निविदा आमंत्रण सूचना
NOTICE INVITING TENDER (NIT)

Enquiry No- 77/25/6009/SUM **Date -5-May-25**

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

1. Tender Type	**Open Tender (Domestic-Indian)**		
2. Package	**SCREENED CONTROL CABLES**		
3. Project	**Framework Agreement (Rate Contract) of SCREENED CONTROL CABLES - Adani Projects**		
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**	**15.05.2025**	**14:00 IST**
	For P-1 bid opening	**15.05.2025**	**17:00 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-RC-507-E005A, Rev 00		
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:

a. Supplier to start manufacturing/supply only after getting the applicable Primary engineering Drgs. /docs approved from BHEL/End Customer.

b. Drawings /documents submission/re-submission schedule shall be as per Technical specification (PE-TS-RC-507-E005A, Rev 00) which shall be used for progress monitoring purpose and required course correction, if any.

c. The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.

d. 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:

a. B is the Vendor delay days beyond original Contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.

b. 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.

c. 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: -

i. Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT.
ii. 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.
iii. Delay in providing engineering input/material by BHEL.
iv. Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC
v. 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. <u>Liquidated Damages (LD):</u>

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 (½) 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 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: a. 90 days for non MSME as per MSMED Act b. 45 days for vendors qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act c. 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:

a) 90 days for non-MSME as per MSMED Act.
b) 45 days for Suppliers qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act.
c) 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:

a) Qualifying Technical and Financial Pre-Qualification Requirement.
b) Techno-Commercial acceptance of offer by BHEL-PEM.
c) Registration in BHEL-PEM for the Tender package
d) 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:
	I	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

		Contract by the supplier. 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. c) However, Performance Security validity is to be extended based on the actual delivery of package. The Performance Security shall not carry any interest.
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)	In case of Breach of Contract, BHEL shall recover 10% of the Contract value from the Supplier using following instruments: (i) Encashment of security instruments like EMD, Performance Security with executing agency (PEM) against the said Contract. (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). (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. (iv) If recovery is not possible then legal remedies shall be pursued. However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.	

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:

- 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 SCREENED CONTROL CABLES 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.
- Local Content certificate (Make In India Certificate) from statutory/cost auditor of the company (in case of companies) or from a practicing Cost Accountant or practicing Chartered Accountant (in case of suppliers other than companies), shall be essentially submitted by supplier along with their offer as per clause No. 9 of Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024

32. Purchase preference to MSE Supplier: Yes.

33. Framework Agreement (Rate Contract) Order Splitting

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.

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 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 of Work	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/system falls under the list of items defined in Para 3 of Ministry of Finance 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 criterion of prior experience/ turnover shall be same for all bidders including startup/MSME.

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**
- **MAIN SUPPLIER'S EVALUTION REPORT FORMAT**
- **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,	**Manish Kumar Sinha / Sr. Manager-CMM** **M/s Bharat Heavy Electricals Ltd.,** Project Engineering Management,

Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301 E-mail: sumansaurabh@bhel.in Contact No.: 9718771765	Power Project Engineering Institute, HRD & ESI Complex, 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 FOR ADANI PROJECTS

TECHNICAL SPECIFICATION
FOR
SCREENED CONTROL CABLE

SPECIFICATION No. **PE-TS-RC-507-E005A**
ISSUE NO. 01
REV NO. 00

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

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SCOPE

SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:

SL.NO	PARAMETERS	REQUIREMENT
1	Supply Including Design, Engineering, Manufacturing	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

	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 with.
7	Bidder shall furnish Type Test Certificate of specified Type Test as per quality plan which has been conducted within last 5 years from 30/11/2024 , i.e. from 01/12/2019 to 30/11/2024 . These reports should be for the tests conducted on Screen Control 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 Quality plan/Relevant Standard
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

TECHNICAL DATA - PART - A

SL.NO	DESCRIPTION	UOM	DETAIL		
	TYPE OF CABLE		**0.5 SQMM Arm, 1 SQMM Arm & 1.5 SQMM Arm**		
1.0	**DESIGN CODES & STANDARDS (LATEST EDITIONS)**				
1.1	Core identification		IS-8130 (1984)		
1.2	Construction for screened control cable		IS: 1554 (Part-1) and IS:3975 (1999)		
1.3	Insulating and sheathing compounds for cables		IS: 1554 (Part-1) & IS: 5831 (1984)		
1.4	Test Method for Measuring the smoke density		ASTMD-2843		
1.5	Test Method for Measuring the Minimum Oxygen Index		ASTMD-2863		
1.6	Methods of test of cables		IS-10810 Part 62		
1.7	Acid gas generation		IEC 754-1		
1.8	Flammability Test		IEEE-383/IEC 332 PART-I		
1.9	Swedish Chimney Test		SEN-SS-424-1475		
2.0	**DESIGN /SYSTEM PARAMETERS**				
2.1	Type of Cable		FRLS SCREENED CONTROL CABLES		
2.2	Voltage Grade	kV	1.1 (peak)		
2.3	**Electrical parameters**				
a	High voltage test		1.5 kV for 1 min (Core – Core), 1kV for 1 min (Core- screen)		
b	Insulation Resistance at 20 deg C		100 M Ohm/Km (Min.)		
2.4	**C&I Parameter**		For 0.5 mm2 (I & OS) Type-F/ For 0.5 mm2 (OS) Type-G	For 1 mm2 (I & OS) Type-F	For 1.5 mm2 (I & OS) Type-F
a	Mutual Capacitance (max.)at 0.8 kHz, nF/Km		120/100	120	120
b	DC resistance (Ohms/Km)		39	18	12
c	Insulation Resistance (min), M Ohm/ Km		100	100	100
d	Cross Talk Figure (min) at 0.8kHz, dB		60	60	60
e	Characteristic impedance, Ohms(max.) at 1 kHz		320/340	320	230
f	Attenuation(max.) at 0.8 kHz(approx), dB/Km		1.2		
	Note:Cable parameters indicated above are at 20 deg C (+/- 3 degC)				
3.0	**CONSTRUCTION FEATURES**				
3.1	**CONDUCTOR**				
a	Material type & Grade		Annealed Tinned Copper / Grade: Electrolytic		
b	Standard applicable		IS-8130		
c	Min number of strands, Dia and cross sectional area		7, 0.3 mm (nom), 0.5 sq.mm	7, 0.43 mm (nom), 1 sq.mm	7, 0.53 mm (nom), 1.5 sq.mm
d	No of Pairs		2/4/8/12		
e	Max. conductor loop resistance per KM (in ohm) at 20 deg. C		73.4 (0.5 mm2)	36.2(1.0 mm2)	24.2(1.5 mm2)
f	Continuous operation suitability		85 DEG. C		
3.2	**INSULATION**				
a	Material		HR PVC Type-C(IS-5831, 1984)		
b	Application		Extruded		
c	Insulation thickness(nominal)		0.6 mm for 0.5 sq.mm. cable & 0.8 mm for 1 & 1.5 sq.mm. Cable		
d	Volume Resistivity (Min.)		1x 10^{13} at 27 deg .C & 1x 10^{10} at 85 deg. C in ohm-cm		

TECHNICAL DATA - PART - A

SL.NO	DESCRIPTION	UOM	DETAIL
	TYPE OF CABLE		**0.5 SQMM Arm, 1 SQMM Arm & 1.5 SQMM Arm**
3.3	**PAIRING & TWISTING**		
a	Whether cores are twisted		Yes
b	Min. number of twist per Metre for paired cables.		17
c	Maximum lay of individual twisted pair		Pair Twisted with lay of 60mm(max)
d	Twisting Direction		All pairs in the same direction. Lapped to form bunch with mylar tape.
e	Single Layer of Binder Tape on each pair is provided		YES
f	Unit Formation(Bunch) of four pair polyester binder tape for cables more than 4P is provided		YES
3.4	**CORE IDENTIFICATION**		Band marking, As per Annexure B-I
3.5	**INDIVIDUALLY & OVERALL SCREENED (TYPE F CABLE)**		
a	Material		Aluminium-Mylar tape
b	Coverage		100%
c	Overlap		Minimum 25%
d	Min thickness (Micron)		28
e	Binder		Polyester tape
Note: Over the Individual pair screening tape, two laps of 0.05 mm thick(min.) polyster tape shall be applied with minimum overlap of 25%. Metallic side of the screen shall be in contact with drain wire.			
3.4	**OVERALL SCREENED (TYPE G CABLE)**		
a	Material		Aluminium-Mylar tape
b	Coverage		100%
c	Overlap		Minimum 25%
d	Min thickness (Micron)		60
e	Binder		Polyester tape.
3.5	**DRAIN WIRE (To be provided separately for individual pair shield and overall shield.)**		
a	Material		Annealed Tinned copper wire, stranded
b	Min number of strands, Dia and cross sectional area		7, 0.3 mm (nom), 0.5 sq.mm
3.6	**ACCESSORIES (BEDDING, BINDER, TAPE REQ.)**		
a	Material		Mylar Tape
3.7	**INNERSHEATH DETAILS**		
a	Material:		Extruded HR PVC Type ST-2 as per IS-5831 & IS-1554 Part-I
b	Thickness (Min)		As per IS-1554
c	Whether FRLS		YES
d	Fillers		Acceptable
e	Material of fillers		Same as inner sheath with FRLS Property(with moisture resistant/non-hygroscopic properties)
f	Method of application		Pressure / Vacuum extruded
g	Rip Cord		Non-Metallic under sheath
3.8	**ARMOUR**		
a	Applicable		Yes
b	Material:		Galvanised Round Steel Wire/Formed Wire conforming as per IS-3975 & IS-1554 Part-I

TECHNICAL DATA - PART - A

SL.NO	DESCRIPTION	UOM	DETAIL
	TYPE OF CABLE		**0.5 SQMM Arm, 1 SQMM Arm & 1.5 SQMM Arm**
c	Minimum Coverage		90%
d	Breaking load of joint		95 % of normal armour
e	Method of jointing		Welding
3.9	**OUTERSHEATH**		
a	Material		FRLS HR- PVC TYPE ST-2 as per IS:5831(anti rodent, anti termite & moisture resistant properties)
b	Minimum Thickness at any point		As per IS-1554 Part-1 1976
c	Minimum & Nominal Thickness at any point		As per applicable standard
d	Application		Extruded
e	Colour		Grey
f	Whether FRLS		YES
g	Other		Resistant to water, Fungus, Termite & rodent attack.
i	Marking/ Embossing on Outer sheath		
1	At every 5 Meters		Manufacturer's name or trade make, year of manufacture, cable code, type of cable & voltage class, Cable Shielding Type-F or G, Sheath Material-FRLS, nominal cross section area of conductor & no. of cores, progressive sequential length marking, drum number, ADANI by Embossing / Printing
2	At every 1 Meters		Progresive sequential length marking @ 1 m by printing/embossing.
3	Allowable Tolerance On Overall Diameter		+/- 2 mm (maximum) over the declared value in data sheet
4	Variation in Diameter		Not more than 1.0 mm throughout the length of cable.
4.0	**FR-LSH CHARACTERISTICS**		
4.1	Oxygen index		29% Minimum as per ASTMD 2863
4.2	Temperature index		250 deg C Minimum as per ASTMD 2863
4.3	Acid gas generation		less than 20% by weight (As per IEC 754-1)
4.4	Smoke density rating		Not more that 60% (As per ASTMD 2843) Defined as average area under curve when the results of smoke density plotted on a curve indicating light absorption v/s time as ASTMD 2843
4.5	Flammability Test		IEC 332 PART-I
4.6	Swedish Chimney Test		As SEN-SS-424-1475 Class F3

TECHNICAL DATA - PART - A

SL.NO	DESCRIPTION	UOM	DETAIL
	TYPE OF CABLE		**0.5 SQMM Arm, 1 SQMM Arm & 1.5 SQMM Arm**
5.0	**CABLE DRUM DETAILS**		
5.1	Type		Non-returnable wooden drums of Heavy construction. All wooden parts shall be manufactured from seasoned wood treated with copper napthenates/ zinc napthenates (refer IS: 401). All ferrous parts shall be treated with suitable rust protective finish or coating to avoid rusting during transit and storage. BIS certification mark shall be stamped on each cable drum.
5.2	Standard drum length		1000 m: up to & including 12 pairs 500 m: above12 pairs For each individual cable size, one short length of not less than 250m may be accepted only in the final drum length to complete the supply
5.3	Tolerance on drum length		(±) 5%
5.4	Outermost Layer		To be covered with waterproof polyethylene
5.5	Details of marking on Drum		a) Manufacturer's name or trade make. b) BHEL-UNIT (Shall be informed during contract) c) Type of cable & voltage grade. d) Year of manufacture. e) Type of insulation. f) No. of core and sizes of cables. g) Cable code - FRLS. h) Single length of cable on drum. i) Direction of rotation, by arrow. j) Approx. gross mass.
6.0	**PERFORMANCE PARAMETERS**		Not Applicable
7.0	**INSPECTION/TESTING**		
7.1	Type test conduction required		Refer Annexure to Quality Plan.
7.2	Validity of type test report		Bidder shall furnish Type Test Certificate of specified Type Test as per quality plan which has been conducted within last 5 years from 30/11/2024 , i.e. from 01/12/2019 to 30/11/2024 . These reports should be for the tests conducted on Screen Control 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 Quality plan/relevant Standard
7.3	Acceptance & Routine test		All acceptance and routine tests as per Quality plan shall be carried out. Charges for these shall be deemed to be included in the cable price.

All cables shall be provided with anti termite, anti rodent, anti fungal & moisture resistant properties

Repaired cables shall not be acceptable. Brand new cables manufactured for subject plant shall be acceptable only

Ovality at any cross section shall not be more than 1 mm.

ANNEXURE: B-I

CORE IDENTIFICATION / PAIR IDENTIFICATION

ANNEXURE: B-I

The cable cores shall be colour coded as mentioned below:

PAIR	CORE	COLOUR
1st	1st	Blue
1st	2nd	Red
2nd	1st	Grey
2nd	2nd	Yellow
3rd	1st	Green
3rd	2nd	Brown
4th	1st	White
4th	2nd	Black

Each four pair is laid to form one unit and wound with Mylar tape. The cores of each unit shall then be identified by colour bands for cables of more than 4-pair. Eg. All eight cores of the first unit shall have a single band of pink color (preferably rose pink).

Unit No No.	COLOUR OF BANDS	BAND MARKS
1. 2. 3. 4.	PINK	=|===|== =||====||== =|||===|||== =||||===||||==
5. 6. 7. 8.	ORANGE	=|===|== =||====||== =|||===|||== =||||===||||==
9. 10. 11. 12.	VIOLET	=|===|== =||====||== =|||===|||== =||||===||||==

The dimension L (distance between the markings) shall be limited to 50 mm. The bands shall be neat and cover at least 2/3 of the periphery of the core.
Eg: A grey wire having 3 orange bands is the first core of the second pair of the Seventh unit.

Band markings shall not be easily erasable and shall also meet Bleeding and Blooming Test and colour fastness to water test requirement as per relevant standard.

TECHNICAL DATA - PART - B (SUPPLIER DATA TO BE FURNISHED AFTER AWARD OF CONTRACT)

SL.NO	DESCRIPTION	UOM	DETAIL
1.0	**GENERAL**		
1.1	Name & Address of Manufacturer		
2.0	**CONDUCTOR**		
2.1	Cross sectional dia		
3.0	**PVC INSULATION**		
3.1	Dielectric constant		
4.0	**CORE LAYING**		
4.1	Min. number of twist per Metre for paired cables.		
4.2	Maximum lay of individual twisted pair		
4.3	Diameter of core		
5.0	**INNERSHEATH**		
5.1	Thickness (min.)		
6.0	**ARMOUR**		
6.1	Size/ dimensions		
6.2	Minimum no. of wires/ formed wires		
7.0	**OUTERSHEATH**		
7.1	Thickness of outer sheath		
7.2	Calculated dia under outer sheath		
8.0	**DIAMETERS**		
8.1	Diameter over laid up core		
8.2	Cable diameter under armour		
8.3	Cable diameter over armour		
8.4	Overall diameter of cable		
8.5	Tolerance of overall diameter		
8.6	Minimum bending radius		
8.7	Safe pulling force		
9.0	**WEIGHTS**		
9.1	Weight of cable		
9.2	Weight of conductor		
9.3	Weight of PVC/ HRPVC insulation		
9.4	Weight of PVC (Inner Sheath & Fillers)		
9.5	Weight of Round Wire / GS formed Wire (Approx)		
9.6	Weight of PVC (Outer Sheath)		
9.7	Dimension of drum (F X B X T) (Approx)		
9.8	Shipping weight (Approx)		

QUALITY PLAN

STANDARD QUALITY PLAN

ITEM : LT PVC INSULATED INSTRUMENTATION CABLE

SQP NO: ADANI/QA/SQP/E/008
REV. NO.:01
DATE: 01.04.2015

Approved by QA

SL No.	COMPONENT/ OPERATION	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		INSPECTION AGENCY			REMARKS
					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
1. Raw Material														
1.1	Copper Rod	Surface	Major	Visual	Each Coil	Each Coil	Conductor shall be smooth	Conductor shall be smooth	MTC	√	P	V	V	
		Chemical Composition	Major	Chemical	IS: 613-Cu	IS: 613-Cu	IS: 613-Cu	IS: 613-Cu		√	P	V	V	
		Resistivity / Conductivity	Critical	Electrical						√	P	V	V	
		Tensile strength	Major	Physical						√	P	V	V	
		Elongation at break	Major	Physical						√	P	V	V	
		Diameter	Major	Dimensional						√	P	V	V	
1.2	PVC Compound	Density	Major	Measurement	1 sample from a lot of 2 MT or part there of each Lot	1 sample from a lot of 2 MT or part there of each Lot	IS: 5831	IS: 5831	MTC	√	P	V	V	
		Thermal stability	Major	Thermal			IS: 5831			√	P	V	V	
		Tensile strength	Major	Physical			IS:10810			√	P	V	V	
		Elongation at break	Major	Physical			IS:10810			√	P	V	V	
		Volume resistivity	Major	Electrical			IS:10810-P 60			√	P	V	V	
		Anti Termite & Rodent	Critical	Thermal			Presence of Lead	Presence of Lead		√	P	V	V	
		Tests for FRLS (For FRLS Cable only)												
		Smoke density	Critical	Optical	1 sample from a lot of 2 MT or part there of each Lot	1 sample from a lot of 2 MT or part there of each Lot	ASTMD-2843	Max 60%	MTC	√	P	V	V	
		Oxygen index	Critical	Thermal			ASTMD-2863	Min. 29%		√	P	V	V	
		Temperature index	Critical	Thermal			ASTMD-2863	Min 250°C		√	P	V	V	
		HCL Test	Critical	Chemical			IS 10810/ IEC-754-1	Max 20% by Weight		√	P	V	V	
1.3	Al-Mylar Tape	Width	Minor	Measrt.	One sample /Lot	One sample /Lot	Data Sheet	Data Sheet	MTC	√	P	V	V	
		Thickness	Major	Measrt.			Data Sheet	Data Sheet		√	P	V	V	
1.4	GI Armour Flat / Wire	Dimensions	Major	Dimensional	IS 3975	IS 3975	IS:3975	IS:3975	MTC	√	P	V	V	
		Tensile strength	Major	Mechanical						√	P	V	V	
		Elongation at Break	Major	Mechanical						√	P	V	V	
		Resistivity	Minor	Electrical						√	P	V	V	
		Torsion Test (For Round Wire Only)	Major	Mechanical						√	P	V	V	
		Wrapping Test	Major	Mechanical						√	P	V	V	
		Adhesion Test	Major	Chemical						√	P	V	V	
		Mass of zinc Coating	Major	Chemical			IS:4826	IS:4826		√	P	V	V	
		Uniformity of Zinc	Major	Chemical			IS 2633	IS 2633		√	P	V	V	

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					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
1.5	Wooden Drums	Dimensions of drum	Major	Dimensional	20%	One sample / size / lot	IS:10418	IS:10418	MTC/ITR		P	V	V	
		Thickness of flange	Major	Dimensional			IS:10418	IS:10418			P	V	V	
		Number of tie rods	Major	Count			IS:10418	IS:10418			P	V	V	
		Size of tie rods	Major	Dimensional			IS:10418	IS:10418			P	V	V	
		Diameter of centre hole	Minor	Dimensional			IS:10418	IS:10418			P	V	V	
		Visual	Major	Visual			IS:10418	IS:10418			P	V	V	
2. IN PROCESS														
2.1	Wire drawing	Surface finish	Major	Visual	100%	10%	IS:8130	IS:8130	MTC/ITR		P	V	V	
		Diameter	Minor	Dimensional	Each setting & one sample per Lot	Each setting & one sample per Lot	Data Sheet	Data Sheet			P	V	V	
		Tensile strength	Major	Mechanical			IS:10810Pt 2	IS:8130			P	V	V	
		Annealing Test	Major	Mechanical			IS: 10810 Pt 1	IS:8130			P	V	V	
		Resistivity/Conductivity	Critical	Electrical			IS:10810Pt 5	IS:5484			P	V	V	
2.2	Stranding	No. of wires	Major	Count	Each setting & Twice in shift	Each setting & Twice in shift	Mfg Plant Std/ Data Sheet/ IS: 8130	Mfg Plant Std/ Data Sheet/ IS: 8130	ITR		P	V	V	
		Wire diameter	Minor	Dimensional							P	V	V	
		Lay Direction	Major	Visual							P	V	V	
		Cond. Dia/height	Major	Dimensional							P	V	V	
		Cond. Resistance	Critical	Electrical							P	V	V	
		Surface	Major	Visual							P	V	V	
2.3	Insulation	Type of compound	Major	Visual	Each setting & Twice in shift	Each setting & Twice in shift	Mfg Plant Std / Data Sheet/ BS:5308	Mfg Plant Std / Data Sheet/ BS:5308	ITR		P	V	V	
		Insulation thickness	Major	Dimensional							P	V	V	
		Surface finish	Major	Visual							P	V	V	
		Colour/Core Identification	Major	Visual							P	V	V	
		Porostiy	Major	Visual	100%	100%					P	V	V	
		Spark Test	Major	Electrical							P	V	V	
		Continuity of Conductor	Major	Visual							P	V	V	
2.4	Pairing / Laying	Lay Length / No.of Twists per Metre	Major	Measrt.	Each setting & Twice in shift	Each setting & Twice in shift	Mfg Plant Std / Data Sheet/ BS:5308	Mfg Plant Std / Data Sheet/ BS:5308	ITR		P	V	V	
		Core / Pair Sequence	Major	Visual							P	V	V	
2.5	Pair / Overall Shielding	Al-Mylar Tape Thickness	Major	Measrt.	Each setting & Twice in shift	Each setting & Twice in shift	Mfg Plant Std / Data Sheet/ BS:5308	Mfg Plant Std / Data Sheet/ BS:5308	ITR		P	V	V	
		Overlap & Coverage	Major	Measrt.							P	V	V	
		Drain Wire Details	Major	Measrt.							P	V	V	
		Diameter over Laid up	Minor	Measrt.							P	V	V	

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					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
2.6	Laying up	Sequence of cores	Major	Visual	Each setting & Twice in a Shift	Each setting & Twice in a Shift	Mfg Plant Std/ Data Sheet/ BS: 5308	Mfg Plant Std/ Data Sheet/ BS: 5308	ITR		P	V	V	
		Lay Length & Direction of lay	Major	Visual							P	V	V	
		Laid up diameter	Major	Dimensional							P	V	V	
		Circularity	Major	Visual							P	V	V	
2.7	Inner sheath	Type of compound	Major	Visual	Each setting & at the end of Each Drum Length	Each setting & at the end of Each Drum Length	Mfg Plant Std/ Data Sheet/ BS: 5308	Mfg Plant Std/ Data Sheet/ BS: 5308	ITR		P	V	V	
		Sheath thickness	Major	Dimensional							P	V	V	
		Surface finish	Major	Visual							P	V	V	
		Dia over sheath	Major	Dimensional							P	V	V	
2.8	Armour	No. of wires	Major	Count	Each setting & at the end of Each Drum Length	Each setting & at the end of Each Drum Length	Mfg Plant Std/ Data Sheet/ IS 3975/IS:1554	Mfg Plant Std/ Data Sheet/ IS 3975/IS:1554	ITR		P	V	V	
		Dimensions of wire	Major	Dimensional							P	V	V	
		Lay direction	Major	Visual							P	V	V	
		Dia over armour	Major	Dimensional							P	V	V	
2.9	Outer sheath	Type of compound	Major	Visual	Each setting & Twice in a Shift	Each setting & Twice in a Shift	Mfg Plant Std/ Data Sheet/ BS: 5308	Mfg Plant Std/ Data Sheet/ BS: 5308	ITR		P	V	V	
		Sheath thickness	Major	Dimensional							P	V	V	
		Surface finish	Major	Visual							P	V	V	
		Dia over sheath	Major	Dimensional							P	V	V	
		TS & Elongation	Major	Dimensional							P	V	V	
		Embossing/Printing/ Seq. Marking	Major	Visual							P	V	V	
3. Finished Cable														
3.1	Routine test	High Voltage test	Critical	Electrical	100%	100%	BS 5308 - II	Withstood	IR	√	P	V	V	**NOTE 1:** Type Test Certificate not earlier than five Years from the date of award duly reviewed & accepted by Owners Engineering for similar type, Size & rating of cable shall be submitted alongwith inspection call.
		Conductor resistance test	Critical	Electrical			BS: 5308-II	IS:8130		√	P	V	V	
		Drain Wire Resistance	Critical	Electrical			IS:10810 Pt5	IS:8130		√	P	V	V	
3.2	Acceptance test	High Voltage test	Critical	Electrical	Sampling as per IS 1554-I	Sampling as per IS 1554-I	BS 5308 - II	BS 5308 - II	IR	√	P	H	H	
		Conductor resistance test	Critical	Electrical			BS 5308-II	BS 5308-II / Data Sheet		√	P	H	H	
		Drain Wire Resistance	Critical	Electrical			IS:10810 Pt5	IS:8130 / Data Sheet		√	P	H	H	

STANDARD QUALITY PLAN

ITEM : LT PVC INSULATED INSTRUMENTATION CABLE

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SL No.	COMPONENT/ OPERATION	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*D	INSPECTION AGENCY			REMARKS
					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
3.2	Acceptance test	Mutual Capacitance	Major	Electrical	Sampling as per IS 1554-I	Sampling as per IS 1554-I	BS 5308 - II	Data Sheet/ BS 5308 - II	IR	√	P	H	H	In case the type test is specially required as per the technical specification/PO, same shall be witnessed. **NOTE 2:** Dimensional verification shall includes: a) Over all Dia. Of Cable. b) No. of Conductor & Armour c)Dim.Conductor/Armour d) Size of Cu. Screen & Overlapping. **NOTE 3:** Rewinding of Cable Drum shall be carried out to check the following: a) Sequntial Marking on outer sheath of cable as per IS/ Data Sheet b) Total Length Verification. c) Surface Defect 3.2 Different cable size drum shall be selected for rewinding.
		Capacitance between Core-Shield	Major	Electrical						√	P	H	H	
		Inductance	Major	Electrical						√	P	H	H	
		L/R Ratio	Major	Electrical						√	P	H	H	
		Core Identification & Sequence of Cable	Major	Physical			BS 5308-II/ Data Sheet	BS 5308-II/ Data Sheet		√	P	H	H	
		Dimension of Maylar Tap	Major	Physical			Data Sheet	Data Sheet		√	P	H	H	
		Volume resistivity	Critical	Electrical			IS:10810 Pt43	IS: 5381		√	P	H	H	
		Thickness of insulation	Major	Dimensional			IS:10810 Pt6	Data Sheet /BS 5308-II		√	P	H	H	
		Thickness of inner sheath	Major	Dimensional			IS:10810 Pt6	Data Sheet /BS 5308-II		√	P	H	H	
		Thickness of outer sheath	Major	Dimensional			IS:10810 Pt6	Data Sheet /BS 5308-II		√	P	H	H	
		TS of Insulation	Major	Physical			IS:10810 Pt7	IS: 5381		√	P	H	H	
		Elongation at break of insulation	Major	Physical			IS:10810 Pt7	IS: 5381		√	P	H	H	
		TS of Outer Sheath	Major	Physical			IS:10810 Pt7	IS: 5381		√	P	H	H	
		Elongation at break of outer sheath	Major	Physical			IS:10810 Pt7	IS: 5381		√	P	H	H	
		Core Identification & Sequence of Cable	Major	Physical			Data Sheet / BS 5308-II	Data Sheet / BS 5308-II		√	P	H	H	
		Dimensional Verification (Note 2)	Major	Measurement			Data Sheet / BS 5308-II	Data Sheet / BS 5308-II		√	P	H	H	
		Rewinding of Drum (Note 3)	Major	Visual	10% of Lot offered for inspection	10% of Lot offered for inspection	Data Sheet and Declared Length	Data Sheet and Declared Length		√	P	H	H	
		Cable Identification (Note 4)	Critical	Visual			Data Sheet	Data Sheet		√	P	H	H	

STANDARD QUALITY PLAN

ITEM : LT PVC INSULATED INSTRUMENTATION CABLE

SQP NO: ADANI/QA/SQP/E/008
REV. NO.:01
DATE: 01.04.2015

Approved by QA

SL No.	COMPONENT/ OPERATION	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		INSPECTION AGENCY			REMARKS
					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
3.2	Acceptance test	Anti Termite & Rodent	Critical	Thermal	01 Sample/ Size/ Lot	01 Sample/ Size/ Lot	Presence of Lead	Presence of Lead		√	P	H	H	**NOTE 4:** Cable Identification for outersheath marking shall be done as per approved datasheet NOTE 5: For FRLS Tests 01 Sample/Lot shall be consider only after tracebility of FRLS material Lot, i.e. outer sheath is made from same batch of FRLS material. Same shall be verified at the time of inspection.
		Tests for FRLS (For FRLS Cable only)												
		Smoke density	Critical	Optical	01 Sample /Size/Lot offered for inspection (Note 5)	01 Sample /Size/Lot offered for inspection (Note 5)	ASTMD-2843	Max. 60%	IR	√	P	H	H	
		Oxygen index	Critical	Thermal			ASTMD-2863	Min. 29%		√	P	H	H	
		Temperature index	Critical	Thermal			ASTMD-2863	Min 250°C		√	P	H	H	
		HCL Test	Critical	Chemical			IS 10810/ IEC-754-1	Max 20% by Wt.		√	P	H	H	
		Flamability Test	Critical	Thermal			IEC-332-1	IEC-332-1		√	P	H	H	

LEGEND:- D* Records identified with tick (√) shall be essentially included by supplier & manufacturer in Quality Documentation package.
** M: Manufacturer / Sub-Supplier, C: Main Supplier , A: **Adani** or their authorized representative.
Use the following term as appropriate in columns 10. **P**: Perform, **V**: verification and **H**: Customer Hold Point to be witnessed and work shall not proceeded till it is witnessed and cleared in writing.
Format of Record: MTC: Manufacturer/Sub-supplier Test Certificate, ITR: Inprocess Test Report/Record, IR: Inspection Report

GENERAL NOTE:-
- Manufacturer should have all the in house testing (Acceptance & Type Test) facilities for LT Cable.
- Testing Instruments used during Inspection must be calibrated from NABL accredited lab only. Instruments used during testing should be within valid calibration date.

Annexure "A" to Standard Quality Plan

TYPE/ ACCEPTANCE/ ROUTINE TEST REQUIREMENTS

A. Type Test Conduction:

1. Tests for which "T" is indicated in the 'Test Conduction Required As' column below shall be conducted as Type Test.

2. Sampling:
   a) Type test (except for Sl. no. b & c below) to be conducted on one size (2P, 4P etc.) of each type (F or G type).
   b) Electrical & C&I tests to be conducted on one size of each type of cables
   c) FRLS & Flammability Test to be conducted only on one sample

B. **Acceptance Test Conduction:**

1. Tests for which "A" is indicated in the 'Test Conduction Required As' column below shall be conducted as Acceptance tests.

2. Sampling:
   a) Acceptance tests (except for Sl. no. b & c below) for every lot shall be as per Appendix-B (Clause 15.22) of IS: 1554
   b) Electrical & C&I tests to be conducted on each size of each type of cables
   c) FRI-S & Flammability tests to be conducted only on one sample, irrespective of size/type.

C. Routine Test Conduction:

1. Tests for which "R" is indicated in the 'Test Conduction Required As' column below shall be conducted as Routine tests.
2. Sampling: Routine tests shall be conducted on 100% cable drums

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		khushbu agrawal	Checked by:		
Reviewed by:		Hema kushwaha	Reviewed by:		

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
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 to inspector at the time of inspection***
II.	Tin coating test (for tinned copper)	For copper conductor only	**T, A**	IS 10810 Pt 4	
III.	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.	Resistivity test	Applicable for Aluminium wire & GS wire	**T,**	IS 10810 Pt 42	
VII.	Uniformity of Zinc coating test	For G. S. wires/Strip only	**T**	IS 10810 Pt 40	
VIII.	Mass of Zinc coating test	For G. S. wires/Strip only	**T**	IS 10810 Pt 41	
IX.	Wrapping Test	Applicable for Aluminium wire & GS wire	**A**	IS 10810 Pt 3	
3.0	**Physical Tests for PVC Insulation & PVC sheath**				
I.	Test for thickness	Applicable for PVC insulation, PVC inner sheath & PVC outer sheath	**T, A**	IS 10810 Pt 6	
II.	Tensile strength and elongation test at break	Applicable for PVC insulation & PVC outer sheath	**T, A**		

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
(a)	Before ageing		T, A	IS 10810 Pt 7	
(b)	After ageing		T, A	IS 10810 Pt 7	
III.	Ageing in air oven	Applicable for PVC insulation & PVC outer sheath	T	IS 10810 Pt 11	
IV.	Loss of mass in air oven test	For PVC outer sheath only	T	IS 10810 Pt 10	
V.	Hot deformation test	For PVC outer sheath only	T	IS 10810 Pt 15	
VI.	Heat shock test	For PVC outer sheath only	T	IS 10810 Pt 14	
VII.	Shrinkage test	For PVC insulation & PVC outer sheath only	T	IS 10810 Pt 12	
VIII.	Thermal stability test	For PVC insulation & PVC outer sheath only	T	IS 10810 Pt 60	
IX	Bleeding & Blooming test	Applicable for PVC insulation & PVC outer sheath	T	IS 10810 Pt 19	For testing color of core
X	Cold bend test	For PVC insulation & PVC outer & Inner sheath	T	IS 10810 Pt 20	In low temperature siff cable
XI	Cold impact test	For PVC insulation & PVC outer & Inner sheath	T	IS 10810 Pt 21	SAME ABOVE FOR DIA ABOVE 12.5 MM
XII	Colour fastness to water	For PVC insulation & PVC outer sheath	T	IS 10810 Pt 18, Appendix-A of IS: 5831	
4.0	**Tests for Al-Mylar Shield**				
I	Continuity test	For Al-Mylar shield		Plant Standad	
II	Shield thickness	For Al-Mylar shield		ADS	
III	Overlap test	For Al-Mylar shield		ADS	
IV	Constructional details, dimensions	For Al-Mylar shield		ADS	
V	Visual, surface finish+	For Al-Mylar shield		Plant Standard	
VI	Overall coverage	For Al-Mylar shield		Plant Standard	
VII	Noise interference test.	For Al-Mylar shield		ADS	
5.0	**Tests for Drain Wire**				
	Annealing test	For copper conductor only		IS 10810 Pt 1	In process records shall be furnished to inspector at the time of inspection.

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		khushbu agrawal	Checked by:		
Reviewed by:		Hema kushwaha	Reviewed by:		

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
	Tin coating test (for tinned copper)	For copper conductor only		IS 10810 Pt 4	
	Resistance test	For Cu Conductor		IS 10810 Pt 5	
	Diameter test	For conductor		ADS	
6.0	**Improved Fire performance (FR-LSH) Tests**				
I.	Oxygen index test	*For outer sheath only*	**T, A**	IS 10810 Pt 58 / ASTMD 2863/	**Test applicable as indicated in Quality Plan/ Technical Data-Part A**
II.	Smoke density test	*For outer sheath only*	**T**	IS 10810 Pt 63 / ASTMD 2843	
III.	Acid gas generation test	*For outer sheath only*	**T, A**	IS 10810 Pt 59 / IEC-754-1	
IV.	Temperature Index Test	*For outer sheath only*	**T**	IS 10810 Pt 64 / ASTMD 2863	
7.0	**Flammability Tests**				
I.	Flammability test for bunched cables	For complete cable	**T**	IS 10810 Pt 62/ IEC-60332 (Part-3-23-Cat-B	**Test applicable as indicated in Quality Plan/ Technical Data-Part A**
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	
8.0	**Electrical Tests**				
I.	High Voltage Test (Water immersion test)	On cores	**T, A, R**	IS 10810 Pt 45	
II.	High Voltage Test at room temperature	For complete cable	**T, A, R**	IS 10810 Pt 45	
III.	Insulation Resistance Test (Volume resistivity method)	For complete cable	**T, A,R**	IS 10810 Pt 43	
IV.	L/R Ratio	For complete cable	**A,R**	BS:5308 Part II	
V.	Spark Test	Online Process during Extrusion of Insulation	**ONLINE**	BS:5308 Part II	

S. No.	TEST	APPLICABLE FOR	TEST CONDUCTION REQUIRED AS	REFERENCE STANDARD	REMARKS
VI.	Thermal ageing test	For complete cable	**T**	IS-1554 Pt-1	Not applicable for screen cable as per IS
VII	Bending Test		**T**	IS 10810 Pt 50	
9.0	**C&I Tests**				
	Cross talk	For complete cable	**T,A**		
	Attenuation	For complete cable	**T,A**		
	Characteristic Impedance	For complete cable	**T,A**		
	Mutual capacitance	For complete cable	**T,A,R**		
	Noise interference	For complete cable	**T,A**		
10.0	**Anti-rodent and Termite Repulsion test**	For PVC outer sheath only	**A**	Refer Note	**Test applicable as indicated in Quality Plan/ Technical Data-Part A**
11.0	**Anti-Fungal Test**	For PVC outer sheath only	**A**	Self-certification by vendor for anti-fungal property.	
12.0	**Special Tests**				
I.	Hydrolytic Stability Test	For complete cable	**	ASTM D 3137:81	**Test applicable as indicated in Quality Plan/ Technical Data-Part A**
II.	Ultraviolet Radiation Test	For complete cable	**	BS EN ISO 4892-2	

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

Note: A few chipping 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.

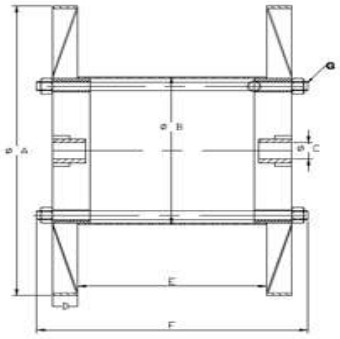
BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		khushbu agrawal	Checked by:		
Reviewed by:		Hema kushwaha	Reviewed by:		

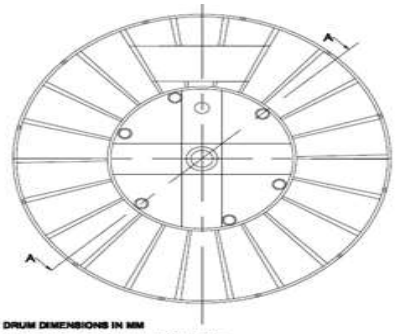
BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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

PACKING REQUIREMENT

Sl.no	DESCRIPTION
1	**Type of Packing (Wood):**
	Wood :
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 wooden drum as per IS 10418.
1.2	Both the end of cables shall be properly sealed with heat shrinkable seal 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.





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

- Drg. not to scale.
- ALL DIMENSIONS ARE IN MM.

2	**Quality of wood:**
	As per IS 10418 for wooden drums
3	**Cushioning material and moisture absorber:**
	Not applicable
4	**Packing slip & holder:**
4.1	Packing slip kept in polyethylene bag shall be placed inside the cable drum at appropriate place.
4.2	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.

UNPRICED SCHEDULE

1) Individual & Overall Screened Cable (Type-F)-Armoured cable

Multi pair (twisted) individual & overall shielded instrumentation cables. (Type-F)

S.No.	Item Code	Item Description	UOM	Order Quantity	Drum Length	Unit Price (Ex-Works) Rs	Total Price (Ex-Works) Rs
(i)	507-0310116-00-A	1.1kV TYPE F(IO) 2P - 0.5 ARMOURED	MTR	246000	1000	0.03922*X/246000	0.03922*X
(ii)	507-0310009-00-A	1.1kV TYPE F(IO) 4P - 0.5 ARMOURED	MTR	573000	1000	0.13928*X/573000	0.13928*X
(iii)	507-0310013-00-A	1.1kV TYPE F(IO) 8P - 0.5 ARMOURED	MTR	379000	1000	0.15526*X/379000	0.15526*X
(iv)	507-0310001-00-A	1.1kV TYPE F(IO) 12P - 0.5 ARMOURED	MTR	145000	1000	0.08101*X/145000	0.08101*X
(v)	507-0310139-00-A	1.1kV TYPE F(IO) 2P - 1 ARMOURED	MTR	16000	1000	0.00425*X/16000	0.00425*X
(vi)	507-0310138-00-A	1.1kV TYPE F(IO) 2P - 1.5 ARMOURED	MTR	470000	1000	0.15819*X/470000	0.15819*X

2) Overall Screened Cable (Type-G)-Armoured cable

Multi pair (twisted) overall shielded instrumentation cables. (Type-G)

S.No.	Item code	Item Description	UOM	Order Quantity	Drum Length	Unit Price (Ex-Works) Rs	Total Price (Ex-Works) Rs
(i)	507-0310025-00-A	1.1kV TYPE G(O) 2P - 0.5 ARMOURED	MTR	300000	1000	0.04081*X/300000	0.04081*X
(ii)	507-0310029-00-A	1.1kV TYPE G(O) 4P - 0.5 ARMOURED	MTR	534000	1000	0.10111*X/534000	0.10111*X
(iii)	507-0310033-00-A	1.1kV TYPE G(O) 8P - 0.5 ARMOURED	MTR	865000	1000	0.26125*X/865000	0.26125*X
(iv)	507-0310017-00-A	1.1kV TYPE G(O) 12P - 0.5 ARMOURED	MTR	48000	1000	0.01962*X/48000	0.01962*X
						GRAND TOTAL(Rs.)	**X**

Notes :

1	Bidder to quote grand total value of the complete package (Rs X) only for the above mentioned BOQ. The item wise break up of total price and unit price shall be derived as per the formulae indicated above.
2	The standard drum length shall be 1000 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 1000 m, 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 250m may be accepted only in the final drum length to complete the project specific 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	Unit price of cables quoted by bidder shall be inclusive of type test charges (If applicable). No separate charges shall be payable for type tests.
6	For PVC formulae & Indices; please refer " PVC Formulae & Factors" file or latest amendment (if any) with upper ceiling limit of 20% & no negative ceiling limit.

DOCUMENTATION REQUIREMENT

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY ALL THE BIDDERS ALONG WITH THE BID

Sl. 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

Sl. No.	BHEL Drawing No.	Drawing Title	Vendor submission (Days)*	BHEL Comment each submission (Days)	Vendor submission (Days)#
I	**Primary Documents**				
1	PE-V0-XXX-507-E141	DATA SHEET & CROSS SECTION DRAWINGS FOR SCREEN CONTROL CABLE	14	10	10
2	PE-V0-XXX-507-E916	QUALITY PLAN FOR SCREEN CONTROL CABLE	14	10	10
iI	**Secondary Documents**				
3	PE-V0-XXX-507-E144	TYPE TEST REPORT FOR SCREEN CONTROL CABLE **	7	10	7

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) ** Within 1 week after conduction of type test, for the type tests to be conducted on cable as per Quality Plan/Relevant Standard

DRAWINGS & DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT

Sl. No.	DOCUMENT TITLE
1	APPROVED TECHNICAL DATASHEET & GA DRAWING.
2	APPROVED QUALITY PLAN.
3	ALL TEST CERTIFICATES

COMPLIANCE CERTIFICATE	
1	It is hereby confirm that the technical specification(Sheet 1 to 57) 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

	PRE-QUALIFICATION REQUIRMENTS FOR SCREENED CONTROL CABLE FOR RATE CONTRACT OF ADANI PROJECTS	PE-PQ-RC-507-E016A REVISION NO. 00 DATE 21/03/2025 SHEET NO. 1 OF 1

ITEMS : Screened Control Cable **SCOPE :** Supply : YES; Erection & Commissioning : NO	
1.0	Vendor should be a manufacturer of screened/ instrumentation control cables.
2.0	Availability of test reports of tests on FRLS screened control cables to establish in-house Capability to carry out all routine, type acceptance 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 screened control cables per month.
4.0	Manufactured and supplied at least one (1) km of FRLS cables.
5.0	Manufactured and supplied screened control cables up to 20 pairs.
6.0	Manufactured and supplied at least 1000 Km of Screened Control cables in one or more orders and at least 200 Km in one single order.
7.0	Minimum two (2) nos. purchase orders for screened control cables 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 bidders, 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 & capacity of the bidder 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 & all the other terms of the tender.
5. Attached annexure (Annexure-1) to be filled by the bidder on quality and general terms. Requisite Documents (Like Factory registration, R&D set up details etc.) asked in Annexure-1, shall also be attached as Annexure-F2.1 to Annexure-F2.17 along with the filled response in the Annexure-1

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
21/03/2025	21/03/25	21/03/25	22/3/25
ABHISHEK KUMAR VERMA (MANAGER)	KHUSHBU AGRAWAL (SR. MGR)	PRAVEEN DUTTA (AGM)	DEBASISA RATH (GM-ELECT)

ANNEXURE-1

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-1

SUB-VENDOR QUESTIONNAIRE

12.	***Manufacturing facilities*** ***(List of machines, special process facilities, material handling etc.)***	***Details attached at Annexure – F2.8***
13.	***Testing facilities*** ***(List of testing equipment)***	***Details attached at Annexure – F2.9***
14.	***If manufacturing process involves fabrication then-*** ***List of qualified Welders*** ***List of qualified NDT personnel with area of specialization***	***Applicable / Not applicable*** ***Details attached at Annexure – F2.10*** ***(if applicable)***
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses***	***Applicable / Not applicable*** ***Details attached at Annexure. –F2.11*** ***(if applicable)***
16.	***Supply reference list including recent supplies***	***Details attached at Annexure – F2.12*** ***(as per format given below)***

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 letter/certificates/End User Feedback***	***Attached at annexure - F2.13***
18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)*** ***Note:- Reports need not to be submitted***	***Applicable / Not applicable*** ***Details attached at Annexure – F2.14*** ***(if applicable)***
19.	***Statutory / mandatory certification for the proposed product***	***Applicable / Not applicable*** ***Details attached at Annexure – F2.15*** ***(if applicable)***
20.	***Copy of ISO 9001 certificate (if available)***	***Attached at Annexure – F2.16***
21.	***Product technical catalogues for proposed item (if available)***	***Details attached at Annexure – F2.17***

Name:		***Desig:***		***Sign:***		***Date:***	

Company's Seal/Stamp:-

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Annexure-B

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Cir. No. 05/DIV/CAB/05 31 January 2023

All Members of Cable Division & All SEBs, Utilities & Listed Purchasing organisations

Sub: Revision in Price Variation Formulae for Instrumentation cable

In current applicable PV formulae of IEEMA for Instrumentation Cable effective from July 2014 there is no variation available on polymers which is having significant portion of cost of the cable.

IEEMA Cable technical committee discussed the subject and felt that there is need of revision in the PV clause by inclusion of Polymer factors and pairs up to 61. IEEMA collected the weight factors for Copper, Steel and Polymer for pair and triad instrumentation as per BSEN standard 502887 and prepared draft formulae and circulated to all stakeholders vide Cir. No. 32/DIV/CAB/05 dated 10th November 2022.

Since there are no adverse comments received; we are making these operational from 1st January 2023.

Although, these PV clauses are made effective from 1st January 2023, practically they can be incorporated in all the current new tenders/contracts starting from 1st February 2023.

We request and recommend all the users & stakeholders including Utilities, PSUs etc. to incorporate these new PV formulae in all the new tenders/contracts henceforth.

For pending contracts, for the date of delivery on or after 1st February 2023, to arrive at the final price variation, we recommend using the following two stage method, which is a standard institutionalized methodology adopted by IEEMA for change over in all IEEMA PV clauses.

1. Calculate price variation 'P' from applicable prices/indices as per your base date / date of tendering up to January 2023 i.e. considering all prices/indices published in PV circular of January 2023; using applicable IEEMA PV clause of Instrumentation cable which is effective from July 2014.

2. Treat the above calculated 'P' as 'P_0' and calculate final price variation considering all prices / indices published in PV circular of January 2023 applicable for revised PV clause of Instrumentation cables effective from 1st January 2023 as base prices/indices up to the applicable prices/indices as per the date of delivery; applicable as per revised relevant PV clause of Instrumentation Cables effective from 1st January 2023.

Director

Encl.: as above

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Material Price Variation Clause for Instrumentation 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)**
P_0 Price quoted/confirmed **(in Rs/Km)**

COPPER

CuF Variation factor for copper

Cu Price of CC copper rods. This price is as applicable for the month, **ONE** month prior to the date of delivery.
Cu_0 Price of CC copper rods. This price is as applicable for the month, **ONE** month prior to the date of tendering.

STEEL

FeF Variation factor for steel

Fe Price of Steel Strips/steel wire. This price is as applicable for the month, **ONE** month prior to the date of delivery.
Fe_0 Price of Steel Strips/steel wire. This price is as applicable for the month, **ONE** month prior to the date of tendering.

POLYMER

POCF Variation factor for polymer

POC Price of PVC/polymer. This price is as applicable for the month, **ONE** month prior to the date of delivery.
POC_0 Price of PVC/polymer. This price is as applicable for the month, **ONE** month prior to the date of tendering.

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The above prices and indices are as published by IEEMA vide Circular reference IEEMA(PVC)/CABLE/--/-- for the month i.e. **ONE** month prior to the date of tendering.

The date of delivery is the date on which the instrumentation 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 are exclusive of GST amount and exclusive of any other central, state or local taxes etc.

(a) All Prices are applicable for the month.

(b) The details of prices are as under:

1. Price of CC copper rods (in Rs/MT) is ex-works price as quoted by the primary producer.
2. 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).
3. Price of Polymer Compound (in Rs/MT) is the ex-work price, as quoted by the manufacturer/s
4. Price of PVC (in Rs/MT) is the ex-work price, as quoted by the manufacturer/s

Price variation formula for Instrumentation Cables

$$P = Po + CuF\,(Cu - Cu_0) + FeF\,(Fe - Fe_0) + POCF\,(POC - POC_0)$$

Tables References for CuF, FeF and POCF:

For **Pair Instrumentation - Over all Screen Cables**

Cu POS	Copper factor
Fe POS	Steel factor
POC POS	Polymer factor

For **Pair Instrumentation - Individual and Over all Screen Cables**

Cu PIS	Copper factor
Fe PIS	Steel factor
POC PIS	Polymer factor

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For **Triad Instrumentation - Over all Screen Cables**

Cu TOS	Copper factor
Fe TOS	Steel factor
POC TOS	Polymer factor

For **Triad Instrumentation - Individual and Over all Screen Cables**

Cu TIS	Copper factor
Fe TIS	Steel factor
POC TIS	Polymer factor

Authorised Signatory

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Copper Factors for Instrumentation Cables - Cu POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.0142	0.0191	0.0237	0.0330	0.0513
2	0.0236	0.0336	0.0430	0.0615	0.0986
3	0.0330	0.0481	0.0619	0.0897	0.1452
4	0.0424	0.0626	0.0810	0.1182	0.1921
5	0.0518	0.0769	0.0999	0.1464	0.2390
6	0.0614	0.0914	0.1191	0.1748	0.2859
7	0.0708	0.1062	0.1383	0.2035	0.3335
8	0.0805	0.1207	0.1576	0.2320	0.3806
9	0.0899	0.1353	0.1765	0.2605	0.4275
10	0.0992	0.1498	0.1957	0.2890	0.4744
11	0.1089	0.1643	0.2149	0.3174	0.5215
12	0.1183	0.1786	0.2339	0.3456	0.5684
13	0.1277	0.1931	0.2532	0.3741	0.6153
14	0.1371	0.2076	0.2721	0.4026	0.6624
15	0.1462	0.2216	0.2906	0.4300	0.7075
16	0.1559	0.2361	0.3095	0.4583	0.7544
17	0.1653	0.2507	0.3288	0.4867	0.8013
18	0.1746	0.2652	0.3477	0.5152	0.8482
19	0.1845	0.2802	0.3677	0.5446	0.8973
20	0.1939	0.2947	0.3869	0.5731	0.9442
21	0.2033	0.3093	0.4059	0.6016	0.9911
22	0.2130	0.3238	0.4251	0.6300	1.0382
23	0.2224	0.3383	0.4440	0.6585	1.0851
24	0.2318	0.3526	0.4633	0.6867	1.1322
25	0.2412	0.3671	0.4822	0.7152	1.1791
26	0.2508	0.3816	0.5015	0.7437	1.2260
27	0.2597	0.3954	0.5194	0.7704	1.2699
28	0.2691	0.4097	0.5384	0.7986	1.3168
29	0.2785	0.4242	0.5573	0.8271	1.3636
30	0.2879	0.4387	0.5766	0.8553	1.4105

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Copper Factors for Instrumentation Cables - Cu POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.2980	0.4542	0.5970	0.8858	1.4609
32	0.3074	0.4687	0.6160	0.9142	1.5080
33	0.3171	0.4832	0.6352	0.9427	1.5549
34	0.3265	0.4978	0.6542	0.9711	1.6018
35	0.3358	0.5120	0.6734	0.9993	1.6489
36	0.3453	0.5266	0.6924	1.0278	1.6958
37	0.3549	0.5411	0.7116	1.0563	1.7427
38	0.3643	0.5556	0.7305	1.0847	1.7898
39	0.3729	0.5689	0.7480	1.1105	1.8325
40	0.3823	0.5834	0.7670	1.1389	1.8791
41	0.3917	0.5977	0.7862	1.1671	1.9260
42	0.4011	0.6122	0.8052	1.1956	1.9729
43	0.4115	0.6282	0.8262	1.2268	2.0247
44	0.4211	0.6427	0.8454	1.2553	2.0716
45	0.4305	0.6572	0.8643	1.2837	2.1185
46	0.4399	0.6718	0.8835	1.3119	2.1656
47	0.4493	0.6861	0.9025	1.3404	2.2125
48	0.4590	0.7006	0.9217	1.3689	2.2594
49	0.4684	0.7151	0.9407	1.3973	2.3065
50	0.4778	0.7296	0.9599	1.4258	2.3534
51	0.4874	0.7441	0.9791	1.4543	2.4005
52	0.4968	0.7587	0.9981	1.4825	2.4474
53	0.5062	0.7732	1.0173	1.5110	2.4943
54	0.5156	0.7877	1.0363	1.5394	2.5414
55	0.5240	0.8003	1.0530	1.5642	2.5821
56	0.5334	0.8147	1.0720	1.5926	2.6289
57	0.5428	0.8293	1.0912	1.6208	2.6758
58	0.5522	0.8438	1.1102	1.6493	2.7227
59	0.5630	0.8601	1.1319	1.6815	2.7763
60	0.5724	0.8746	1.1511	1.7100	2.8232
61	0.5819	0.8891	1.1700	1.7384	2.8701

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Steel Factors for Instrumentation Cables - Fe POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1233	0.1319	0.1375	0.1487	0.1739
2	0.1832	0.1944	0.2031	0.2148	0.2477
3	0.1866	0.1993	0.2102	0.2299	0.2733
4	0.2036	0.2188	0.2314	0.2538	0.3347
5	0.2215	0.2411	0.2538	0.2791	0.4395
6	0.2373	0.2583	0.2722	0.3306	0.4795
7	0.2373	0.2583	0.2722	0.3306	0.4795
8	0.2681	0.3210	0.3390	0.4482	0.5427
9	0.3184	0.3434	0.4388	0.4881	0.5884
10	0.3336	0.4333	0.4594	0.5114	0.6118
11	0.3376	0.4398	0.4659	0.5179	0.6183
12	0.3490	0.4511	0.4797	0.5291	0.6894
13	0.4239	0.4678	0.4993	0.5542	0.7153
14	0.4362	0.4678	0.4993	0.5542	1.3096
15	0.4503	0.4968	0.5283	0.5803	1.4666
16	0.4568	0.4968	0.5348	0.5870	1.5058
17	0.4790	0.5164	0.5570	0.6176	0.9134
18	0.4790	0.5229	0.5570	0.6176	0.9134
19	0.4855	0.5229	0.5570	0.6176	0.9134
20	0.5181	0.5609	0.6019	0.7147	0.9760
21	0.5181	0.5609	0.6019	0.7147	0.9855
22	0.5432	0.5889	0.6813	0.8479	1.0403
23	0.5432	0.5889	0.6813	0.8479	1.0403
24	0.5657	0.6608	0.7093	0.8842	1.1638
25	0.5657	0.6608	0.7093	0.8842	1.1638
26	0.5722	0.6740	0.7223	0.9037	1.1833
27	0.5806	0.6871	0.7354	0.9268	1.1996
28	0.5976	0.7075	0.7584	0.9542	1.2487
29	0.5976	0.7075	0.7584	0.9542	1.2487
30	0.5976	0.7075	0.7584	0.9542	1.2487

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Steel Factors for Instrumentation Cables - Fe POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.6816	0.7409	0.8977	0.9996	1.4648
32	0.6816	0.7409	0.8977	0.9996	1.4648
33	0.6816	0.7409	0.8977	0.9996	1.4648
34	0.7020	0.8710	0.9298	1.0270	1.5216
35	0.7020	0.8710	0.9298	1.0270	1.5216
36	0.7085	0.8775	0.9363	1.0335	1.5281
37	0.7085	0.8775	0.9363	1.0335	1.5281
38	0.7365	0.9006	0.9637	1.1527	1.5857
39	0.7430	0.9071	0.9702	1.1592	1.5924
40	0.7430	0.9071	0.9702	1.1592	1.5924
41	0.8667	0.9482	1.0023	1.2101	1.7887
42	0.8667	0.9547	1.0091	1.2101	1.7887
43	0.8732	0.9547	1.0091	1.2101	1.7952
44	0.9006	0.9822	1.0454	1.2540	1.8537
45	0.9006	0.9822	1.0519	1.2540	1.8537
46	0.9006	0.9887	1.0519	1.2540	1.8602
47	0.9071	0.9887	1.0519	1.2605	1.8602
48	0.9166	1.0028	1.1527	1.3661	1.8922
49	0.9392	1.0208	1.1756	1.4664	1.9433
50	0.9392	1.0275	1.1756	1.4729	1.9433
51	0.9457	1.0322	1.1830	1.4795	2.0691
52	0.9457	1.0322	1.1895	1.4795	2.0691
53	0.9457	1.0322	1.1895	1.4795	2.0756
54	0.9594	1.1369	1.2106	1.5222	2.2459
55	0.9731	1.1485	1.2222	1.5222	2.2794
56	0.9796	1.1485	1.2287	1.5222	2.2859
57	0.9796	1.1485	1.2287	1.5290	2.2859
58	0.9981	1.1877	1.2614	1.5791	2.3308
59	0.9981	1.1877	1.2614	1.5791	2.3376
60	1.0048	1.1877	1.2679	1.5856	2.3376
61	1.0048	1.1877	1.2679	1.5856	2.3376

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Polymer Factors for Instrumentation Cables - POC POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1073	0.1190	0.1233	0.1364	0.1643
2	0.1769	0.1953	0.2106	0.2312	0.2889
3	0.1793	0.1984	0.2032	0.2378	0.2973
4	0.2042	0.2255	0.2443	0.2752	0.3505
5	0.2341	0.2627	0.2861	0.3158	0.4240
6	0.2653	0.2941	0.3174	0.3753	0.4998
7	0.2595	0.2865	0.3079	0.3627	0.4801
8	0.3001	0.3380	0.3611	0.4188	0.5607
9	0.3312	0.3665	0.4117	0.4739	0.6256
10	0.3663	0.4074	0.4531	0.5212	0.6909
11	0.3686	0.4097	0.4551	0.5227	0.6923
12	0.3781	0.4336	0.4657	0.5307	0.7345
13	0.4030	0.4598	0.4929	0.5811	0.7763
14	0.4127	0.4717	0.5069	0.5979	0.8025
15	0.4571	0.5059	0.5601	0.6380	0.8792
16	0.4701	0.5207	0.5762	0.6575	0.9070
17	0.4964	0.5643	0.6033	0.7089	0.9729
18	0.5095	0.5792	0.6203	0.7298	1.0039
19	0.5090	0.5777	0.6180	0.7257	0.9972
20	0.5469	0.6235	0.6856	0.7822	1.0884
21	0.5554	0.6330	0.6959	0.7939	1.1049
22	0.5887	0.6679	0.7421	0.8704	1.2232
23	0.5966	0.6772	0.7525	0.8823	1.2413
24	0.6391	0.7092	0.7728	0.9293	1.3121
25	0.6473	0.7184	0.7831	0.9412	1.3301
26	0.6591	0.7320	0.7981	0.9582	1.3528
27	0.6624	0.7597	0.8297	0.9897	1.3569
28	0.6889	0.7840	0.8602	1.0276	1.4266
29	0.6986	0.7956	0.8730	1.0428	1.4493
30	0.7068	0.8049	0.8831	1.0548	1.4676

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Polymer Factors for Instrumentation Cables - POC POS					
Pair Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.7560	0.8780	0.9578	1.1024	1.5753
32	0.7697	0.8938	0.9758	1.1240	1.6084
33	0.7779	0.9032	0.9861	1.1361	1.6264
34	0.7987	0.9317	1.0110	1.1942	1.7045
35	0.8091	0.9436	1.0243	1.2102	1.7280
36	0.8262	0.9638	1.0472	1.2375	1.7693
37	0.8229	0.9590	1.0410	1.2289	1.7551
38	0.8727	0.9860	1.1023	1.2989	1.8217
39	0.8829	0.9978	1.1157	1.3145	1.8450
40	0.8940	1.0105	1.1294	1.3312	1.8695
41	0.9316	1.0705	1.1559	1.3625	1.9523
42	0.9508	1.0932	1.1812	1.3931	1.9981
43	0.9612	1.1051	1.1946	1.4088	2.0213
44	0.9826	1.1299	1.2540	1.4754	2.0903
45	0.9928	1.1417	1.2670	1.4911	2.1134
46	0.9940	1.1426	1.2678	1.4908	2.1130
47	1.0045	1.1545	1.2808	1.5065	2.1360
48	1.0393	1.1897	1.3007	1.5488	2.1913
49	1.0763	1.2267	1.3312	1.5929	2.2877
50	1.0865	1.2388	1.3443	1.6085	2.3107
51	1.0948	1.2487	1.3897	1.6248	2.3319
52	1.1058	1.2610	1.4037	1.6412	2.3565
53	1.1160	1.2729	1.4167	1.6566	2.3795
54	1.1474	1.3198	1.4514	1.6900	2.4387
55	1.1556	1.3256	1.4625	1.7421	2.4952
56	1.1713	1.3441	1.4836	1.7674	2.5333
57	1.1815	1.3560	1.4967	1.7829	2.5563
58	1.2046	1.4175	1.5269	1.8573	2.6381
59	1.2150	1.4294	1.5400	1.8727	2.6611
60	1.2290	1.4458	1.5585	1.8950	2.6946
61	1.2281	1.4440	1.5557	1.8907	2.6872

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Copper Factors for Instrumentation Cables - Cu PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.0170	0.0216	0.0267	0.0363	0.0545
2	0.0330	0.0430	0.0524	0.0709	0.1080
3	0.0472	0.0621	0.0759	0.1039	0.1594
4	0.0605	0.0814	0.0997	0.1369	0.2109
5	0.0745	0.1005	0.1235	0.1699	0.2625
6	0.0886	0.1196	0.1473	0.2030	0.3140
7	0.1027	0.1390	0.1713	0.2365	0.3665
8	0.1167	0.1583	0.1951	0.2696	0.4181
9	0.1308	0.1773	0.2188	0.3026	0.4696
10	0.1446	0.1967	0.2426	0.3359	0.5213
11	0.1586	0.2158	0.2665	0.3689	0.5730
12	0.1727	0.2349	0.2902	0.4019	0.6247
13	0.1867	0.2542	0.3140	0.4352	0.6764
14	0.2005	0.2733	0.3378	0.4683	0.7281
15	0.2143	0.2921	0.3610	0.5002	0.7780
16	0.2284	0.3112	0.3846	0.5333	0.8295
17	0.2422	0.3303	0.4084	0.5664	0.8812
18	0.2562	0.3496	0.4322	0.5996	0.9326
19	0.2705	0.3692	0.4567	0.6339	0.9863
20	0.2846	0.3886	0.4808	0.6670	1.0381
21	0.2986	0.4076	0.5045	0.7000	1.0897
22	0.3127	0.4270	0.5283	0.7332	1.1414
23	0.3265	0.4461	0.5521	0.7663	1.1931
24	0.3405	0.4652	0.5758	0.7993	1.2448
25	0.3546	0.4845	0.5996	0.8326	1.2963
26	0.3686	0.5036	0.6235	0.8656	1.3480
27	0.3819	0.5219	0.6460	0.8969	1.3966
28	0.3960	0.5410	0.6697	0.9299	1.4481
29	0.4098	0.5603	0.6935	0.9630	1.4998
30	0.4238	0.5794	0.7173	0.9960	1.5513

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Copper Factors for Instrumentation Cables - Cu PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.4387	0.5995	0.7424	1.0313	1.6064
32	0.4525	0.6189	0.7661	1.0644	1.6582
33	0.4665	0.6380	0.7899	1.0974	1.7096
34	0.4805	0.6573	0.8137	1.1306	1.7613
35	0.4946	0.6764	0.8375	1.1637	1.8130
36	0.5084	0.6955	0.8613	1.1967	1.8647
37	0.5225	0.7148	0.8850	1.2300	1.9164
38	0.5365	0.7339	0.9088	1.2630	1.9681
39	0.5496	0.7518	0.9309	1.2936	2.0153
40	0.5636	0.7710	0.9546	1.3266	2.0667
41	0.5777	0.7901	0.9784	1.3596	2.1184
42	0.5915	0.8093	1.0022	1.3927	2.1699
43	0.6065	0.8298	1.0280	1.4284	2.2263
44	0.6206	0.8492	1.0518	1.4617	2.2780
45	0.6344	0.8683	1.0756	1.4947	2.3298
46	0.6484	0.8876	1.0993	1.5277	2.3814
47	0.6625	0.9067	1.1231	1.5610	2.4331
48	0.6766	0.9258	1.1469	1.5941	2.4846
49	0.6905	0.9451	1.1707	1.6271	2.5362
50	0.7044	0.9642	1.1945	1.6604	2.5880
51	0.7185	0.9836	1.2183	1.6935	2.6397
52	0.7325	1.0026	1.2420	1.7265	2.6914
53	0.7465	1.0217	1.2658	1.7597	2.7430
54	0.7603	1.0410	1.2896	1.7928	2.7948
55	0.7731	1.0584	1.3109	1.8223	2.8402
56	0.7872	1.0775	1.3347	1.8553	2.8917
57	0.8013	1.0966	1.3585	1.8884	2.9434
58	0.8151	1.1159	1.3823	1.9214	2.9948
59	0.8303	1.1370	1.4086	1.9584	3.0530
60	0.8444	1.1561	1.4326	1.9915	3.1047
61	0.8585	1.1754	1.4564	2.0245	3.1564

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Steel Factors for Instrumentation Cables - Fe PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1326	0.1381	0.1465	0.1575	0.1824
2	0.1958	0.2059	0.2146	0.2305	0.2619
3	0.2020	0.2159	0.2299	0.2494	0.3248
4	0.2201	0.2385	0.2494	0.2747	0.4298
5	0.2424	0.2594	0.2748	0.3332	0.4763
6	0.2597	0.3083	0.3279	0.4356	0.5097
7	0.2597	0.3083	0.3279	0.4356	0.5097
8	0.3224	0.4083	0.4450	0.4849	0.5823
9	0.4068	0.4497	0.4784	0.5278	0.6805
10	0.4299	0.4643	0.4904	0.5395	0.7919
11	0.4450	0.4795	0.5056	0.5575	0.8173
12	0.4562	0.4907	0.5194	0.5742	0.8447
13	0.4730	0.5100	0.5416	0.6453	0.8768
14	0.4730	0.5100	0.5481	0.6453	0.8833
15	0.5020	0.5390	0.5732	0.6826	0.9351
16	0.5020	0.5455	0.5797	0.6891	0.9416
17	0.5241	0.5735	0.6529	0.8202	0.9874
18	0.5306	0.5735	0.6529	0.8202	0.9874
19	0.5306	0.5735	0.6597	0.8267	0.9939
20	0.5546	0.6643	0.7076	0.8826	1.1405
21	0.5661	0.6690	0.7124	0.8920	1.1479
22	0.6430	0.6996	0.8427	0.9288	1.3591
23	0.6430	0.6996	0.8427	0.9288	1.3591
24	0.6660	0.8207	0.8790	0.9700	1.4233
25	0.6660	0.8207	0.8790	0.9700	1.4233
26	0.6792	0.8337	0.8920	0.9830	1.4428
27	0.6923	0.8521	0.9057	1.0014	1.4642
28	0.8070	0.8795	0.9378	1.1149	1.5144
29	0.8070	0.8795	0.9378	1.1149	1.5144
30	0.8070	0.8795	0.9378	1.1149	1.5144

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Steel Factors for Instrumentation Cables - Fe PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.8521	0.9199	0.9782	1.1673	1.7114
32	0.8521	0.9199	0.9782	1.1673	1.7114
33	0.8521	0.9199	0.9782	1.1673	1.7114
34	0.8795	0.9520	1.0895	1.3672	1.7766
35	0.8795	0.9520	1.0895	1.3737	1.7831
36	0.8795	0.9585	1.0962	1.3737	1.7831
37	0.8860	0.9585	1.0962	1.3737	1.7896
38	0.9134	1.0714	1.1380	1.4230	1.9677
39	0.9134	1.0779	1.1445	1.4230	1.9742
40	0.9199	1.0779	1.1445	1.4295	1.9742
41	0.9520	1.1153	1.1836	1.4863	2.1971
42	0.9520	1.1221	1.1836	1.4863	2.1971
43	0.9520	1.1221	1.1836	1.4928	2.2036
44	1.0719	1.1548	1.3877	1.5430	2.2705
45	1.0719	1.1548	1.3877	1.5495	2.2770
46	1.0719	1.1613	1.3877	1.5495	2.2770
47	1.0784	1.1613	1.3877	1.5495	2.2770
48	1.0826	1.1776	1.4156	1.6981	2.3170
49	1.1111	1.3598	1.4370	1.7237	2.3735
50	1.1111	1.3598	1.4370	1.7237	2.3802
51	1.1221	1.3672	1.4583	1.7557	2.3906
52	1.1221	1.3672	1.4583	1.7557	2.3971
53	1.1221	1.3737	1.4583	1.7557	2.3971
54	1.1432	1.3951	1.4928	1.7878	2.4421
55	1.1613	1.4099	1.5076	1.8133	2.4820
56	1.1613	1.4164	1.5076	1.8133	2.4820
57	1.1613	1.4164	1.5076	1.8198	2.4885
58	1.1897	1.4592	1.6774	2.1030	2.7680
59	1.1962	1.4592	1.6774	2.1030	2.7680
60	1.1962	1.4657	1.6774	2.1095	2.7745
61	1.1962	1.4657	1.6841	2.1095	2.7745

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Polymer Factors for Instrumentation Cables - POC PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1160	0.1170	0.1337	0.1346	0.1726
2	0.1950	0.2126	0.2285	0.2551	0.3100
3	0.1994	0.2191	0.2285	0.2644	0.3325
4	0.2289	0.2539	0.2723	0.3023	0.3985
5	0.2646	0.2885	0.3127	0.3540	0.4774
6	0.2929	0.3300	0.3576	0.4166	0.5515
7	0.2871	0.3226	0.3488	0.4046	0.5321
8	0.3429	0.3764	0.4043	0.4615	0.6250
9	0.3738	0.4275	0.4532	0.5160	0.7060
10	0.4110	0.4502	0.4997	0.5736	0.7657
11	0.4160	0.4702	0.5016	0.5718	0.7794
12	0.4433	0.4977	0.5299	0.6039	0.8152
13	0.4655	0.5268	0.5573	0.6607	0.8838
14	0.4767	0.5404	0.5731	0.6797	0.9122
15	0.5117	0.5772	0.6371	0.7281	0.9941
16	0.5266	0.5934	0.6557	0.7490	1.0244
17	0.5703	0.6232	0.6879	0.8042	1.0892
18	0.5846	0.6400	0.7071	0.8270	1.1223
19	0.5847	0.6397	0.7055	0.8238	1.1161
20	0.6153	0.6933	0.7631	0.8880	1.2007
21	0.6386	0.7250	0.7969	0.9252	1.2473
22	0.6811	0.7649	0.8360	0.9930	1.3768
23	0.6903	0.7753	0.8476	1.0062	1.3963
24	0.7362	0.8267	0.9054	1.0685	1.4608
25	0.7453	0.8371	0.9168	1.0817	1.4803
26	0.7606	0.8539	0.9355	1.1026	1.5077
27	0.7717	0.8870	0.9672	1.1344	1.5577
28	0.8026	0.9217	0.9932	1.1768	1.6222
29	0.8132	0.9343	1.0073	1.1934	1.6463
30	0.8224	0.9447	1.0186	1.2066	1.6659

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Polymer Factors for Instrumentation Cables - POC PIS					
Pair Instrumentation Individual and Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.8880	0.9893	1.1008	1.2919	1.7863
32	0.9027	1.0067	1.1205	1.3155	1.8214
33	0.9119	1.0171	1.1318	1.3286	1.8409
34	0.9402	1.0727	1.1664	1.3727	1.9228
35	0.9521	1.0861	1.1815	1.3903	1.9486
36	0.9707	1.1082	1.2061	1.4202	1.9929
37	0.9677	1.1041	1.2008	1.4122	1.9796
38	0.9956	1.1427	1.2649	1.4803	2.0606
39	1.0073	1.1561	1.2800	1.4978	2.0860
40	1.0194	1.1703	1.2955	1.5162	2.1129
41	1.0780	1.2328	1.3608	1.5876	2.2506
42	1.0983	1.2567	1.3876	1.6200	2.2985
43	1.1100	1.2701	1.4024	1.6374	2.3240
44	1.1484	1.3302	1.4412	1.7017	2.4034
45	1.1600	1.3436	1.4560	1.7192	2.4289
46	1.1625	1.3459	1.4582	1.7209	2.4308
47	1.1741	1.3593	1.4731	1.7383	2.4561
48	1.2063	1.3716	1.5157	1.7940	2.5204
49	1.2427	1.4171	1.5582	1.8357	2.6182
50	1.2544	1.4305	1.5731	1.8529	2.6434
51	1.2683	1.4765	1.5845	1.9048	2.6621
52	1.2806	1.4904	1.6002	1.9233	2.6891
53	1.2920	1.5038	1.6148	1.9404	2.7143
54	1.3260	1.5068	1.6580	1.9807	2.7652
55	1.3342	1.5463	1.7031	1.9972	2.8202
56	1.3514	1.5668	1.7258	2.0247	2.8611
57	1.3630	1.5799	1.7404	2.0418	2.8864
58	1.4284	1.6246	1.8115	2.1284	3.0240
59	1.4398	1.6377	1.8261	2.1458	3.0492
60	1.4556	1.6557	1.8465	2.1704	3.0854
61	1.4552	1.6549	1.8446	2.1669	3.0793

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Copper Factors for Instrumentation Cables - Cu TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.0187	0.0263	0.0332	0.0472	0.0748
2	0.0330	0.0481	0.0619	0.0900	0.1457
3	0.0472	0.0699	0.0907	0.1326	0.2160
4	0.0614	0.0917	0.1194	0.1751	0.2866
5	0.0757	0.1135	0.1481	0.2178	0.3569
6	0.0896	0.1350	0.1763	0.2600	0.4265
7	0.1038	0.1565	0.2047	0.3024	0.4968
8	0.1181	0.1783	0.2334	0.3449	0.5671
9	0.1323	0.2001	0.2621	0.3876	0.6374
10	0.1462	0.2216	0.2906	0.4300	0.7075
11	0.1604	0.2434	0.3193	0.4725	0.7779
12	0.1746	0.2652	0.3477	0.5152	0.8482
13	0.1891	0.2875	0.3772	0.5589	0.9208
14	0.2033	0.3093	0.4059	0.6016	0.9911
15	0.2176	0.3310	0.4346	0.6443	1.0616
16	0.2318	0.3526	0.4633	0.6867	1.1322
17	0.2455	0.3736	0.4907	0.7277	1.1998
18	0.2597	0.3954	0.5194	0.7704	1.2699
19	0.2736	0.4169	0.5479	0.8128	1.3402
20	0.2879	0.4387	0.5766	0.8553	1.4105
21	0.3021	0.4605	0.6050	0.8979	1.4808
22	0.3163	0.4820	0.6337	0.9404	1.5512
23	0.3303	0.5038	0.6622	0.9829	1.6215
24	0.3453	0.5266	0.6924	1.0278	1.6958
25	0.3595	0.5484	0.7211	1.0705	1.7664
26	0.3737	0.5701	0.7498	1.1132	1.8367
27	0.3879	0.5919	0.7785	1.1557	1.9073
28	0.4011	0.6122	0.8052	1.1956	1.9729
29	0.4153	0.6340	0.8339	1.2380	2.0432
30	0.4295	0.6557	0.8623	1.2805	2.1135

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Copper Factors for Instrumentation Cables - Cu TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.4438	0.6773	0.8910	1.3232	2.1838
32	0.4577	0.6991	0.9195	1.3656	2.2541
33	0.4720	0.7209	0.9482	1.4081	2.3244
34	0.4862	0.7424	0.9766	1.4508	2.3948
35	0.5014	0.7659	1.0076	1.4967	2.4709
36	0.5156	0.7877	1.0363	1.5394	2.5414
37	0.5298	0.8095	1.0650	1.5821	2.6117
38	0.5440	0.8313	1.0937	1.6248	2.6823
39	0.5570	0.8510	1.1196	1.6632	2.7461
40	0.5712	0.8726	1.1483	1.7060	2.8165
41	0.5852	0.8943	1.1768	1.7484	2.8868
42	0.5994	0.9161	1.2055	1.7909	2.9571
43	0.6136	0.9377	1.2339	1.8336	3.0274
44	0.6278	0.9594	1.2626	1.8760	3.0975
45	0.6420	0.9810	1.2911	1.9185	3.1678
46	0.6577	1.0050	1.3228	1.9657	3.2459
47	0.6717	1.0268	1.3515	2.0083	3.3165
48	0.6859	1.0486	1.3802	2.0511	3.3868
49	0.7001	1.0704	1.4089	2.0938	3.4574
50	0.7144	1.0922	1.4376	2.1362	3.5279
51	0.7286	1.1139	1.4663	2.1789	3.5983
52	0.7411	1.1330	1.4913	2.2163	3.6601
53	0.7553	1.1547	1.5199	2.2588	3.7302
54	0.7695	1.1763	1.5484	2.3013	3.8005
55	0.7835	1.1980	1.5771	2.3439	3.8708
56	0.7976	1.2199	1.6058	2.3864	3.9411
57	0.8119	1.2414	1.6342	2.4289	4.0115
58	0.8261	1.2631	1.6630	2.4715	4.0818
59	0.8421	1.2879	1.6954	2.5200	4.1621
60	0.8563	1.3097	1.7241	2.5627	4.2324
61	0.8705	1.3315	1.7528	2.6051	4.3030

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Steel Factors for Instrumentation Cables - Fe TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1297	0.1368	0.1449	0.1548	0.1812
2	0.1977	0.2144	0.2271	0.2478	0.3074
3	0.2103	0.2286	0.2410	0.2658	0.3600
4	0.2314	0.2481	0.2632	0.3018	0.4608
5	0.2508	0.2718	0.3018	0.3615	0.5070
6	0.2733	0.3394	0.3587	0.4618	0.5563
7	0.2733	0.3394	0.3587	0.4618	0.5563
8	0.3480	0.4473	0.4702	0.5221	0.6339
9	0.4098	0.4877	0.5138	0.5777	0.7457
10	0.4611	0.5047	0.5334	0.5973	0.8776
11	0.4611	0.5047	0.5334	0.5973	0.8776
12	0.4788	0.5251	0.5540	0.6140	0.9115
13	0.5047	0.5511	0.5854	0.7015	0.9588
14	0.5047	0.5511	0.5854	0.7015	0.9588
15	0.5308	0.5799	0.6170	0.7387	1.0177
16	0.5308	0.5799	0.6170	0.7387	1.0177
17	0.5624	0.6144	0.7092	0.8290	1.0809
18	0.5624	0.6144	0.7092	0.8290	1.0809
19	0.5624	0.6144	0.7092	0.8290	1.0809
20	0.5911	0.6982	0.7444	0.9319	1.2189
21	0.5911	0.7029	0.7491	0.9366	1.2336
22	0.6318	0.7418	0.7925	0.9907	1.3783
23	0.6318	0.7418	0.7925	0.9907	1.3783
24	0.7168	0.7787	0.9414	1.0428	1.5368
25	0.7168	0.7787	0.9414	1.0428	1.5368
26	0.7168	0.7787	0.9414	1.0428	1.5368
27	0.7298	0.9077	0.9615	1.0677	1.5788
28	0.7568	0.9418	1.0001	1.1885	1.6428
29	0.7568	0.9418	1.0001	1.1885	1.6428
30	0.7568	0.9418	1.0001	1.1885	1.6428

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Steel Factors for Instrumentation Cables - Fe TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.8331	0.9757	1.0432	1.2432	1.8271
32	0.8331	0.9757	1.0432	1.2432	1.8271
33	0.8331	0.9757	1.0432	1.2432	1.8271
34	0.9309	1.0144	1.0876	1.2942	1.9165
35	0.9309	1.0144	1.0876	1.2942	1.9165
36	0.9309	1.0144	1.0876	1.2942	1.9165
37	0.9309	1.0144	1.0876	1.2942	1.9165
38	0.9710	1.0617	1.2161	1.5235	1.9944
39	0.9710	1.0617	1.2161	1.5235	1.9944
40	0.9710	1.0617	1.2161	1.5235	1.9944
41	1.0096	1.1889	1.2716	1.5793	2.3468
42	1.0096	1.1889	1.2716	1.5793	2.3468
43	1.0096	1.1889	1.2716	1.5793	2.3468
44	1.0527	1.2372	1.3171	1.6498	2.4498
45	1.0527	1.2372	1.3171	1.6498	2.4498
46	1.0527	1.2372	1.3171	1.6498	2.4498
47	1.0527	1.2372	1.3171	1.6498	2.4498
48	1.0729	1.2600	1.3382	1.6777	2.4895
49	1.1737	1.2811	1.5449	1.8497	2.5629
50	1.1737	1.2811	1.5449	1.8497	2.5629
51	1.1784	1.2885	1.5514	1.8638	2.5629
52	1.1784	1.2885	1.5514	1.8638	2.5629
53	1.1784	1.2947	1.5514	1.8638	2.5629
54	1.2053	1.3158	1.5802	1.8959	2.6141
55	1.2174	1.5032	1.6007	1.9212	2.6540
56	1.2174	1.5032	1.6007	1.9212	2.6540
57	1.2174	1.5032	1.6007	1.9212	2.6540
58	1.2631	1.5457	1.6572	1.9852	2.9483
59	1.2631	1.5457	1.6572	1.9852	2.9483
60	1.2631	1.5457	1.6572	1.9852	2.9483
61	1.2631	1.5457	1.6572	1.9852	2.9483

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Polymer Factors for Instrumentation Cables- POC TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1229	0.1291	0.1414	0.1489	0.1884
2	0.2057	0.2293	0.2513	0.2848	0.3773
3	0.2162	0.2401	0.2603	0.2928	0.3895
4	0.2476	0.2776	0.3028	0.3474	0.4491
5	0.3007	0.3324	0.3591	0.4109	0.5423
6	0.3409	0.3830	0.4160	0.4857	0.6385
7	0.3359	0.3761	0.4075	0.4736	0.6191
8	0.3928	0.4376	0.4710	0.5411	0.7471
9	0.4365	0.5025	0.5432	0.6170	0.7832
10	0.4650	0.5354	0.5725	0.6541	0.8422
11	0.4646	0.5341	0.5707	0.6508	0.8370
12	0.4979	0.5485	0.6093	0.6925	0.9559
13	0.5451	0.6171	0.6637	0.7627	1.0687
14	0.5596	0.6338	0.6824	0.7846	1.1018
15	0.5993	0.6833	0.7553	0.8638	1.2061
16	0.6116	0.6972	0.7706	0.8817	1.2332
17	0.6501	0.7380	0.8235	0.9587	1.3575
18	0.6661	0.7565	0.8442	0.9837	1.3951
19	0.6652	0.7548	0.8416	0.9788	1.3870
20	0.7224	0.8058	0.8816	1.0300	1.4613
21	0.7156	0.8209	0.8967	1.0453	1.4777
22	0.7648	0.8706	0.9617	1.1454	1.6106
23	0.7760	0.8835	0.9759	1.1621	1.6359
24	0.8429	0.9776	1.0735	1.2715	1.8169
25	0.8552	0.9915	1.0890	1.2895	1.8439
26	0.8555	0.9913	1.0882	1.2875	1.8410
27	0.8921	1.0375	1.1338	1.3352	1.9078
28	0.9283	1.0803	1.1820	1.3945	2.0054
29	0.9428	1.0970	1.2004	1.4164	2.0384
30	0.9549	1.1110	1.2159	1.4344	2.0654

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Polymer Factors for Instrumentation Cables- POC TOS					
Triad Instrumentation Over all Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	1.0261	1.1842	1.2887	1.5200	2.1807
32	1.0166	1.1742	1.2775	1.5077	2.1664
33	1.0279	1.1871	1.2918	1.5244	2.1916
34	1.0685	1.2293	1.3712	1.6104	2.2888
35	1.1108	1.2776	1.4252	1.6731	2.3798
36	1.1310	1.3013	1.4517	1.7053	2.4287
37	1.1260	1.2944	1.4432	1.6932	2.4094
38	1.2035	1.3712	1.4990	1.7877	2.5696
39	1.2155	1.3852	1.5145	1.8057	2.5969
40	1.2282	1.3997	1.5304	1.8243	2.6253
41	1.2651	1.4536	1.6138	1.9154	2.7553
42	1.2883	1.4811	1.6445	1.9525	2.8112
43	1.2624	1.4515	1.6112	1.9140	2.7575
44	1.3297	1.5317	1.6899	2.0110	2.8738
45	1.3410	1.5446	1.7042	2.0277	2.8988
46	1.3813	1.5900	1.7544	2.0850	2.9804
47	1.3935	1.6039	1.7699	2.1030	3.0074
48	1.4100	1.6502	1.8248	2.1518	3.1155
49	1.4594	1.6887	1.8761	2.2154	3.1799
50	1.4717	1.7027	1.8914	2.2333	3.2069
51	1.4823	1.7156	1.9048	2.2488	3.2389
52	1.4955	1.7306	1.9213	2.2681	3.2683
53	1.5137	1.7528	1.9463	2.2984	3.3133
54	1.5536	1.8012	1.9945	2.3870	3.4241
55	1.5932	1.8237	2.0406	2.4005	3.4925
56	1.5625	1.7894	2.0022	2.3567	3.4329
57	1.5737	1.8024	2.0164	2.3735	3.4581
58	1.6163	1.8777	2.0706	2.4604	3.5647
59	1.6801	1.9501	2.1518	2.5549	3.7008
60	1.6959	1.9686	2.1725	2.5798	3.7387
61	1.7055	1.9792	2.1846	2.5930	3.7578

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Copper Factors for Instrumentation Cables - Cu TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.0215	0.0289	0.0364	0.0509	0.0782
2	0.0424	0.0575	0.0713	0.0993	0.1551
3	0.0614	0.0841	0.1048	0.1466	0.2302
4	0.0802	0.1104	0.1381	0.1939	0.3054
5	0.0992	0.1368	0.1714	0.2414	0.3805
6	0.1177	0.1631	0.2044	0.2882	0.4546
7	0.1366	0.1895	0.2377	0.3352	0.5295
8	0.1556	0.2158	0.2709	0.3824	0.6047
9	0.1743	0.2422	0.3042	0.4297	0.6795
10	0.1932	0.2686	0.3375	0.4769	0.7544
11	0.2122	0.2949	0.3708	0.5242	0.8296
12	0.2309	0.3215	0.4040	0.5715	0.9045
13	0.2502	0.3483	0.4383	0.6200	0.9816
14	0.2691	0.3750	0.4716	0.6673	1.0568
15	0.2880	0.4013	0.5048	0.7145	1.1319
16	0.3068	0.4276	0.5383	0.7618	1.2073
17	0.3251	0.4532	0.5703	0.8076	1.2794
18	0.3442	0.4798	0.6039	0.8548	1.3543
19	0.3629	0.5062	0.6371	0.9018	1.4295
20	0.3817	0.5326	0.6704	0.9491	1.5044
21	0.4005	0.5588	0.7036	0.9963	1.5795
22	0.4195	0.5852	0.7369	1.0436	1.6544
23	0.4383	0.6116	0.7702	1.0909	1.7293
24	0.4578	0.6392	0.8050	1.1404	1.8084
25	0.4769	0.6658	0.8385	1.1877	1.8835
26	0.4957	0.6921	0.8718	1.2352	1.9587
27	0.5147	0.7184	0.9050	1.2824	2.0338
28	0.5325	0.7436	0.9365	1.3269	2.1042
29	0.5515	0.7699	0.9698	1.3742	2.1794
30	0.5703	0.7965	1.0031	1.4212	2.2542

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Copper Factors for Instrumentation Cables - Cu TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.5891	0.8228	1.0363	1.4685	2.3291
32	0.6079	0.8492	1.0696	1.5158	2.4043
33	0.6269	0.8756	1.1029	1.5630	2.4791
34	0.6457	0.9019	1.1361	1.6103	2.5543
35	0.6657	0.9300	1.1719	1.6611	2.6352
36	0.6845	0.9566	1.2052	1.7083	2.7103
37	0.7035	0.9829	1.2387	1.7556	2.7855
38	0.7223	1.0096	1.2720	1.8031	2.8606
39	0.7399	1.0339	1.3028	1.8464	2.9293
40	0.7588	1.0602	1.3360	1.8936	3.0041
41	0.7777	1.0866	1.3693	1.9409	3.0790
42	0.7965	1.1132	1.4026	1.9879	3.1542
43	0.8152	1.1395	1.4358	2.0352	3.2291
44	0.8343	1.1659	1.4691	2.0825	3.3039
45	0.8531	1.1923	1.5024	2.1298	3.3791
46	0.8735	1.2208	1.5386	2.1815	3.4617
47	0.8923	1.2474	1.5721	2.2290	3.5368
48	0.9111	1.2738	1.6054	2.2763	3.6120
49	0.9301	1.3004	1.6387	2.3235	3.6874
50	0.9489	1.3267	1.6722	2.3708	3.7625
51	0.9680	1.3531	1.7055	2.4183	3.8377
52	0.9850	1.3769	1.7352	2.4603	3.9040
53	1.0038	1.4032	1.7685	2.5076	3.9789
54	1.0228	1.4296	1.8017	2.5546	4.0538
55	1.0416	1.4562	1.8353	2.6019	4.1290
56	1.0604	1.4826	1.8685	2.6491	4.2039
57	1.0792	1.5089	1.9018	2.6964	4.2788
58	1.0982	1.5353	1.9350	2.7437	4.3539
59	1.1190	1.5646	1.9723	2.7966	4.4388
60	1.1377	1.5912	2.0056	2.8442	4.5139
61	1.1568	1.6176	2.0389	2.8915	4.5891

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Steel Factors for Instrumentation Cables - Fe TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1381	0.1465	0.1545	0.1660	0.1939
2	0.2145	0.2315	0.2437	0.2647	0.4189
3	0.2272	0.2454	0.2594	0.3135	0.4447
4	0.2482	0.2679	0.3137	0.3800	0.4943
5	0.2720	0.3347	0.3525	0.4544	0.5463
6	0.3332	0.4250	0.4544	0.4972	0.5919
7	0.3332	0.4250	0.4544	0.4972	0.5919
8	0.4453	0.4798	0.5121	0.5575	0.8243
9	0.4834	0.5298	0.5617	0.6635	0.9033
10	0.5030	0.5523	0.5813	0.6886	0.9444
11	0.5030	0.5523	0.5813	0.6886	0.9444
12	0.5233	0.5636	0.6016	0.7134	0.9783
13	0.5494	0.5954	0.6813	0.8492	1.0326
14	0.5494	0.5954	0.6813	0.8492	1.0326
15	0.5787	0.6842	0.7213	0.9080	1.1759
16	0.5787	0.6842	0.7213	0.9080	1.1759
17	0.6620	0.7242	0.8699	0.9513	1.4008
18	0.6620	0.7242	0.8699	0.9513	1.4008
19	0.6620	0.7242	0.8699	0.9513	1.4008
20	0.6944	0.8634	0.9127	1.0052	1.4699
21	0.6944	0.8681	0.9174	1.0147	1.4847
22	0.7766	0.9179	0.9765	1.1553	1.5695
23	0.7766	0.9179	0.9765	1.1553	1.5695
24	0.8793	0.9608	1.0241	1.2109	1.7861
25	0.8793	0.9608	1.0241	1.2109	1.7861
26	0.8793	0.9608	1.0241	1.2109	1.7861
27	0.9020	0.9907	1.1282	1.3071	1.8248
28	0.9359	1.0985	1.1674	1.4573	2.0168
29	0.9359	1.0985	1.1674	1.4573	2.0168
30	0.9359	1.0985	1.1674	1.4573	2.0168

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Steel Factors for Instrumentation Cables - Fe TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	0.9698	1.1419	1.2156	1.5135	2.2294
32	0.9698	1.1419	1.2156	1.5135	2.2294
33	0.9698	1.1419	1.2156	1.5135	2.2294
34	1.0938	1.1932	1.4220	1.5767	2.3315
35	1.0938	1.1932	1.4220	1.5767	2.3315
36	1.0938	1.1932	1.4220	1.5767	2.3315
37	1.0938	1.1932	1.4220	1.5767	2.3315
38	1.1329	1.4024	1.4861	1.7654	2.4344
39	1.1329	1.4024	1.4861	1.7654	2.4344
40	1.1329	1.4024	1.4861	1.7654	2.4344
41	1.1885	1.4656	1.5495	1.8551	2.5362
42	1.1885	1.4656	1.5495	1.8551	2.5362
43	1.1885	1.4656	1.5495	1.8551	2.5362
44	1.2987	1.5149	1.7334	2.0413	2.8585
45	1.2987	1.5149	1.7334	2.0413	2.8585
46	1.2987	1.5149	1.7334	2.0413	2.8585
47	1.2987	1.5149	1.7334	2.0413	2.8585
48	1.3286	1.5431	1.7728	2.2075	2.9159
49	1.4442	1.7095	1.8049	2.2592	2.9742
50	1.4442	1.7095	1.8049	2.2592	2.9742
51	1.4516	1.7095	1.8164	2.2772	3.0028
52	1.4516	1.7095	1.8164	2.2772	3.0028
53	1.4516	1.7095	1.8164	2.2772	3.0093
54	1.4795	1.7481	1.8624	2.3276	3.2700
55	1.5009	1.7671	1.8806	2.3506	3.5370
56	1.5009	1.7671	1.8806	2.3506	3.5370
57	1.5009	1.7671	1.8806	2.3506	3.5370
58	1.5430	1.8246	1.9406	2.4190	3.6397
59	1.5430	1.8246	1.9406	2.4190	3.6397
60	1.5430	1.8246	1.9406	2.4190	3.6397
61	1.5430	1.8246	1.9406	2.4190	3.6397

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Polymer Factors for Instrumentation Cables - POC TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
1	0.1233	0.1405	0.1426	0.1613	0.1850
2	0.2242	0.2528	0.2738	0.3046	0.4104
3	0.2400	0.2650	0.2849	0.3215	0.4184
4	0.2742	0.3014	0.3310	0.3834	0.4974
5	0.3246	0.3703	0.3970	0.4439	0.5936
6	0.3775	0.4204	0.4510	0.5193	0.6968
7	0.3728	0.4137	0.4426	0.5075	0.6780
8	0.4318	0.4754	0.5285	0.6006	0.7373
9	0.4958	0.5431	0.6012	0.6901	0.9313
10	0.5245	0.5763	0.6377	0.7265	1.0061
11	0.5251	0.5761	0.6374	0.7245	1.0027
12	0.5427	0.6139	0.6794	0.7750	1.0612
13	0.6086	0.6688	0.7406	0.8635	1.1738
14	0.6242	0.6868	0.7605	0.8869	1.2085
15	0.6704	0.7650	0.8358	0.9798	1.3294
16	0.6836	0.7799	0.8523	0.9993	1.3582
17	0.7305	0.8266	0.9070	1.0719	1.4969
18	0.7479	0.8465	0.9296	1.0986	1.5369
19	0.7475	0.8452	0.9271	1.0942	1.5293
20	0.7870	0.9151	1.0070	1.1562	1.6060
21	0.8033	0.9079	0.9987	1.1738	1.6249
22	0.8594	0.9988	1.0821	1.2805	1.7817
23	0.8717	1.0127	1.0977	1.2984	1.8085
24	0.9577	1.1053	1.2035	1.4129	2.0025
25	0.9710	1.1202	1.2200	1.4321	2.0313
26	0.9723	1.1212	1.2207	1.4316	2.0296
27	1.0239	1.1690	1.2765	1.4892	2.0989
28	1.0623	1.2236	1.3284	1.5790	2.2108
29	1.0779	1.2416	1.3481	1.6024	2.2455
30	1.0909	1.2568	1.3649	1.6217	2.2740

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IEEMA (PVC)/Instrumentation Cable/2022 **Effective from: 01st January 2023**

Polymer Factors for Instrumentation Cables - POC TIS					
Triad Instrumentation Individual & Overall Screen Cables					
Cable size in sq.mm No. of Pairs	0.5 sq.mm	0.75 sq.mm	1.0 sq.mm	1.5 sq.mm	2.5 sq.mm
31	1.1639	1.3365	1.4418	1.7150	2.4025
32	1.1558	1.3281	1.4320	1.7047	2.3902
33	1.1681	1.3420	1.4475	1.7226	2.4170
34	1.2195	1.3857	1.5425	1.8070	2.5685
35	1.2628	1.4355	1.5977	1.8713	2.6613
36	1.2845	1.4606	1.6260	1.9052	2.7126
37	1.2798	1.4541	1.6179	1.8936	2.6935
38	1.3479	1.5470	1.6986	2.0001	2.8623
39	1.3612	1.5622	1.7154	2.0196	2.8910
40	1.3750	1.5780	1.7326	2.0398	2.9211
41	1.4230	1.6564	1.8307	2.1352	3.0490
42	1.4472	1.6848	1.8627	2.1738	3.1065
43	1.4222	1.6565	1.8308	2.1365	3.0543
44	1.5099	1.7490	1.9168	2.2371	3.2019
45	1.5221	1.7631	1.9322	2.2551	3.2289
46	1.5638	1.8095	1.9837	2.3138	3.3120
47	1.5767	1.8246	2.0005	2.3330	3.3408
48	1.6219	1.8739	2.0627	2.4040	3.4196
49	1.6659	1.9210	2.1084	2.5024	3.5355
50	1.6789	1.9360	2.1251	2.5219	3.5643
51	1.6909	1.9494	2.1391	2.5385	3.6401
52	1.7051	1.9658	2.1571	2.5592	3.6713
53	1.7253	1.9892	2.1841	2.5912	3.7191
54	1.7741	2.0439	2.2294	2.6525	3.8075
55	1.8258	2.0989	2.2897	2.7070	3.8918
56	1.7964	2.0660	2.2528	2.6651	3.8346
57	1.8087	2.0802	2.2684	2.6831	3.8614
58	1.8452	2.1171	2.3549	2.7792	3.9710
59	1.9100	2.1908	2.4374	2.8747	4.1088
60	1.9272	2.2110	2.4599	2.9016	4.1488
61	1.9381	2.2233	2.4733	2.9170	4.1700

PACKAGE: SCREENED CONTROL CABLES
PROJECT: FRAMEWORK AGREEMENT (RATE CONTRACT)-Adani Projects
ENQUIRY NO.-
BIDDER NAME:

1) Individual & Overall Screened Cable (Type-F)-Armoured cable

Multi pair (twisted) individual & overall shielded instrumentation cables. (Type-F)

	S.No.	Item Code	Item Description	UOM	Order Quantity	Drum Length	Unit Price (Ex-Works) (INR)	TOTAL PRICE (EX-WORKS) (INR)	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)
	(i)	507-0310116-00-A	1.1kV TYPE F(IO) 2P - 0.5 ARMOURED	MTR	246000	1000	=I6/F6	=0.03922*I20		=I6*J6%		=(I6+K6)*L6%	=I6+K6+M6
	(ii)	507-0310009-00-A	1.1kV TYPE F(IO) 4P - 0.5 ARMOURED	MTR	573000	1000	=I7/F7	=0.13928*I20		=I7*J6%		=(I7+K7)*L6%	=I7+K7+M7
	(iii)	507-0310013-00-A	1.1kV TYPE F(IO) 8P - 0.5 ARMOURED	MTR	379000	1000	=I8/F8	=0.15526*I20		=I8*J6%		=(I8+K8)*L6%	=I8+K8+M8
	(iv)	507-0310001-00-A	1.1kV TYPE F(IO) 12P - 0.5 ARMOURED	MTR	145000	1000	=I9/F9	=0.08101*I20		=I9*J6%		=(I9+K9)*L6%	=I9+K9+M9
	(v)	507-0310139-00-A	1.1kV TYPE F(IO) 2P - 1 ARMOURED	MTR	16000	1000	=I10/F10	=0.00425*I20		=I10*J6%		=(I10+K10)*L6%	=I10+K10+M10
	(vi)	507-0310138-00-A	1.1kV TYPE F(IO) 2P - 1.5 ARMOURED	MTR	470000	1000	=I11/F11	=0.15819*I20		=I11*J6%		=(I11+K11)*L6%	=I11+K11+M11

2) Overall Screened Cable (Type-G)-Armoured cable

Multi pair (twisted) overall shielded instrumentation cables. (Type-G)

	S.No.	Item code	Item Description	UOM	Order Quantity	Drum Length	Unit Price (Ex-Works) (INR)	Total Price (Ex-Works) (INR)	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)
	(i)	507-0310025-00-A	1.1kV TYPE G(O) 2P - 0.5 ARMOURED	MTR	300000	1000	=I16/F16	=0.04081*I20		=I16*J6%		=(I16+K16)*L6%	=I16+K16+M16
	(ii)	507-0310029-00-A	1.1kV TYPE G(O) 4P - 0.5 ARMOURED	MTR	534000	1000	=I17/F17	=0.10111*I20		=I17*J6%		=(I17+K17)*L6%	=I17+K17+M17
	(iii)	507-0310033-00-A	1.1kV TYPE G(O) 8P - 0.5 ARMOURED	MTR	865000	1000	=I18/F18	=0.26125*I20		=I18*J6%		=(I18+K18)*L6%	=I18+K18+M18
	(iv)	507-0310017-00-A	1.1kV TYPE G(O) 12P - 0.5 ARMOURED	MTR	48000	1000	=I19/F19	=0.01962*I20	=I6	=I19*J6%	=L6	=(I19+K19)*L6%	=I19+K19+M19
							GRAND TOTAL (Total Ex-Works) (INR)	X		=SUM(K6:K11)+SUM(K16:K19)		=SUM(M6:M11)+SUM(M16:M19)	=SUM(N6:N11)+SUM(N16:N19)

Notes :

1 Bidder has to quote only Total Ex-Works 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. Bidder 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 meters as indicated above. Tolerance on individual drum length shall be ±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 1000 m, in which case it shall be -5% to 0%. Cables consumed for testing and inspection shall be to bidder's account.

=A25+ For each individual cable size, one short length of not less than 250m may be accepted only in the final drum length to complete the project specific 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 Unit price of cables quoted by bidder shall be inclusive of type test charges (If applicable). No separate charges shall be payable for type tests.

7 For PVC formulae & Indices; please refer " PVC Formulae & Factors" file or latest amendment (if any) with upper ceiling limit of 20% & no negative ceiling limit.

COST OF WITHDRAWAL									
PROJECT:-						Framework Agreement (Rate Contract)- Adani Projects			
PACKAGE :-						SCREENED CONTROL CABLES			
TENDER ENQUIRY :-						77/25/6009/SUM dated 05.05.2025			
NAME OF THE BIDDER									
Sl. No.	Volume/ Section	Page No.	Clause No.	Technical Specification/Tender Document No	Complete Description of Deviation	Cost of withdrawal of deviation to be entered by the bidder in	Reference of price Schedule of which Cost of Withdrawal of Deviation is applicable	Nature of cost of withdrawal of deviation (Positive/Negative)	Reasons for quoting deviation
1	TECHNICAL DEVIATION								
1.01									
1.02									
1.03									
1.04									
1.05									
2	COMMERCIAL DEVIATION								
2.01									
2.02									
2.03									
2.04									
2.05									

	PRE - QUALIFYING REQUIREMENTS
PROJECT:	**RATE CONTRACT**
PACKAGE:	**SCREENED CONTROL 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	**8,12,00,000.00**

Rs.Eight 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.

Tentative List of projects for Framework Agreement (Rate Contract)- Adani Projects of SCREENED CONTROL CABLES

1. 2 X 800 MW ADANI POWER LIMITED RAIGARH (PH-II)
2. 2 X 800 MW ADANI POWER LIMITED RAIPUR (PH-II)
3. 2X800 MW MTEUPPL MIRZAPUR
4. 2X800 MW MEL MAHAN PH-II

BHEL / PEM / CMM

SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT)- ADANI PROJECTS PACKAGE: SCREENED CONTROL CABLES

1. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of SCREENED CONTROL CABLES 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 SCREENED CONTROL CABLES 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.

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-RC-507-E005A 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.

MAIN SUPPLIER'S EVALUTION REPORT
OF THE PROPOSED SUB-SUPPLIER

1. Name of Main Supplier :

2. Project Name :

3. Package Name :

4. Name of item/equipment to be procure :
(with Rating/Type/Size)

5. .Brief specification of equipment to be procured :

6. Name of the proposed sub-supplier :

7. Address of sub-supplier's Regd. office :
(with phone no. Fax no. & Email)

8. Address of the sub-supplier's manufacturing unit :
(with phone no. Fax no., & Email)

9. Name of the contact person of the sub- supplier :
(with phone no. Fax no., Mob no. & Email)

10. Reference List :
(Extensive experience in particular type of equipment to be procured)

Name of customer with address	Name of the plant where equipment were installed	Type/ Rating/ Capacity	Date of dispatch of equipment	Date of Commissioning of equipment	Nos. of years in operation	Performance feed back from customer

11. Main supplier's to submit their own assessment report of the sub-supplier:
Attached / Not attached

12. Main supplier's recommendation:

Name Designation Signature Date
Dept. / Company

List of enclosures :-
1.
2.
3.

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 the ……bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said 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.

We ……..BANK 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 the ……we 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)/ Cotractor (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 Prinicpal 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)
_____

KUMAR SUMAN SAURABH

Digitally signed by KUMAR SUMAN SAURABH
DN: c=IN, postalCode=201301, st=UTTAR PRADESH, l=GAUTAM BUDDHA NAGAR, o=BHARAT HEAVY ELECTRICALS LTD., ou=BHEL, PS-PEM, serialNumber=5ee389b2a515dd679b11a248e8891c15d93a538dcc190daf100048fdb5a2ec42, pseudonym=621a436d2a8c4662a05f1ae795645eb5, 2.5.4.20=1a762e39a18dd603c55b055d223fb86301c306189abd0e3846a5e6642d243477, email=SUMANSAURABH@BHEL.IN, cn=KUMAR SUMAN SAURABH
Date: 2025.04.26 12:39:07 +05'30'

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.

Sl	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: _____