T, A	IS 10810 Pt 3	
IV.	Resistance test	For Al/Cu	T, A, R	IS 10810 Pt 5	
2.0	Tests for Armour Wires/Strips				
I.	Measurement of dimensions	Applicable for Aluminium wire & GS wire/Strip	T	IS 10810 Pt 36	
II.	Tensile test	Applicable for Aluminium wire & GS wire/Strip	T	IS 10810 Pt 37	
III.	Elongation at break test	Applicable for GS wire/Strip only	T	IS 10810 Pt 37	
IV.	Torsion test	For GS round wire only	T	IS 10810 Pt 38	
V.	Winding / Adhesion Test	For GS strip only	T	IS 10810 Pt 39	
VI.	Uniformity of Zinc coating test	For G. S. wires/Strip only	T	IS 10810 Pt 40	
VII.	Mass of Zinc coating test	For G. S. wires/Strip only	T	IS 10810 Pt 41	
VIII.	Resistivity test	Applicable for Aluminium wire & GS wire	T	IS 10810 Pt 42	
IX.	Wrapping Test	Applicable for Aluminium wire	A	IS 10810 Pt 3	
3.0	Physical Tests for XLPE Insulation & PVC sheath				
I.	Test for thickness	Applicable for XLPE insulation, PVC inner sheath & PVC outer sheath	T, A	IS 10810 Pt 6	
II.	Tensile strength and elongation test at break	Applicable for XLPE insulation & PVC outer sheath			
(a)	Before ageing		T, A	IS 10810 Pt 7	
(b)	After ageing		T, A	IS 10810 Pt 7	



BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	VIKAS KUMAR SINGH		Checked by:		
Reviewed by:	Ayan Saha		Reviewed by:		

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			


	ANNEXURE-A TO QP	CUSTOMER:	PROJECT TITLE	SPECIFICATION NUMBER:
		BIDDER/VENDOR:	QUALITY PLAN NUMBER: PE-QP-999-507-E002, R03	SPECIFICATION TITLE:
	SHEET 3 OF 4	SYSTEM: CABLE	ITEM: LT XLPE POWER CABLE	DOC. NO.

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARK S
III.	Ageing in air oven	Applicable for XLPE insulation & PVC outer sheath	T	IS 10810 Pt 11	
IV.	Hot set test	For XLPE insulation only	T, A	IS 10810 Pt 30	
V.	Loss of mass in air oven test	For PVC outer sheath only	T	IS 10810 Pt 10	
VI.	Shrinkage test	For XLPE insulation & PVC outer sheath only	T	IS 10810 Pt 12	
VII.	Hot deformation test	For PVC outer sheath only	T	IS 10810 Pt 15	
VIII.	Heat shock test	For PVC outer sheath only	T	IS 10810 Pt 14	
IX.	Thermal stability test	For PVC outer sheath only	T	IS 10810 Pt 60	
X.	Water absorption (gravimetric) test	For XLPE insulation only	T	IS 10810 Pt 33	
4.0	Improved Fire performance (FR-LSH) Tests				
I.	Oxygen index test	For inner (as applicable)/ outer sheath	T, A	IS 10810 Pt 58 / ASTM D 2863/ NES 715-I	Applicable for Inner Sheath also, if the same is indicated in Approved Datasheet
II.	Smoke density test	For inner (as applicable)/ outer sheath	T	IS 10810 Pt 63 / ASTM D 2843	
III.	Acid gas generation test	For inner (as applicable)/ outer sheath	T, A	IS 10810 Pt 59 / IEC-754-1	
IV.	Temperature Index Test	For inner (as applicable)/ outer sheath	T	IS 10810 Pt 64 / ASTM D 2863	
5.0	Flammability Tests				
I.	Flammability test for bunched cables	For complete cable	T	IS 10810 Pt 62/ IEC-60332 (Part-3-23-Cat-B)	Test & Category applicable as indicated in Approved Datasheet
II.	Flammability test for single cable	For complete cable	T, A	IS: 10810 Pt 61 / IEC:60332 Part-1	
III.	Swedish chimney test	For complete cable	A	SEN SS 424 1475 (Class F3)	
IV.	Flammability test	For complete cable	A	IEEE: 60383	
6.0	Electrical Tests				
I.	High Voltage Test	For complete cable	T, A, R	IS 10810 Pt 45	

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		VIKAS KUMAR SINGH	Checked by:		
Reviewed by:		Ayan Saha	Reviewed by:		

BIDDER/ SUPPLIER	
Sign & Date	
Seal	



FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	ANNEXURE-A TO QP	CUSTOMER:	PROJECT TITLE	SPECIFICATION NUMBER:
		BIDDER/VENDOR:	QUALITY PLAN NUMBER: PE-QP-999-507-E002, R03	SPECIFICATION TITLE:
	SHEET 4 OF 4	SYSTEM: CABLE	ITEM: LT XLPE POWER CABLE	DOC. NO.

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
II.	Insulation Resistance Test (Volume resistivity method)	For complete cable	T, A	IS 10810 Pt 43	
7.0	Anti-rodent and Termite Repulsion test	For PVC outer sheath only	A	Refer Note	Test applicable if indicated in Approved Datasheet
8.0	Anti-Fungal Test	For PVC outer sheath only	A	Self-certification by vendor for anti-fungal property.	
9.0	Special Tests/ Optional test				
I.	Hydrolytic Stability Test	For complete cable	**	ASTM D 3137:81	Test applicable if indicated in Approved Datasheet
II.	Ultraviolet Radiation Test	For complete cable	**	BS EN ISO 4892-2	
III.	Cold bend test	For PVC outer sheath only	O (Optional)	IS 10810 Pt 20	
IV.	Cold impact test	For PVC outer sheath only	O (Optional)	IS 10810 Pt 21	
V.	Resistance test for armour	Applicable for Aluminium wire & GS wire	O (Optional)	Table 7, IS 7098 Pt 1	


**** These tests shall be conducted on one sample for the entire contract and duration of these tests shall be 14 days.**

Note: A few chippings of the PVC compound is slowly ignited on a porcelain dish or cubicle in a muffle furnace at about 60-degree C. The resulting ignited ash is boiled with a little ammonium acetate solution (10%). Place a drop of aqueous sodium sulphide solution on a thick filter paper and allow soaking. Touch the spot with a drop of above extract. A black spot indicates the presence of lead, the anti-termite and rodent compound.

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	VIKAS KUMAR SINGH		Checked by:		
Reviewed by:	Ayan Saha		Reviewed by:		

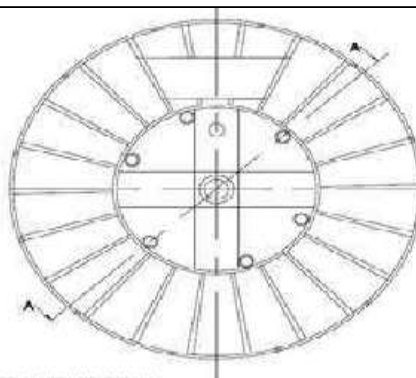
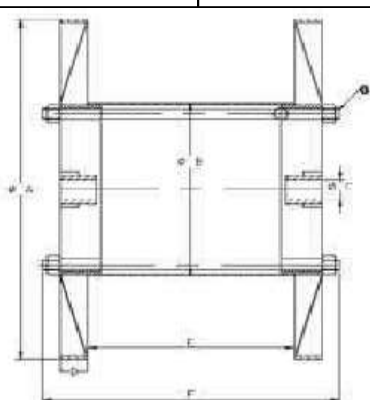
BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	TECHNICAL SPECIFICATION LT XLPE POWER CABLE (RATE CONTRACT)	PE-TS-999-507-E002
		Issue No: 01
		Rev. No. 00
		Date :19.02.2025

PACKING REQUIREMENT

Sl.no	DESCRIPTION
1	Type of Packing: STEEL DRUM
	Steel:
1.1	Item shall be fully covered with multi layered cross laminated colourless polyethylene sheet of at least 100 GSM and shall be packed inside steel drum as per below typical drawing.
1.2	Both the end of cables shall be properly sealed with heat shrinkable PVC/rubber caps secured by 'U' nails so as to eliminate ingress of water during transportation, storage & erection.
1.3	A tag containing same information shall be attached to the leading end of the cable.
1.4	After complete packing of the cable drum as mentioned above; the packed cable shall be covered with wooden planks tied along the flanges, to avoid accidental falling of hard/ sharp object on the cable directly.



APPROXIMATE DRUM DIMENSIONS IN MM
 ALL DIMENSIONS AND VALUES ARE
 TYPICAL AND ARE DEPENDENT ON
 CABLE WEIGHT.

A	FLANGE
B	BARREL
C	CENTRAL HOLE
D	FLANGE
E	TRAVERSE
F	GROSS WIDTH
G	STUD SIZE

→ Dwg. not to scale.
 → ALL DIMENSIONS ARE IN MM.

2	Cushioning material and moisture absorber:
	Not applicable
3	Packing slip & holder:
3.1	Packing slip kept in polyethylene bag shall be placed inside the cable drum at appropriate place.
3.2	One copy of packing slip wrapped in polyethylene bag covered in galvanized iron tin sheet/ aluminium packing slip holder shall be fixed on the external surface the cable drum.



TECHNICAL SPECIFICATION
LT XLPE POWER CABLE
(RATE CONTRACT)

PE-TS-999-507-E002
Issue No: 01
Rev. No. 00
Date :19.02.2025

DOCUMENTATION REQUIREMENT

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY ALL THE BIDDERS ALONG WITH THE BID	
SI. No.	DOCUMENT TITLE
1	PQR CREDENTIALS
2	COMPLIANCE SHEET

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT ALONG WITH SUBMISSION SCHEDULE				
SI. No.	DOCUMENT TITLE	SUBMISSION SCHEDULE		
		Vendor submission (Days)*	BHEL Comment (Days)	Vendor submission (Days)#
I	Primary documents			
1	Datasheet and Cross Section Drawings for LT XLPE Power Cable	14	18	10
2	QAP for LT XLPE Power cables	14	18	10
II	Secondary documents			
1	Type Test Report for LT XLPE Power cable	7\$	18	10
NOTES:				
a) * 1st submission within indicated days from date of purchase order.				
b) # Submission (within indicated days) after incorporating all BHEL comments.				
c) Primary documents shall be considered for Delay analysis				
d) \$: 1st submission within indicated days from the date of purchase order (in case Type Test reports are available)/ from the date of conduction of test.				

DRAWINGS & DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT	
SI. No.	DOCUMENT TITLE
1	APPROVED DOCUMENTS
2	APPROVED QUALITY PLAN.
3	ALL TEST CERTIFICATES



TECHNICAL SPECIFICATION
LT XLPE POWER CABLE
(RATE CONTRACT)

PE-TS-999-507-E002

Issue No: 01

Rev. No. 00

Date :19.02.2025

COMPLIANCE CERTIFICATE


1	It is hereby confirm that the technical specification (sheet 1 to) has been read, understood. We confirm compliance to the tender specification including any clarification and amendments without any deviation.
2	It is hereby declared that any technical submittals which was not specifically asked for in NIT shall stand withdrawn.

Signature of authorised Representative


Name and Designation :

Name & Address of the Bidder

Date

	TECHNICAL SPECIFICATION LT XLPE POWER CABLE (RATE CONTRACT)	PE-TS-999-507-E002
		Issue No: 01
		Rev. No. 00
		Date :19.02.2025

PRE QUALIFICATION REQUIREMENT (TECHNICAL)

	RATE CONTRACT (NTPC Variant)	PE-PQ-RC-507-E012
	PRE-QUALIFICATION REQUIREMENTS OF LT XLPE POWER CABLE	REVISION NO. 1 DATE 18/02/2025
		SHEET NO. 1 OF 1

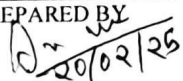
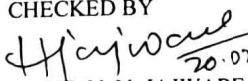


ITEMS : LT XLPE POWER CABLE

SCOPE: Supply: YES; Erection & Commissioning: NO;

1.0	Vendor should be a manufacturer of LT power cables.
2.0	Availability of test reports of tests on LT XLPE FRLS power cables to establish in- house capability to carry out all routine, type & acceptance tests as per relevant IS/international standards (except UV radiation & hydrolytic stability test which can be conducted at Govt. lab/ Govt. approved independent lab).
3.0	Capacity of manufacturing 200 km of LT power cables per month.
4.0	Manufactured and supplied at least one (1) km of FRLS cables.
5.0	Manufactured and supplied L T Power cable sizes of minimum 240 sq. mm for 3/3.5 core and minimum 630 sq. mm for single core cable.
6.0	Manufactured & supplied at least 500 km of L T Power cables in one or more orders and at least 100 km in one single order.
7.0	Minimum two (2) nos. purchase orders for LT XLPE power cable shall be submitted which should not be more than five (5) years old from the date of techno- commercial bid opening for establishing continuity in business.

NOTES:

1. Consideration of offer shall be subject to customer's approval of bidder, if applicable.
2. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.
3. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
4. After satisfactory fulfillment of all the above criteria! requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.
5. Attached annexure (**Annexure-I**) to be filled by the bidder on quality & general terms. Requisite Documents (like factory registration certificate, R&D set-up details etc.) asked in Annexure-I, shall also be attached as Annexure-F2.1 to Annexure- F2.17 along with the filled response in the Annexure-I.

PREPARED BY  NAME: ASHIM KUMAR DAS DESIGNATION: Sr. MANAGER	CHECKED BY  NAME: N. N. JAJWARE DESIGNATION: DGM	REVIEWED BY  NAME: PRAVEEN DUTTA DESIGNATION: AGM	APPROVED BY  NAME: DEBASISA RATH DESIGNATION: DH-ELECT(GM)
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ANNEXURE-I

SUB-VENDOR QUESTIONNAIRE

i.	Item/Scope of Sub-contracting			
ii.	Address of the registered office	Details of Contact Person (Name, Designation, Mobile, Email)		
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured	Details of Contact Person: (Name, Designation, Mobile, Email)		
iv.	Annual Production Capacity for proposed item/scope of sub-contracting			
v.	Annual production for last 3 years for proposed item/scope of sub-contracting			
vi.	Details of proposed works			
1.	Year of establishment of present works			
2.	Year of commencement of manufacturing at above works			
3.	Details of change in Works address in past (if any)			
4.	Total Area			
	Covered Area			
5.	Factory Registration Certificate	Details attached at Annexure – F2.1		
6.	Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)	Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design) Details attached at Annexure – F2.2 (if applicable)		
7.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)	Details attached at Annexure – F2.3		
8.	After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)	Applicable / Not applicable Details attached at Annexure – F2.4		
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any	Details attached at Annexure – F2.5		
10.	Sources of Raw Material/Major Bought Out Item	Details attached at Annexure – F2.6		
11.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing	Details attached at Annexure – F2.7		



ANNEXURE-I

SUB-VENDOR QUESTIONNAIRE

12.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)	<i>Details attached at Annexure – F2.8</i>			
13.	Testing facilities (List of testing equipment)	<i>Details attached at Annexure – F2.9</i>			
14.	If manufacturing process involves fabrication then-	<i>Applicable / Not applicable</i>			
	List of qualified Welders	<i>Details attached at Annexure – F2.10</i>			
	List of qualified NDT personnel with area of specialization	<i>(if applicable)</i>			
15.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses	<i>Applicable / Not applicable</i> <i>Details attached at Annexure. –F2.11</i> <i>(if applicable)</i>			
16.	Supply reference list including recent supplies	<i>Details attached at Annexure – F2.12</i> <i>(as per format given below)</i>			
Project/ package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply
17.	Product satisfactory performance feedback <i>letter/certificates/End User Feedback</i>			<i>Attached at annexure - F2.13</i>	
18.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) <i>Note:- Reports need not to be submitted</i>			<i>Applicable / Not applicable</i> <i>Details attached at Annexure – F2.14</i> <i>(if applicable)</i>	
19.	Statutory / mandatory certification for the proposed product			<i>Applicable / Not applicable</i> <i>Details attached at Annexure – F2.15</i> <i>(if applicable)</i>	
20.	Copy of ISO 9001 certificate (if available)			<i>Attached at Annexure – F2.16</i>	
21.	Product technical catalogues for proposed item (if available)			<i>Details attached at Annexure – F2.17</i>	
Name:		Desig:	Sign:	Date:	

Company's Seal/Stamp:-



TECHNICAL SPECIFICATION
LT XLPE POWER CABLE
(RATE CONTRACT)

PE-TS-999-507-E002
Issue No: 01
Rev. No. 00
Date :19.02.2025

UNPRICED SCHEDULE

Sr. No.	Item code	Item description	Unit	Order Quantity (metres)	PEM QTY. (Meters)	TRICHY QTY. (Meters)	RANIPET QTY. (Meters)	ISG QTY. (Meters)	TBG QTY. (Meters)	Drum Length (Meters)	UNIT PRICE (EX-WORKS) (Rs)	TOTAL PRICE (EX-WORKS) (Rs)	REMARKS
A	1.1KV, Al conductor (Plain aluminium of grade H2), XLPE insulated. Armoured (Non-magnetic hard drawn aluminium round wire armour of H4 grade for single core cables and GS round/ Formed wire armour for Multi- core cables). INNER SHEATH: Extruded HRPVC compound conforming to type ST2 of IS: 5831 for multicore cable (Single core cables shall have no inner sheath). OVERALL SHEATH: extruded overall FRLSH HRPVC compound conforming to type ST2 of IS: 5831, black in colour.												
1.0	507-0280063-00-A	1C-35 Sq. mm XLPE-Al(A) FRLS	MTR	211000	210000	0	0	1000	0	1000	0.007*X/211000	0.007*X	
2.0	507-0280074-00-A	1C-70 Sq. mm XLPE-Al(A) FRLS	MTR	6000	6000	0	0	0	0	1000	0.0003*X/6000	0.0003*X	
3.0	507-0280064-00-A	1C-120 Sq. mm XLPE-Al(A) FRLS	MTR	34000	33000	0	0	1000	0	1000	0.0022*X/34000	0.0022*X	
4.0	507-0280914-00-A	1C-150 Sq. mm XLPE-Al(A) FRLS	MTR	5000	0	0	0	0	5000	1000	0.0004*X/5000	0.0004*X	
5.0	507-0280175-00-A	1C-300 Sq. mm XLPE-Al(A) FRLS	MTR	1649000	126000	0	1523000	0	0	1000	0.2206*X/1649000	0.2206*X	
6.0	507-0280005-00-A	1C-400 Sq. mm XLPE-Al(A) FRLS	MTR	100000	100000	0	0	0	0	1000	0.017*X/100000	0.017*X	
7.0	507-0280007-00-A	1C-630 Sq. mm XLPE-Al(A) FRLS	MTR	327000	314250	0	0	6000	6750	750	0.08323*X/327000	0.08323*X	
8.0	507-0280011-00-A	2C-10 Sq. mm XLPE-Al(A) FRLS	MTR	256000	236000	0	0	1000	19000	1000	0.007*X/256000	0.007*X	
9.0	507-0280017-00-A	2C-25 Sq. mm XLPE-Al(A) FRLS	MTR	152000	130000	0	0	22000	0	1000	0.005*X/152000	0.005*X	
10.0	507-0280021-00-A	2C-50 Sq. mm XLPE-Al(A) FRLS	MTR	78000	70000	0	0	8000	0	1000	0.004*X/78000	0.004*X	
11.0	507-0280027-00-A	2C-95 Sq. mm XLPE-Al(A) FRLS	MTR	293000	270000	0	0	23000	0	1000	0.02523*X/293000	0.02523*X	
12.0	507-0280039-00-A	3C-10 Sq. mm XLPE-Al(A) FRLS	MTR	436000	413000	0	0	23000	0	1000	0.014*X/436000	0.014*X	
13.0	507-0280125-00-A	3C-16 Sq. mm XLPE-Al(A) FRLS	MTR	176000	41000	31000	83000	21000	0	1000	0.007*X/176000	0.007*X	
14.0	507-0280047-00-A	3C-25 Sq. mm XLPE-Al(A) FRLS	MTR	614000	300000	0	277000	37000	0	1000	0.028*X/614000	0.028*X	
15.0	507-0280136-00-A	3C-35 Sq. mm XLPE-Al(A) FRLS	MTR	294000	0	0	255000	39000	0	1000	0.01635*X/294000	0.01635*X	
16.0	507-0280049-00-A	3C-50 Sq. mm XLPE-Al(A) FRLS	MTR	289000	284000	0	0	5000	0	1000	0.02005*X/289000	0.02005*X	
17.0	507-0280160-00-A	3C-70 Sq. mm XLPE-Al(A) FRLS	MTR	94000	0	0	84000	10000	0	1000	0.009*X/94000	0.009*X	
18.0	507-0280051-00-A	3C-95 Sq. mm XLPE-Al(A) FRLS	MTR	285000	270000	0	0	15000	0	1000	0.03332*X/285000	0.03332*X	
19.0	507-0280222-00-A	3C-120 Sq. mm XLPE-Al(A) FRLS	MTR	18000	0	0	0	18000	0	1000	0.0026*X/18000	0.0026*X	
20.0	507-0280041-00-A	3C-150 Sq. mm XLPE-Al(A) FRLS	MTR	197000	180000	0	0	17000	0	1000	0.03433*X/197000	0.03433*X	
21.0	507-0280138-00-A	3C-185 Sq. mm XLPE-Al(A) FRLS	MTR	43000	20000	0	0	23000	0	1000	0.00923*X/43000	0.00923*X	
22.0	507-0280045-00-A	3C-240 Sq. mm XLPE-Al(A) FRLS	MTR	297000	254250	0	0	42750	0	750	0.0819*X/297000	0.0819*X	
23.0	507-0280161-00-A	3C-300 Sq. mm XLPE-Al(A) FRLS	MTR	35250	15750	0	0	19500	0	750	0.012*X/35250	0.012*X	
24.0	507-0280031-00-A	3,5C-25 Sq. mm XLPE-Al(A) FRLS	MTR	248000	241000	0	0	7000	0	1000	0.013*X/248000	0.013*X	
25.0	507-0280224-00-A	3,5C-35 Sq. mm XLPE-Al(A) FRLS	MTR	14000	0	0	0	9000	5000	1000	0.0009*X/14000	0.0009*X	
26.0	507-0280035-00-A	3,5C-50 Sq. mm XLPE-Al(A) FRLS	MTR	325000	293000	0	0	32000	0	1000	0.02604*X/325000	0.02604*X	
27.0	507-0280225-00-A	3,5C-70 Sq. mm XLPE-Al(A) FRLS	MTR	54000	0	0	0	22000	32000	1000	0.00533*X/54000	0.00533*X	
28.0	507-0280037-00-A	3,5C-95 Sq. mm XLPE-Al(A) FRLS	MTR	251000	216000	0	0	35000	0	1000	0.03408*X/251000	0.03408*X	
29.0	507-0280915-00-A	3,5C-120 Sq. mm XLPE-Al(A) FRL	MTR	23000	0	0	0	23000	0	1000	0.004*X/23000	0.004*X	
30.0	507-0280226-00-A	3,5C-150 Sq. mm XLPE-Al(A) FRL	MTR	25000	7000	0	0	14000	4000	1000	0.0052*X/25000	0.0052*X	
31.0	507-0280029-00-A	3,5C-185 Sq. mm XLPE-Al(A) FRL	MTR	40000	36000	0	0	4000	0	1000	0.01021*X/40000	0.01021*X	
32.0	507-0280085-00-A	3,5C-240 Sq. mm XLPE-Al(A) FRL	MTR	18000	9000	0	0	0	9000	750	0.0059*X/18000	0.0059*X	
33.0	507-0280033-00-A	3,5C-300 Sq. mm XLPE-Al(A) FRL	MTR	3000	0	0	0	0	3000	750	0.0012*X/3000	0.0012*X	
34.0	507-0280053-00-A	4C-10 Sq. mm XLPE-Al(A) FRLS	MTR	131000	115000	0	0	3000	13000	1000	0.005*X/131000	0.005*X	
35.0	507-0280916-00-A	4C-16 Sq. mm XLPE-Al(A) FRLS	MTR	81000	0	0	0	31000	50000	1000	0.0034*X/81000	0.0034*X	

B	1.1KV, Cu conductor (Class-2 Plain annealed, Electrolytic Grade), XLPE insulated. Armoured (GS round/formed wire armour for Multi- core cables). INNER SHEATH: Extruded HRPVC compound conforming to type ST2 of IS: 5831 for multicore cable. OVERALL SHEATH: extruded overall FRLSH HRPVC compound conforming to type ST2 of IS: 5831, black in colour.												
1,0	507-0280015-00-A	2C-2.5 Sq. mm XLPE-Cu(A) FRLS	MTR	1336000	1086000	0	152000	98000	0	1000	0.038*X/1336000	0.038*X	
2,0	507-0280043-00-A	3C-2.5 Sq. mm XLPE-Cu(A) FRLS	MTR	5778000	2900000	1720000	1142000	16000	0	1000	0.2024*X/5778000	0.2024*X	
3,0	507-0280055-00-A	4C-2.5 Sq. mm XLPE-Cu(A) FRLS	MTR	37000	20000	0	0	17000	0	1000	0.0016*X/37000	0.0016*X	
4,0	507-0280065-00-A	2CX6 Sq. mm XLPE-Cu(A) FRLS	MTR	80000	80000	0	0	0	0	1000	0.004*X/80000	0.004*X	

Notes

1	Bidder has to quote only Total Value 'X'. Based on this price, unit price shall be derived for all items as per formula indicated above.
2	The standard drum length shall be 1000/750 meters as indicated above. Tolerance on individual drum length shall be ±5%.
3	Overall tolerance on total dispatched quantity of each size shall be (-) 2% and (+) 0% except where the total ordered quantity is one single drum length of 1000m, in which case it shall be -5% to 0%. Cables consumed for testing and inspection shall be to bidder's account.
4	For each individual cable size, one short length of not less than 200m may be accepted only in the final drum length to complete the supply (except where the total ordered quantity is one single drum length of 1000m). The overall tolerance limits stipulated above shall continue to apply (in case short lengths are accepted).
5	For type test requirement please refer clause no. 5.2 of Technical Data -Part-A of technical specification.
6	PVC shall be applicable as per PVC formula & factors mentioned in Annexure -B.



Annexure-B

Indian Electrical & Electronics Manufacturer's Association
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 132, Dr. A. B. Road, Worli, F +91 22 2493 2705
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Cir. No. 35/DIV/ CAB/05/

24th April 2018

To Members of the Cable Division, Utilities, Railways & Listed purchasing organizations

Sub: Correction in PV formulae of LT XLPE Power Cable and addition of factors for HT XLPE Power Cables

We have recently published revised Price Variation Clause for LT&HT XLPE Power Cables and made it effective from 1st November 2017 vide Cir. No.111/DIV/CAB/05 dated 5th December 2017

While replying to a query of a buyer it is observed that the polymer factor for LT XLPE Power Cables (both aluminium and copper) was incorrectly represented by Table P2.

We have now corrected the anomaly by correcting the PV formulae of LT XLPE Aluminium and Copper Insulated Cables (Sl. No. D & E) by representing Polymer factor by Table L2.

We have also worked out factors for XLPE, Copper and Steel for 3 core HT XLPE Power Cables for 500 and 630 sq.mm.

We now enclose complete PV clause of Cable by including all the PV formulae of different types of power cable (Sl. No. A to I), polymer factor Table L2 and updated XL4, H2 and H5 Table of factors for your perusal & record.

We request to replace PV clause of Cable already circulated vide Cir. 111/DIV/CAB/05 dated 5th December 2017 with the enclosed PV clause in your records for future use.


 Senior Director
 Encl: as above

IEEMA (PVC)/CABLE(R-1)/2017**Effective from: 1st November 217****Material Price Variation Clause For PVC And XLPE Insulated Cables**

The Price quoted/confirmed is based on the input cost of raw materials/components as on the date of quotation, and the same is deemed to be related to the prices of raw materials as specified in the price variation clause given below. In case of any variation in these prices, the price payable shall be subject to adjustment up or down in accordance with the formulae provided in this document.

Terms used in price variation formulae:

P Price payable as adjusted in accordance with above appropriate formula (in Rs/Km)

Po Price quoted/confirmed (in Rs/Km)

ALUMINIUM

AIF Variation factor for aluminium

AI Price of Aluminium. This price is as applicable of first working day of the month, one month prior to the date of delivery.

Alo Price of aluminium. This price is as applicable on first working day of the month, one month prior to the date of tendering.

COPPER

CuF Variation factor for copper

Cu Price of CC copper rods. This price is as applicable on first working day of the month, one month prior to the date of delivery.

Cuo Price of CC copper rods. This price is as applicable on first working day of the month, one month prior to the date of tendering.

PVC COMPOUND

PVCc price of PVC compound. This price is as applicable on first working day of the month, one month prior to the date of delivery.

PVCco Price of PVC compound. This price is as applicable on first working day of the month, one month prior to the date of tendering.

CCFAI Variation factor for PVC compound/Polymer for aluminum conductor cable.

CCFCu Variation factor for PVC compound/Polymer for copper conductor cable.

IEEMA (PVC)/CABLE(R-1)/2017
XLPE COMPOUND
Effective from: 1st November 217

Cc price of XLPE compound. This price is as applicable on first working day of the month, one month prior to the date of delivery.

Cco Price of XLPE compound. This price is as applicable on first working day of the month, one month prior to the date of tendering.

XLFAL Variation factor for XLPE compound for aluminum conductor cable.

XLFCU Variation factor for XLPE compound for Copper conductor cable.

STEEL

FeF Variation factor for steel

FeW Variation factor for round wire steel armouring

Fe Price of Steel Strips/steel wire. This price is as applicable on the first working day of the month, one month prior to the date of delivery.

Feo Price of steel strips/steel wire. This price is as applicable on first working day of the month, one month prior to the date of tendering.

The above prices and indices are as published by IEEMA vide Circular reference IEEMA (PVC)/CABLE R(1)/--/-- prevailing as on 1st working day of the month i.e. one month prior to the date of tendering.

The date of delivery is the date on which the cable is notified as being ready for inspection/dispatch (in the absence of such notification, the date of manufacturer's dispatch note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.

Notes

- (a) All prices of raw materials are exclusive of GST amount.
- (b) All prices excluding Aluminium & Copper are as on first working day of the month.
- (c) The details of prices are as under:

1. Price of Aluminium is LME average Cash SELLER Settlement price of Primary Aluminium in US\$ per MT as published by London Metal Bulletin (LME) including Premium for Aluminium Ingot in US\$ per MT is converted in Indian Rs./MT.
2. Price of PVC Compound (in Rs/MT) is the ex-works price, as quoted by the manufacturer.
3. Price of XLPE Compound (in Rs/MT) is the ex-works price, as quoted by the manufacturer
4. Price of CC copper rods (in Rs/MT) is ex-works price as quoted by the primary producer.
5. Price of galvanized steel strip / steel wire (in Rs/MT) is ex-works price as quoted by the manufacturer for Round steel Wire and Flat steel strip (the relevant price of steel strip or steel wire is to be selected depending upon the type of armouring of the cable).

IEEMA (PVC)/CABLE(R-1)/2017**Effective from: 1st November 2017****Price variation formulae for 'Power Cables'****A. Aluminum conductor PVC insulated 1.1 kV power cables**

$$P = P_o + AIF (AL - ALo) + CCFAI (PVCc - PVCco) + FeF (Fe - Feo)$$

For unarmoured multicore cables (without steel armour); $FeF = 0$ Table References:

ALP	Aluminium conductor in single core unarmoured & multicore cables
P1	Aluminium conductor aluminium armour in single core armoured cables
P2	PVC compound
P3	Steel armour

B. Copper conductor PVC insulated 1.1 kV power cables

$$P = P_o + CuF (Cu - Cuo) + CCFCu (PVCc - PVCco) + FeF (Fe - Feo) + AIF (Al - ALo)$$

For steel armoured cables; $AIF = 0$ For aluminium armoured cables; $FeF = 0$ For unarmoured cables; $FeF, AIF = 0$ Tables References:

CUP	Copper conductor
P2	PVC compound
P3	Steel armour
P4	Aluminium armour

C. Copper conductor PVC insulated 1.1 kV control cables

$$P = P_o + CuF (Cu - Cuo) + CCFCu (PVCc - PVCco) + FeF (Fe - Feo)$$

For unarmoured cables; $FeF = 0$ Tables References:

CUC	Copper conductor
P5	PVC compound
P6	Steel armour

D. Aluminum conductor XLPE insulated 1.1 kV power cables

$$P = P_o + AIF (AL - ALo) + XLFAL(CC-Cco) + CCFAI (PVCc - PVCco) + FeF (Fe - Feo)$$

For unarmoured multicore cables (without steel armour); $FeF = 0$ Table References:

ALP	Aluminium conductor in single core unarmoured & multicore cables
P1	Aluminium conductor aluminium armour in single core armoured cables
L2	Polymer (CCFAI)
P3	Steel armour
XL1	XLPE Compound (XLFAL)

E. Copper conductor XLPE insulated 1.1 kV power cables

$$P = P_o + CuF (Cu - Cuo) + XLFCU (CC-Cco) + CCFCu (PVCc - PVCco) + FeF (Fe - Feo) + AIF (Al - ALo)$$

For steel armoured cables; $AIF = 0$ For aluminium armoured cables; $FeF = 0$

proud partners in implementation

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IEEMA (PVC)/CABLE(R-1)/2017**Effective from: 1st November 217**

For unarmoured cables; FeF, AIF = 0

Tables References:

CUP	Copper conductor
L2	Polymer (CCFCu)
P3	Steel armour
P4	Aluminium armour
XL1	XLPE Compound (XLFCu)

F. Copper conductor XLPE insulated 1.1 kV control cables

$$P = P_o + CuF (Cu - Cuo) + XLFCU (CC-Cco) + CCFCu (PVCc-PVCco) + FeF (Fe-Feo)$$

For unarmoured cables; FeF = 0

Tables References:

CUC	Copper conductor
P5	PVC compound
P6	Steel armour
XL2	XLPE Compound

G. For Aluminium conductor XLPE insulated 3.3 to 33 kV power cables

$$P = P_o + AIF (Al - Alo) + XLFAL(CC-Cco) + CCFAI (PVCc - PVCco) + FeF (Fe - Feo)$$

For unarmoured multicore cables (without steel armour); FeF = 0

Table References:

ALP	Aluminium conductor in single core unarmoured & multicore cables
H1	Aluminium conductor + aluminium armour in single core armoured cables
H2	Polymer
H3/H5	Steel armour (Flat/Round)
XL3/XL4	XLPE Compound (Single core /Multicore)

H. Copper conductor XLPE Insulated 3.3 to 33 kV power cables

$$P = P_o + CuF (Cu - Cuo) + XLFCU (CC-Cco) + CCFCu (PVCc - PVCco) + FeF (Fe - Feo) + AIF (Al - Alo)$$

For steel armoured cables; AIF = 0 For aluminium armoured cables; FeF = 0

For unarmoured cables; FeF, AIF = 0

Table References:

CUP	Copper conductor
H2	Polymer
H3/H5	Steel armour (Flat/Round)
H4	Aluminium armour
XL3/XL4	XLPE Compound (Single core /Multicore)

I. Copper conductor XLPE insulated 1.0 and 1.5 kV Solar PV DC cables

$$P = P_o + CuF (Cu - Cuo)$$

Table CUcdc Copper Conductor


 Authorized Signatory

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE ALP
VARIATION FACTOR FOR ALUMINIUM (AIF)
POWER CABLES WITH ALUMINIUM CONDUCTOR
(EXCLUDING SINGLE CORE ARMoured CABLES)

Nominal Cross Sectional Area (in Sq. mm.)	1 core	2 core	3 core	3.5 core	4 core
2.5	0.007	0.014	0.021	-	0.028
4	0.011	0.023	0.034	-	0.046
6	0.017	0.034	0.052	-	0.069
10	0.029	0.053	0.087	-	0.116
16	0.046	0.091	0.137	-	0.183
25/16	0.073	0.146	0.219	0.262	0.292
35/16	0.101	0.202	0.302	0.345	0.404
50/25	0.137	0.273	0.410	0.478	0.547
70/35	0.197	0.395	0.593	0.687	0.791
95/50	0.274	0.548	0.821	0.949	1.095
120/70	0.346	0.691	1.035	1.221	1.382
150/70	0.425	0.853	1.279	1.464	1.706
185/95	0.533	1.070	1.605	1.861	2.140
225/120	0.655	1.310	1.965	2.287	2.620
240/120	0.703	1.400	2.099	2.421	2.799
300/150	0.879	1.757	2.635	3.033	3.514
400/185	1.126	2.249	3.374	3.873	4.498
500	1.418	2.838	4.256	-	5.675
630	1.828	3.663	5.494	-	7.326
800	2.340	4.679	7.018	-	9.357
1000	2.951	5.890	8.934	-	11.779

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE CUP
VARIATION FACTOR FOR COPPER CONDUCTOR (CUF)
POWER CABLES WITH COPPER CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm.)	1 core	2 core	3 core	3.5 core	4 core
2.5	0.023	0.046	0.069	-	0.092
4	0.036	0.076	0.112	-	0.151
6	0.056	0.112	0.171	-	0.227
10	0.095	0.174	0.286	-	0.382
16	0.151	0.299	0.451	-	0.602
25/16	0.240	0.480	0.720	0.862	0.960
35/16	0.332	0.664	0.993	1.135	1.329
50/25	0.451	0.898	1.348	1.572	1.799
70/35	0.648	1.299	1.950	2.260	2.602
95/50	0.901	1.802	2.700	3.121	3.601
120/70	1.138	2.273	3.407	4.016	4.545
150/70	1.398	2.806	4.207	4.815	5.611
185/95	1.753	3.519	5.279	6.121	7.038
225/120	2.154	4.309	6.463	7.522	8.617
240/120	2.312	4.605	6.904	7.963	9.206
300/150	2.891	5.779	8.667	9.976	11.558
400/185	3.703	7.397	11.097	12.738	14.794
500	4.664	9.334	13.998	-	18.665
630	6.012	12.048	18.070	-	24.095
800	7.696	15.389	23.082	-	30.775
1000	9.706	19.372	29.055	-	38.741

TABLE CU_{sdc}
VARIATION FACTOR FOR COPPER CONDUCTOR (CUF)
 1.0 & 1.5KV Solar PV DC Cables with Copper Conductor

Cable Size in sq.mm.	Copper content in MT/km
2.5	0.023
4	0.038
6	0.058
10	0.090

IEEMA (PVC)/CABLE(R-1)/2017

Effective from: 1st November 217

TABLE CUC

VARIATION FACTOR FOR COPPER CONDUCTOR (CUF)
CONTROL CABLES WITH COPPER CONDUCTOR

No of Cores	Core size 1.5 sq mm	Core size 2.5 sq mm
2	0.026	0.047
3	0.039	0.070
4	0.052	0.094
5	0.065	0.117
6	0.078	0.141
7	0.091	0.164
8	0.110	0.182
9	0.117	0.205
10	0.130	0.235
12	0.157	0.282
14	0.183	0.329
16	0.209	0.376
18	0.246	0.410
19	0.248	0.446
20	0.260	0.456
24	0.313	0.563
27	0.352	0.634
30	0.391	0.704
37	0.483	0.869
44	0.573	1.033
52	0.678	1.221
61	0.796	1.432

IEEMA (PVC)/CABLE(R-1)/2017
Effective from: 1st November 217
TABLE P1

VARIATION FACTOR FOR ALUMINIUM (AIF)
ALUMINIUM ARMoured SINGLE CORE PVC INSULATED 1.1 KV CABLES

Nominal cross sectional area (in Sq.mm)	Aluminium factor for Aluminium armoured cable with aluminium conductor
4	0.0685
6	0.0795
10	0.1017
16	0.1303
25	0.1693
35	0.2090
50	0.2597
70	0.3360
95	0.4567
120	0.5443
150	0.6427
185	0.7743
240	0.9737
300	1.2582
400	1.5502
500	1.8958
630	2.3650
800	2.9306
1000	3.7666

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE P2

VARIATION FACTOR FOR PVC COMPOUND (CCFAI/CCFCu)
 PVC INSULATED 1.1 KV POWER CABLES WITH COPPER/ALUMINIUM CONDUCTOR

Nominal cross Sectional Area (in Sq. mm)	1 core	2 core		3 core		3.5 core		4 core	
	Unarm	Unarm	arm	Unarm	arm	Unarm	arm	Unarm	arm
2.5	0.079	0.125	0.139	0.141	0.157	-	-	0.161	0.179
4	0.094	0.140	0.156	0.164	0.182	-	-	0.188	0.209
6	0.101	0.154	0.171	0.179	0.199	-	-	0.198	0.220
10	0.114	0.194	0.216	0.214	0.238	-	-	0.249	0.277
16	0.142	0.234	0.246	0.279	0.290	-	-	0.328	0.345
25	0.171	0.288	0.303	0.364	0.383	0.422	0.444	0.443	0.466
35	0.189	0.321	0.338	0.403	0.429	0.489	0.515	0.498	0.524
50	0.211	0.411	0.433	0.508	0.535	0.613	0.645	0.647	0.681
70	0.241	-	-	0.613	0.645	0.707	0.744	-	-
95	0.284	-	-	0.795	0.811	0.908	0.927	-	-
120	0.339	-	-	0.866	0.884	1.024	1.045	-	-
150	0.388	-	-	1.070	1.092	1.289	1.315	-	-
185	0.450	-	-	1.310	1.337	1.499	1.530	-	-
225	0.521	-	-	1.586	1.618	1.840	1.878	-	-
240	0.534	-	-	1.649	1.683	1.990	2.031	-	-
300	0.653	-	-	2.007	2.048	2.361	2.409	-	-
400	0.770	-	-	2.437	2.487	2.616	2.669	-	-
500	0.936	-	-	3.117	3.181	3.687	3.762	-	-
630	1.175	-	-	-	-	-	-	-	-
800	1.433	-	-	-	-	-	-	-	-
1000	1.642	-	-	-	-	-	-	-	-

IEEMA (PVC)/CABLE(R-1)/2017

Effective from: 1st November 217

TABLE P3

VARIATION FACTOR FOR STEEL (FeF)

PVC INSULATED 1.1 KV POWER CABLES WITH COPPER/ALUMINIUM CONDUCTOR

Nominal Cross sectional Area (in Sq. mm)	2 core	Shape	3 core	Shape	3 ½ core	Shape	4 core	Shape
4	0.305	W	0.335	W	-	-	0.363	W
6	0.348	W	0.363	W	-	-	0.407	W
10	0.392	W	0.407	W	-	-	0.293	F
16	0.235	F	0.293	F	-	-	0.323	F
25	0.293	F	0.352	F	0.382	F	0.382	F
35	0.323	F	0.382	F	0.411	F	0.440	F
50	0.382	F	0.440	F	0.469	F	0.499	F
70	0.411	F	0.499	F	-	F	0.587	F
95	0.499	F	0.587	F	0.616	F	0.645	F
120	0.528	F	0.616	F	0.675	F	0.731	F
150	0.587	F	0.675	F	0.731	F	0.790	F
185	0.645	F	0.761	F	0.820	F	0.879	F
240	0.731	F	0.879	F	0.937	F	0.996	F
300	0.820	F	0.966	F	1.055	F	1.113	F
400	0.937	F	1.083	F	1.172	F	1.231	F
500	1.055	F	1.231	F	1.348	F	1.406	F
630	1.172	F	-	-	-	-	-	-

IEEMA (PVC)/CABLE(R-1)/2017
TABLE P3 (Additional)

Effective from: 1st November 217

VARIATION FACTOR FOR ROUND WIRE 'W' STEEL (FeF)
PVC INSULATED 1.1 KV POWER CABLES WITH COPPER/ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area (in sq. mm)	2 Core	3 Core	3 .5 Core	4 Core
1.5	0.247	0.259		0.288
2.5	0.273	0.289		0.329
4	0.305	0.335		0.363
6	0.348	0.363		0.407
10	0.392	0.407		0.533
16	0.439	0.523	0.014	0.573
25	0.526	0.625	0.664	0.685
35	0.591	0.685	0.729	0.761
50	0.661	0.790	0.864	1.108
70	0.745	1.122	1.200	1.256
95	1.085	1.286	1.376	1.443
120	1.147	1.386	1.479	1.562
150	1.267	1.526	1.684	2.173
185	1.403	2.090	2.315	2.421
240	1.994	2.397	2.641	2.722
300	2.180	2.642	3.670	3.842
400	2.987	3.728	4.126	4.292
500	3.517	4.225	5.958	6.301
630	4.774	6.018	6.737	7.141

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE P4

VARIATION FACTOR FOR ALUMINIUM (AIF)
PVC INSULATED 1.1 KV POWER CABLES WITH COPPER CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm)	Aluminium Factor for Aluminium armoured cable with copper conductor
4	0.058
6	0.063
10	0.073
16	0.084
25	0.096
35	0.108
50	0.123
70	0.139
95	0.183
120	0.198
150	0.218
185	0.241
240	0.271
300	0.379
400	0.424
500	0.478
630	0.537
800	0.591
1000	0.816

TABLE P5

VARIATION FACTOR FOR PVC COMPOUND (CCFCu)
PVC INSULAYTED CONTROL CABLES WITH COPPER CONDUCTOR

No of cores	Core size 1.5 sq mm		Core size 2.5 sq mm	
	Unarm	Arm	Unarm	Arm
2	0.118	0.121	0.125	0.139
3	0.121	0.131	0.141	0.157
4	0.137	0.152	0.161	0.179
5	0.157	0.174	0.187	0.206
6	0.179	0.199	0.234	0.260
7	0.179	0.199	0.234	0.260
8	0.193	0.215	0.292	0.325
9	0.216	0.241	0.300	0.335
10	0.236	0.262	0.303	0.337
12	0.249	0.277	0.334	0.371
14	0.311	0.327	0.389	0.409
16	0.344	0.362	0.435	0.458
18	0.352	0.371	0.474	0.500
19	0.375	0.395	0.476	0.501
20	0.391	0.412	0.519	0.546
24	0.457	0.481	0.584	0.615
27	0.491	0.517	0.631	0.664
30	0.529	0.557	0.706	0.743
37	0.615	0.647	0.835	0.879
44	0.739	0.778	1.019	1.026
52	0.845	0.889	1.100	1.158
61	0.952	1.002	1.246	1.312

IEEMA (PVC)/CABLE(R-1)/2017
TABLE P6

Effective from: 1st November 2017

VARIATION FACTOR FOR STEEL (FeF)
PVC INSULATED CONTROL CABLES WITH COPPER CONDUCTOR

No of cores	Core size 1.5 sq mm	Shape of armour	Core size 2.5 sq mm	Shape of armour
2	0.243	W	0.277	W
3	0.257	W	0.289	W
4	0.277	W	0.314	W
5	0.303	W	0.342	W
6	0.329	W	0.379	W
7	0.329	W	0.379	W
8	0.341	W	0.456	W
9	0.383	W	0.275	F
10	0.408	W	0.325	F
12	0.289	F	0.342	F
14	0.306	F	0.360	F
16	0.317	F	0.372	F
18	0.332	F	0.350	F
19	0.343	F	0.397	F
20	0.368	F	0.400	F
24	0.398	F	0.475	F
27	0.414	F	0.478	F
30	0.425	F	0.503	F
37	0.461	F	0.548	F
44	0.507	F	0.601	F
52	0.556	F	0.641	F
61	0.585	F	0.685	F

IEEMA (PVC)/CABLE(R-1)/2017
TABLE P6 (Additional)

Effective from: 1st November 217

VARIATION FACTOR FOR ROUND WIRE 'W' STEEL (FeF)
PVC INSULATED CONTROL CABLES WITH COPPER CONDUCTOR

No. of Cores	Core size 1.5 sq mm	Core size 2.5 sq mm
2	0.243	0.273
3	0.257	0.289
4	0.277	0.314
5	0.303	0.342
6	0.329	0.379
7	0.329	0.379
8	0.341	0.456
9	0.383	0.508
10	0.408	0.535
12	0.510	0.572
14	0.546	0.625
16	0.581	0.660
19	0.608	0.696
24	0.714	0.819
25	0.679	0.798
27	0.732	0.837
28	0.696	0.815
30	0.758	0.881
33	0.747	0.883
37	0.820	1.217
44	0.926	1.355
48	1.122	1.308
50	1.122	1.308
52	1.149	1.361
56	1.202	1.388
61	1.299	1.520

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE L2

VARIATION FACTOR FOR POLYMER (CCFAI / CCFCu)
 XLPE INSULATED 1.1 KV POWER CABLES WITH COPPER / ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm)	1 core	2 core		3 core		3.5 core		4 core	
	Unarm	Unarm	Arm	Unarm	Arm	Unarm	Arm	Unarm	Arm
2.5	0.055	0.163	0.175	0.166	0.177	-	-	0.177	0.188
4	0.075	0.201	0.204	0.205	0.213	-	-	0.218	0.213
6	0.085	0.213	0.234	0.205	0.230	-	-	0.242	0.232
10	0.082	0.252	0.280	0.217	0.251	-	-	0.285	0.298
16	0.089	0.278	0.341	0.289	0.246	-	-	0.300	0.279
25	0.101	0.307	0.278	0.276	0.247	0.295	0.264	0.331	0.290
35	0.109	0.330	0.319	0.305	0.270	0.328	0.292	0.368	0.319
50	0.124	0.482	0.685	0.348	0.311	0.372	0.335	0.422	0.394
70	0.146	0.354	0.335	0.469	0.397	0.489	0.420	0.528	0.464
95	0.163	0.436	0.389	0.504	0.441	0.544	0.471	0.591	0.523
120	0.176	0.475	0.421	0.556	0.498	0.599	0.538	0.722	0.656
150	0.217	0.510	0.490	0.690	0.611	0.717	0.633	0.840	0.762
185	0.236	0.631	0.608	0.836	0.738	0.854	0.756	1.007	0.899
240	0.273	0.750	0.726	1.002	0.842	1.079	0.952	1.238	1.119
300	0.303	0.919	0.887	1.161	1.012	1.170	1.031	1.457	1.414
400	0.372	1.093	1.040	1.376	1.283	1.545	1.379	1.778	1.626
500	0.413	1.342	-	1.568	1.400	1.806	1.456	-	-
630	0.469	1.546	-	-	-	-	-	-	-
800	0.569	-	-	-	-	-	-	-	-
1000	0.667	-	-	-	-	-	-	-	-

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE XL1
VARIATION FACTOR FOR XLPE COMPOUND (XLFAL/XLFCU)

XLPE INSULATED 1.1 KV POWER CABLES WITH COPPER/ALUMINIUM CONDUCTOR

Nominal cross Sectional Area (in Sq. mm)	1 core		2 core		3 core		3.5 core		4 core	
	Unarm	Arm	Unarm	Arm	Unarm	arm	Unarm	Arm	Unarm	arm
2.5	0.007	0.010	0.014	0.014	0.021	0.021			0.028	0.028
4	0.009	0.012	0.018	0.018	0.027	0.027			0.036	0.036
6	0.010	0.015	0.022	0.022	0.033	0.033			0.043	0.043
10	0.013	0.018	0.025	0.025	0.039	0.039			0.053	0.053
16	0.016	0.023	0.034	0.034	0.049	0.049			0.065	0.065
25	0.021	0.030	0.048	0.048	0.070	0.070	0.084	0.084	0.093	0.093
35	0.025	0.035	0.059	0.059	0.084	0.084	0.099	0.099	0.112	0.112
50	0.033	0.044	0.075	0.075	0.108	0.108	0.130	0.130	0.144	0.144
70	0.042	0.054	0.095	0.095	0.137	0.137	0.160	0.160	0.179	0.179
95	0.048	0.062	0.110	0.110	0.160	0.160	0.190	0.190	0.211	0.211
120	0.060	0.076	0.138	0.138	0.200	0.200	0.239	0.239	0.266	0.266
150	0.078	0.095	0.180	0.180	0.259	0.259	0.296	0.296	0.344	0.344
185	0.097	0.116	0.224	0.224	0.324	0.324	0.369	0.369	0.430	0.430
240	0.116	0.137	0.266	0.266	0.388	0.388	0.446	0.446	0.518	0.518
300	0.138	0.164	0.325	0.325	0.467	0.467	0.540	0.540	0.620	0.620
400	0.175	0.214	0.357	0.357	0.536	0.536	0.619	0.619	0.714	0.714
500	0.217	0.260	0.440	0.440	0.660	0.660	0.769	0.769	0.880	0.880
630	0.265	0.318	0.542	0.542	0.814	0.814	0.941	0.941	1.085	1.085
800	0.323	0.389								
1000	0.375	0.444								

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE XL2
VARIATION FACTOR FOR XLPE COMPOUND (XLFCU)
 XLPE INSULAYTED CONTROL CABLES WITH COPPER CONDUCTOR

No of cores	Core size 1.5 sq mm		Core size 2.5 sq mm	
	Unarm	Arm	Unarm	Arm
2	0.010	0.010	0.012	0.012
3	0.016	0.016	0.018	0.018
4	0.021	0.021	0.025	0.025
5	0.026	0.026	0.031	0.031
6	0.031	0.031	0.037	0.037
7	0.036	0.036	0.043	0.043
8	0.036	0.036	0.043	0.043
9	0.042	0.042	0.049	0.049
10	0.052	0.052	0.061	0.061
12	0.062	0.062	0.074	0.074
14	0.073	0.073	0.086	0.086
16	0.083	0.083	0.098	0.098
18	0.094	0.094	0.110	0.110
19	0.099	0.099	0.116	0.116
20	0.104	0.104	0.123	0.123
24	0.125	0.125	0.147	0.147
27	0.140	0.140	0.165	0.165
30	0.156	0.156	0.184	0.184
37	0.192	0.192	0.227	0.227
44	0.229	0.229	0.270	0.270
52	0.270	0.270	0.319	0.319
61	0.317	0.317	0.374	0.374

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE XL3

VARIATION FACTOR FOR XLPE(XLFAL/XLFCU)

 SINGLE CORE ARMoured /UNARMoured XLPE INSULATED 3.3 to 33 KV POWER CABLES WITH
CU / AL CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm.)	XLPE Factor for Armoured/ Unarmoured Cable with AL /CU Conductor					
	3.3 KV	6.6 KV (E)	11 KV (E)/ 6.6 KV (UE)	11 KV (UE)	22 KV (E)	33 KV (E)
25	0.110	0.131	0.170	0.279		
35	0.122	0.137	0.175	0.284	0.317	0.522
50	0.135	0.151	0.191	0.307	0.341	0.563
70	0.155	0.172	0.215	0.342	0.379	0.615
95	0.174	0.193	0.241	0.377	0.417	0.670
120	0.192	0.212	0.262	0.407	0.449	0.713
150	0.209	0.229	0.283	0.437	0.481	0.757
185	0.228	0.250	0.308	0.471	0.518	0.809
240	0.255	0.279	0.343	0.519	0.569	0.883
300	0.280	0.322	0.372	0.560	0.613	0.943
400	0.326	0.392	0.420	0.625	0.683	1.041
500	0.388	0.461	0.469	0.694	0.757	1.142
630	0.467	0.520	0.529	0.777	0.845	1.265
800	0.567	0.593	0.602	0.874	0.949	1.407
1000	0.656	0.665	0.660	0.955	1.036	1.525

Note : XLPE factors include Semicons for Conductor & Insulation screen

TABLE – XL4

VARIATION FACTOR FOR XLPE (CCF1AL / CCF1Cu)

3 CORE XLPE INSULATED 3.3 to 33 KV POWER CABLES WITH COPPER / ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm)	3.3 KV ARM	6.6 KV (E) ARM	6.6 KV (UE) / 11 KV (E) ARM	11 KV (UE) ARM	22 KV (E) ARM	33 KV (E) ARM
25	0.315	0.394	0.511	0.838		
35	0.339	0.427	0.545	0.880	0.982	1.638
50	0.378	0.474	0.600	0.957	1.065	1.751
70	0.435	0.541	0.679	1.067	1.183	1.916
95	0.489	0.604	0.755	1.171	1.295	2.071
120	0.537	0.661	0.822	1.265	1.396	2.210
150	0.585	0.719	0.890	1.359	1.497	2.350
185	0.642	0.784	0.968	1.468	1.614	2.513
240	0.717	0.873	1.074	1.615	1.773	2.732
300	0.781	1.006	1.167	1.744	1.928	2.919
400	0.886	1.227	1.314	1.948	2.130	3.229
500	0.956	1.421	1.445	2.148	2.381	3.538
630	1.129	1.582	1.609	2.382	2.630	3.940

Note : XLPE factors include Semicons for Conductor & Insulation screen

IEEMA (PVC)/CABLE(R-1)/2017

 Effective from: 1st November 217

TABLE H1
VARIATION FACTOR FOR ALUMINIUM (AIF)
 ALUMINIUM ARMoured SINGLE CORE XLPE INSULATED 3.3 TO 33 KV CABLES

Nominal Cross Sectional Area (in Sq. mm.)	Aluminium Factor for Aluminium Armoured Cable with Aluminium Conductor					
	3.3 KV	6.6 KV (E)	11 KV (E)/ 6.6 KV (UE)	11 KV (UE)	22 KV (E)	33 KV (E)
35	0.251	0.284	0.301	0.344	0.358	0.473
50	0.312	0.336	0.352	0.397	0.408	0.672
70	0.385	0.409	0.423	0.469	0.501	0.723
95	0.476	0.500	0.518	0.637	0.656	0.856
120	0.561	0.586	0.601	0.726	0.744	0.949
150	0.653	0.678	0.696	0.823	0.842	1.050
185	0.773	0.797	0.893	0.949	0.965	1.183
240	0.997	1.063	1.083	1.139	1.154	1.387
300	1.209	1.271	1.283	1.333	1.307	1.753
400	1.438	1.556	1.565	1.620	1.636	2.046
500	1.873	1.901	1.910	2.110	2.128	2.484
630	2.337	2.361	2.369	2.580	2.595	2.978
800	3.007	3.071	3.080	3.145	3.163	3.588
1000	3.737	3.741	3.749	3.804	3.822	4.565

TABLE H2
VARIATION FACTOR FOR POLYMER (CCFAI / CCFCu)
 3 CORE XLPE INSULATED 3.3 to 33 KV POWER CABLES WITH COPPER / ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm)	3.3 KV ARM	6.6 KV (E) ARM	6.6 KV (UE) / 11 KV (E) ARM	11 KV (UE) ARM	22 KV (E) ARM	33 KV (E) ARM
35	0.374	0.990	1.142	1.604	1.782	-
50	0.445	1.119	1.260	1.834	2.046	2.864
70	0.547	1.290	1.396	2.011	2.284	3.219
95	0.594	1.440	1.647	2.269	2.428	3.367
120	0.732	1.692	1.877	2.498	2.715	3.646
150	0.812	1.906	2.061	2.767	2.931	3.927
185	0.960	2.086	2.406	3.028	3.180	4.166
240	1.130	2.484	2.744	3.398	3.580	4.589
300	1.219	2.912	3.161	3.840	4.016	5.029
400	1.313	3.530	3.664	4.353	4.666	5.736
500	1.652	3.925	3.971	4.621	4.878	5.913
630	1.949	4.487	4.982	5.225	5.477	6.696

Fillers added in PVC consumption

TABLE H3
VARIATION FACTOR FOR STEEL (FeF)

XLPE INSULATED 3.3 TO 33 KV POWER CABLES WITH COPPER / ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area Sq. mm.	3.3 KV	6.6 KV (E)	11 KV (E) / 6.6 KV (UE)	11 KV (UE)	22 KV (E)	33 KV (E)
25	0.551	0.604	0.656	0.814		
35	0.645	0.645	0.731	0.879	0.937	-
50	0.675	0.703	0.761	0.937	0.966	1.181
70	0.761	0.761	0.849	0.996	1.055	1.289
95	0.820	0.849	0.907	1.083	1.113	1.348
120	0.879	0.907	0.966	1.142	1.172	1.406
150	0.966	0.966	1.055	1.201	1.259	1.494
185	1.025	1.055	1.113	1.259	1.318	1.553
240	1.142	1.142	1.231	1.377	1.406	1.641
300	1.231	1.259	1.318	1.465	1.524	1.758
400	1.348	1.406	1.435	1.582	1.641	1.876

TABLE H4
VARIATION FACTOR FOR ALUMINIUM (AIF)

XLPE INSULATED SINGLE CORE 3.3 TO 33 KV POWER CABLES WITH COPPER CONDUCTOR

Nominal Cross Sectional Area (in Sq. mm.)	Aluminium Factor for Aluminium Armoured Cable with Copper Conductor					
	3.3 KV	6.6 KV (E)	11 KV (E)/ 6.6 KV (UE)	11 KV (UE)	22 KV (E)	33 KV (E)
35	0.153	0.187	0.204	0.247	0.258	0.372
50	0.179	0.203	0.220	0.262	0.275	0.425
70	0.196	0.219	0.233	0.278	0.311	0.444
95	0.213	0.237	0.254	0.373	0.392	0.470
120	0.228	0.253	0.268	0.393	0.410	0.488
150	0.243	0.269	0.287	0.414	0.432	0.504
185	0.261	0.285	0.381	0.437	0.455	0.526
240	0.324	0.389	0.410	0.465	0.480	0.556
300	0.365	0.428	0.440	0.490	0.510	0.737
400	0.432	0.471	0.480	0.536	0.552	0.783
500	0.489	0.517	0.526	0.726	0.744	0.844
630	0.544	0.568	0.572	0.787	0.801	0.902
800	0.706	0.787	0.797	0.862	0.880	0.982
1000	0.824	0.865	0.867	0.923	0.940	1.324

TABLE - H5
VARIATION FACTOR FOR STEEL (FeW)

XLPE INSULATED 3.3KV TO 33 KV POWER CABLES WITH COPPER / ALUMINIUM CONDUCTOR

Nominal Cross Sectional Area in Sq. mm	3.3/3.3 KV	3.3/6.6 KV	11 KV (E) / 6.6 KV (UE)	11 KV (UE)	22 KV (E)	33 KV (E)
25	1.258	1.457	1.612	2.509	1.503	--
35	1.361	1.569	1.853	2.644	2.797	2.517
50	1.682	1.687	2.321	2.800	2.921	4.569
70	2.033	1.979	2.503	3.219	3.347	4.809
95	2.202	2.507	2.718	4.019	4.200	5.437
120	2.371	2.675	2.882	4.241	4.416	6.713
150	2.870	2.847	3.265	4.447	4.621	6.976
185	3.121	3.309	4.148	4.726	5.289	7.356
240	3.758	4.227	4.442	5.442	6.651	7.718
300	4.099	5.024	5.182	6.894	7.084	8.187
400	5.750	6.572	6.658	7.433	7.657	8.760
500	6.716	6.777	6.861	7.588	7.797	8.830
630	7.492	7.465	7.477	8.209	8.386	9.413



PRE - QUALIFYING REQUIREMENTS

PROJECT:

RATE CONTRACT

PACKAGE:

LT XLPE Power Cable

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover value during any three out of last six Financial Years as on tender due date should not be less than	51,12,00,000.00

Rs.Fifty One Crore Twelve Lakh only

Notes:-

a) The bidder has to submit financial accounts (audited, if applicable comprising of Audit report, Balance Sheet, Profit & Loss A/c Statement and Notes/Schedules pertaining to Turnover/Sales/Revenue), for any three out of last six Financial Years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual financial turnover shall be calculated based on available information as below:-

i) If the accounts are available for ≤ 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but ≤ 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but ≤ 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

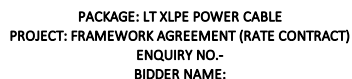
b) Foreign bidder is to submit a latest report from reputed third party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other Income shall not be considered for arriving at Annual Turnover/Sales. For evaluation purpose, turnover figure excluding taxes shall be considered.

d) For evaluation of foreign bidder, exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two part bid) shall be considered.

e) Bidder who is 50% or above subsidiary of any other company including those registered outside India and does not meet any of the above Financial Criteria, such bidder may be qualified based on credentials of its holding company provided such holding company meets the above PQR criteria. In such case, the Bidder would be required to furnish a Letter of Support from its Holding Company, pledging unconditional and irrevocable financial support for the execution of the Contract by the Bidder in case of award.

f) In cases where audited results for the last financial year as on the date of Techno Commercial bid opening are not available, a Certificate would be required from CEO/CFO stating that the financial results of the Company are under audit as on the date of Techno-commercial bid opening and are not available.



Sr. No.	Item code	Item description	Unit	Order Quantity (metres)	Drum Length (Meters)	UNIT PRICE (EX- WORKS) (Rs)	TOTAL PRICE (EX- WORKS) (Rs)	FREIGHT CHARGES (EXCLUDING GST) @ ____ % OF TOTAL EX- WORKS	FREIGHT CHARGES EXCLUDING GST (INR)	Applicable GST @ ____% (on "Total Ex- Works +Freight")	GST (INR)	TOTAL F.O.R. SITE PRICE (INR)
A	1.1KV, Al conductor (Plain aluminium of grade H2), XLPE insulated. Armoured (Non-magnetic hard drawn aluminium round wire armour of H4 grade for single core cables and GS round/ Formed wire armour for Multi- core cables). INNER SHEATH: Extruded HRPVC compound conforming to type ST2 of IS: 5831 for multicore cable (Single core cables shall have no inner sheath). OVERALL SHEATH: extruded overall FRLSH HRPVC compound conforming to type ST2 of IS: 5831, black in colour.											
1.0	507-0280063-00-A	1C-35 Sq. mm XLPE-Al(A) FRLS	MTR	211000	1000	#VALUE!	#VALUE!					
2.0	507-0280074-00-A	1C-70 Sq. mm XLPE-Al(A) FRLS	MTR	6000	1000	#VALUE!	#VALUE!					
3.0	507-0280064-00-A	1C-120 Sq. mm XLPE-Al(A) FRLS	MTR	34000	1000	#VALUE!	#VALUE!					
4.0	507-0280914-00-A	1C-150 Sq. mm XLPE-Al(A) FRLS	MTR	5000	1000	#VALUE!	#VALUE!					
5.0	507-0280175-00-A	1C-300 Sq. mm XLPE-Al(A) FRLS	MTR	1649000	1000	#VALUE!	#VALUE!					
6.0	507-0280005-00-A	1C-400 Sq. mm XLPE-Al(A) FRLS	MTR	100000	1000	#VALUE!	#VALUE!					
7.0	507-0280007-00-A	1C-630 Sq. mm XLPE-Al(A) FRLS	MTR	327000	750	#VALUE!	#VALUE!					
8.0	507-0280011-00-A	2C-10 Sq. mm XLPE-Al(A) FRLS	MTR	256000	1000	#VALUE!	#VALUE!					
9.0	507-0280017-00-A	2C-25 Sq. mm XLPE-Al(A) FRLS	MTR	152000	1000	#VALUE!	#VALUE!					
10.0	507-0280021-00-A	2C-50 Sq. mm XLPE-Al(A) FRLS	MTR	78000	1000	#VALUE!	#VALUE!					
11.0	507-0280027-00-A	2C-95 Sq. mm XLPE-Al(A) FRLS	MTR	293000	1000	#VALUE!	#VALUE!					
12.0	507-0280039-00-A	3C-10 Sq. mm XLPE-Al(A) FRLS	MTR	436000	1000	#VALUE!	#VALUE!					
13.0	507-0280125-00-A	3C-16 Sq. mm XLPE-Al(A) FRLS	MTR	176000	1000	#VALUE!	#VALUE!					
14.0	507-0280047-00-A	3C-25 Sq. mm XLPE-Al(A) FRLS	MTR	614000	1000	#VALUE!	#VALUE!					
15.0	507-0280136-00-A	3C-35 Sq. mm XLPE-Al(A) FRLS	MTR	294000	1000	#VALUE!	#VALUE!					
16.0	507-0280049-00-A	3C-50 Sq. mm XLPE-Al(A) FRLS	MTR	289000	1000	#VALUE!	#VALUE!					
17.0	507-0280160-00-A	3C-70 Sq. mm XLPE-Al(A) FRLS	MTR	94000	1000	#VALUE!	#VALUE!					
18.0	507-0280051-00-A	3C-95 Sq. mm XLPE-Al(A) FRLS	MTR	285000	1000	#VALUE!	#VALUE!					
19.0	507-0280222-00-A	3C-120 Sq. mm XLPE-Al(A) FRLS	MTR	18000	1000	#VALUE!	#VALUE!					
20.0	507-0280041-00-A	3C-150 Sq. mm XLPE-Al(A) FRLS	MTR	197000	1000	#VALUE!	#VALUE!					
21.0	507-0280138-00-A	3C-185 Sq. mm XLPE-Al(A) FRLS	MTR	43000	1000	#VALUE!	#VALUE!					
22.0	507-0280045-00-A	3C-240 Sq. mm XLPE-Al(A) FRLS	MTR	297000	750	#VALUE!	#VALUE!					
23.0	507-0280161-00-A	3C-300 Sq. mm XLPE-Al(A) FRLS	MTR	35250	750	#VALUE!	#VALUE!					
24.0	507-0280031-00-A	3.5C-25 Sq. mm XLPE-Al(A) FRLS	MTR	248000	1000	#VALUE!	#VALUE!					
25.0	507-0280224-00-A	3.5C-35 Sq. mm XLPE-Al(A) FRLS	MTR	14000	1000	#VALUE!	#VALUE!					
26.0	507-0280035-00-A	3.5C-50 Sq. mm XLPE-Al(A) FRLS	MTR	325000	1000	#VALUE!	#VALUE!					
27.0	507-0280225-00-A	3.5C-70 Sq. mm XLPE-Al(A) FRLS	MTR	54000	1000	#VALUE!	#VALUE!					
28.0	507-0280037-00-A	3.5C-95 Sq. mm XLPE-Al(A) FRLS	MTR	251000	1000	#VALUE!	#VALUE!					
29.0	507-0280915-00-A	3.5C-120 Sq. mm XLPE-Al(A) FRLS	MTR	23000	1000	#VALUE!	#VALUE!					
30.0	507-0280226-00-A	3.5C-150 Sq. mm XLPE-Al(A) FRLS	MTR	25000	1000	#VALUE!	#VALUE!					
31.0	507-0280029-00-A	3.5C-185 Sq. mm XLPE-Al(A) FRLS	MTR	40000	1000	#VALUE!	#VALUE!					
32.0	507-0280085-00-A	3.5C-240 Sq. mm XLPE-Al(A) FRLS	MTR	18000	750	#VALUE!	#VALUE!					
33.0	507											

1	Bidder has to quote only Total Value 'X'. Based on this price, unit price shall be derived for all items as per formula indicated above.
2	Bidder to quote freight charges in percentage of their quoted Total Ex-works Prices. Bidder to give single % of freight charges considering delivery anywhere in India in the freight column. Bidders have to give same % of freight for each line item. Further, bidder to quote non-zero freight %.
3	The standard drum length shall be 1000/750 meters as indicated above. Tolerance on individual drum length shall be $\pm 5\%$.
4	Overall tolerance on total dispatched quantity of each size shall be (-) 2% and (+) 0% on Individual Purchase Order against Rate Contract except where the total ordered quantity is one single drum length of 1000m, in which case it shall be -5% to 0%. Cables consumed for testing and inspection shall be to bidder's account.
5	For each individual cable size, one short length of not less than 200m may be accepted only in the final drum length to complete the supply (except where the total ordered quantity is one single drum length of 1000m). The overall tolerance limits stipulated above shall continue to apply (in case short lengths are accepted).
6	For type test requirement please refer clause no. 5.2 of Technical Data -Part-A of technical specification.
7	PVC shall be applicable as per PVC formula & factors mentioned in Annexure -B.

[illegible]

**Tentative List of projects for Framework Agreement (Rate Contract) of LT
XLPE POWER CABLES**

1. 2X800 MW LARA
2. 2X800 MW Singrauli STPP (NTPC)
3. 2X800 MW KODERMA
4. 1X800 MW SIPAT
5. 1X800 MW DARLIPALI
6. 2X660 MW RAGHUNATHPUR SG
7. 1X800 MW SINGARENI
8. 3X800 MW TELANGANA BTG



BHEL / PEM / CMM

SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT) FOR LT XLPE POWER CABLE

1. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of LT XLPE POWER CABLE required at various BHEL project sites on behalf of various BHEL units. Framework Agreement (Rate Contract) validity for ordering shall be two years from the purchase order for Rate Contract.
2. Framework Agreement (Rate Contract) shall be finalized only with suppliers who are registered with BHEL-PEM. Bidders who are not registered with BHEL-PEM (suppliers already registered with other BHEL Units shall also be required to apply registration in BHEL PEM) needs to apply & get registered for subject package with PEM before Reverse Auction & hence they need to apply online for registration on PEM web portal & have to enclose acknowledgement with the bid documents else their bid may not be considered for evaluation.

The bidders who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at <https://bhel.com/supplier-registration> .

All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

3. Framework Agreement (Rate contract) is proposed to be done with 3 suppliers in ratio of 45:30:25 value wise at L1 FOR site price (Ex-works + freight) for this package. However, order for a project shall not be split.
4. Quantity variation shall be applicable as +/- 30 % of the contract value. Bidders shall be informed that the quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.
5. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of LT XLPE POWER CABLE required at various BHEL project sites on behalf of various BHEL units. All bidders shall note the following: –
 - a) As and when requirement arises, the concerned Purchase Department of respective BHEL unit will place order directly on the supplier against the Framework Agreement (Rate Contract).
 - b) The drawings/ documents submission & approval, submission of Performance Security/ Performance Bank Guarantee, submission of invoices, processing and release of payment after supply of material, contractual dispute & commercial matters shall be dealt as per Framework Agreement (Rate Contract) contract terms & conditions directly by Purchase Department of respective BHEL unit which has placed purchase order against the Rate Contract.
6. Details of consignee and project site information for dispatch of material shall be intimated at the time of placement of PO for specific project after finalization of RC.
7. The items will be required against respective projects. Exact quantities and Project information shall be intimated while placing Purchase Order for a specific project based on the Rate Contract.
8. Price Variation shall be applicable for the subject package. Base date for initial prices for this tender shall be one month prior to date of NIT. All bidders shall quote as per the Price Variation Formulae Annexure provided in NIT.
9. Inspection of materials shall be carried out by BHEL/ CQA and or by Customer or by an Authorized Agency at manufacture's works before dispatch, if required. Dispatch of material to be done, only after receipt of BHEL/ Customer MDCC. It is responsibility of vendor to obtain Material Dispatch Clearance Certificate (MDCC) from BHEL or Customer as required before dispatch of material.
10. Vendor shall give inspection call on BHEL-CQS web site to applicable inspection agency with a copy of inspection call to BHEL for arranging Customer participation (if applicable) in inspection / Joint inspection on the proposed date with an advance notice of 15 working days. Inspection charges shall be paid by BHEL.




BHEL / PEM / CMM

11. Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL/ Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL/ Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.
12. Other terms and conditions shall be as per Standard Technical specification No. PE-TS-999-507-E00 Rev 00, GCC Rev 07, Corrigenda 01 & Corrigenda 02 to GCC Rev 07 and Enquiry letter.
13. This Enquiry is subject to Conditions/ limits if any imposed in in BHEL-PEM PMD/ Vendor registration.
14. Tentative quantity is given in Enquiry.
15. Bidders to submit offer for RC of said items ONLINE via BHEL-GePNIC Portal only. Bidders to upload tender documents complete in all respects duly signed & stamped on each and every page by the authorized signatory of the bidder as a token of acceptance of all the terms and conditions of tender.
16. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendor/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.




CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन
MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT
मुख्य संविदाकार प्रस्ताव सह मल्यांकन रिपोर्ट

Ref No:		Date:	
संदर्भ सं.:		तिथि:	
i.	Main Contractor मुख्य संविदाकार		
ii.	Project परियोजना		
iii.	Package Name पैकेज का नाम	Package No पैकेज सं.	
iv.	Proposed Item/Scope of Sub-contracting उप-संविदा(अनुबंध) का प्रस्तावित मद/ दायरा		
v.	Item covered under निम्नलिखित के अंतर्गत शामिल मद	Schedule-1 /अनुसूची- 1	As per contract clause No- अनुबंध के अनुसार खंड सं.-- -
		Schedule-2 अनुसूची- -2	
vi.	<p>If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled</p> <p>/यदि मद अनुसूची -1 है और प्रस्तावित उप-विक्रेता स्वदेशी है, तो मुख्य संविदाकार को स्पष्ट करना होगा कि संविदा/अनुबंध के प्रावधान कैसे पूरे किए जाएंगे</p>		
vii.	Name and Address of the proposed Sub-vendor's works /प्रस्तावित सब-वेंडर का नाम तथा पता		
viii.	PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network पीओ नियोजन की तिथि / एल- 2 नेटवर्क के अनुसार विनिर्माण (यदि स्व-निर्मित है) की शुरुआत		
ix.	Item Description (Type/Size/Rating/Scope of Sub-Contracting) मद का विवरण (प्रकार / आकार / रेटिंग / उप-अनुबंध का दायरा)	Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc) इस पैकेज में परिकल्पित प्रस्तावित मद की कुल मात्रा (संख्या / क्रियाशील मीटर /	Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc) प्रस्तावित उप-विक्रेता (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि) से खरीदी जाने वाली मात्रा
			Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time / परियोजना समय सूची के अनुसार मात्रा आवश्यकताओं के लिए समय-सीमा और क्या प्रस्तावित उप-विक्रेता समय पर प्रस्तावित मांग की मात्रा की आपूर्ति करने में पूरी तरह से सक्षम है
x.	Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here) पिछले 3 वर्षों के लिए उप-अनुबंध के समान मद / दायरे के लिए प्रस्तावित सब-वेंडर (मुख्य संविदाकार		


	CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन	
	MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT	
	मुख्य संविदाकार प्रस्ताव सह मल्यांकन रिपोर्ट	

	हेतु आपूर्ति, यदि कोई हो, सहित) का आपूर्ति अनुभव (नोट: - उप-अनुबंध के प्रस्तावित मद / दायरे के संबंध में केवल प्रासंगिक अनुभव के विवरण का उल्लेख हो						
	Project/Package परियोजना/पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति मद (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	PO ref no/date पीओ संदर्भ सं. /तिथि	Supplied Quantity आपूर्ति की मात्रा	Date of Supply आपूर्ति की तिथि	
We confirm that as per our physical assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद की आपूर्ति के लिए उपयुक्त है।							
Name: नाम:		Desig: पद:		Contact No: दूरभाष सं.:		Sign: हस्ताक्षर:	Date: तिथि:


Company's Seal/Stamp:- कंपनी का मुहर:-

	CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली
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i.	Item/Scope of Sub-contracting उप-संविदा(अनुबंध) का मद/ दायरा				
ii.	Address of the registered office पंजीकृत कार्यालय का पता 	Details of Contact Person संपर्क व्यक्ति का विवरण (Name, Designation, Mobile, Email) (नाम, पदनाम, मोबाइल, ईमेल) 			
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है 	Details of Contact Person: संपर्क व्यक्ति का विवरण (Name, Designation, Mobile, Email) (नाम, पदनाम, मोबाइल, ईमेल) 			
iv.	Annual Production Capacity for proposed item/scope of sub-contracting उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता				
v.	Annual production for last 3 years for proposed item/scope of sub-contracting उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन	<table border="1" style="width: 100%;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>			
vi.	Details of proposed works प्रस्तावित कार्यों का विवरण				
1.	Year of establishment of present works वर्तमान फैक्टरी की स्थापना का वर्ष				
2.	Year of commencement of manufacturing at above works उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष				
3.	Details of change in Works address in past (if any) पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)				
4.	Total Area कुल क्षेत्र Covered Area शामिल क्षेत्र				
5.	Factory Registration Certificate फैक्टरी पंजीकरण प्रमाण पत्र	Details attached at Annexure – F2.1 विवरण अनुलग्नक- एफ 2.1 पर संलग्न है			
6.	Design/ Research & development set-up डिजाइन / अनुसंधान और विकास सेटअप (No. of manpower, their qualification, machines & tools employed etc.) (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)	Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design) Details attached at Annexure – F2.2 (if applicable) लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है। विवरण अनुलग्नक –एफ 2.2 पर संलग्न है। (यदि लागू हो)			
7.	Overall organization Chart with Manpower Details	Details attached at Annexure – F2.3 विवरण अनुलग्नक – F2.3 में संलग्न है।			

	<p align="center">CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन</p> <p align="center">SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली</p>
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	(Design/Manufacturing/Quality etc) मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)	
8.	After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.) भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.4 विवरण अनुलग्नक -F2.4 पर संलग्न है ।
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any फलोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	Details attached at Annexure – F2.5 विवरण अनुलग्नक - F2.5में संलग्न है ।
10.	Sources of Raw Material/Major Bought Out Item कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	Details attached at Annexure – F2.6 विवरण अनुलग्नक - F2.6में संलग्न है।
11.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	Details attached at Annexure – F2.7 विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	Manufacturing facilities (List of machines, special process facilities, material handling etc.) विनिर्माण सुविधा(मशीनों की सूची , विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	Details attached at Annexure – F2.8 विवरण अनुलग्नक - F2.8में संलग्न है ।
13.	Testing facilities (List of testing equipment) परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	Details attached at Annexure – F2.9 विवरण अनुलग्नक - F2.9 में संलग्न है ।
14.	If manufacturing process involves fabrication then- यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- List of qualified Welders पात्र वेल्डर की सूची List of qualified NDT personnel with area of specialization विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.10 विवरण अनुलग्नक - F2.10में संलग्न है। (if applicable) लागू / लागू नहीं
15.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure. –F2.11 विवरण अनुलग्नक - F2.10में संलग्न है। (if applicable) (यदि लागू हो)
16.	Supply reference list including recent supplies नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	Details attached at Annexure – F2.12 विवरण अनुलग्नक - F2.12 में संलग्न है । (as per format given below) (नीचे दिए गए प्रारूप के अनुसार)

	CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली

Project/ package परियोजना /पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	PO ref no/date पीओ संदर्भ सं. / तिथि	Supplied Quantity आपूर्ति की मात्रा	Date of Supply आपूर्ति की तारीख
17.	Product satisfactory performance feedback letter/certificates/End User Feedback उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फीडबैक		Attached at annexure - F2.13 अनुलग्नक F2. 3पर संलग्न है		
18.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है <i>Note:- Reports need not to be submitted</i>		Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.14 विवरण अनुलग्नक - F2.1 4में संलग्न है (if applicable) (यदि लागू हो)		
19.	Statutory / mandatory certification for the proposed product प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण		Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.15 (if applicable) (यदि लागू हो)		
20.	Copy of ISO 9001 certificate आईएसओ 9001 प्रमाण पत्र की प्रति (if available)(यदि उपलब्ध हो)		Attached at Annexure – F2.16 अनुलग्नक में संलग्न - F2.1 6 है		
21.	Product technical catalogues for proposed item (if available) प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)		Details attached at Annexure – F2.17 विवरण अनुलग्नक - F2.1 7 में संलग्न है		
Name: नाम:		Desig: पद:		Sign: हस्ता क्षर:	Date: तिथि:

Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____ hereinafter referred to as the 'Vendor / Contractor / Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated valued at Rs..... (Rupees -----)/FC.....(in words.....) for (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs ----- (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

WeBANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including..... and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before thewe shall be discharged from all liabilities under this guarantee thereafter.

This Bank Guarantee shall be governed, construed and interpreted in accordance with the laws of India.

Courts at shall alone have exclusive jurisdiction over any matter arising out of or in connection with this Bank Guarantee

We, BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....
- b) This Guarantee shall be valid up to
- c) Unless the Bank is served a written claim or demand on or before _____ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Bank Guarantee should be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the contract.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. From Nationalized/Public Sector / Private Sector/ Foreign Banks can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

Format for Local Content Certificate as per MII order

Ref:

Date:

To,

Bharat Heavy Electricals Limited

PEM, PPEI Building,

Plot No 25, Sector -16A

Noida (U.P)-201301

Reference: Tender Enquiry No-.....

Name of Package:

Dear Sir,

We hereby certify that items of(Package name)

for.....(Project Name) offered by M/s(bidder's name)

having its works/office at has local content of%. Further,

it is also certified that the local content percentage (%) certified above is in line with definition of local content given in point no 2 of Public Procurement (Preference to Make in India), Order 2017- revision, having ref. no. P-45021/2/2017-PP(BE-II)-Part(4) Vol.II dated 04.06.2020 & 19.07.2024 an

M/s..... qualifies as Class-I local supplier.

Further, cost of locally imported items (inclusive of taxes) sourced locally from resellers/ distributors

is Rs and cost of licence/royalty paid/technical expertise cost etc. source from outside of India

is Rs.....

Details of the location(s) at which the local value addition-

Yours very truly

..... (Signing Authority Name & Sign)

..... (Firm Name)

Land Border Certificate

Dated:

Tender Title:

This has reference to order no. F.No.7/10/2021-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division. We, M/s _____, confirm the following:

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this M/s _____ is not from such a country.

I hereby certify that this M/s _____ fulfills all requirements in this regard and is eligible to be considered.

Signature with Company seal

Annexure-1

INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process, terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.
- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

For & On behalf of the Principal
(Office Seal)

Place _____

Date _____

Witness: _____
(Name & Address) _____

For & On behalf of the Bidder/ Contractor
(Office Seal)

Witness: _____
(Name & Address) _____

Clause on IP in the tender

Integrity Pact (IP)

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name: _____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile) _____
Email: _____
Fax: _____

(2)
Name: _____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile) _____
Email: _____
Fax: _____