

**TELANGANA STATE POWER GENERATION
CORPORATION LIMITED
5X800 MW YADADRI TPS**

VOLUME-II

**TECHNICAL SPECIFICATION FOR
*PVC INSULATED WIRES***

SPECIFICATION NO: *PE-TS-417-558-E003A*

REVISION: 00



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301**

394404/2021/PS-PEM-EL


**TECHNICAL SPECIFICATION
FOR PVC INSULATED WIRES**
**5X800 MW YADADRI TPS (TELANGANA STATE
POWER GENERATION CORPORATION LIMITED)**

SPECIFICATION NO. PE-TS-417-558-E003A

VOLUME II

SECTION I

REVISION 00


DATE: 02.08.2021

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Total nos. of sheets including cover & separator sheets = 15 sheets

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			VOLUME II	
	5X800 MW YADADRI TPS (TELANGANA STATE POWER GENERATION CORPORATION LIMITED)		SECTION I	
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COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.


1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same
2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'
3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.
4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in BOQ-Cum-Price schedule of the specification shall not be considered (i.e., technical description & quantities as per specification shall prevail).

BIDDER'S STAMP & SIGNATURE

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SECTION – I

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1.0 SCOPE

- 1.1 Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of PVC Wires conforming to this specification.
- 1.2 Technical requirements of rigid steel conduits are indicated in Data Sheet-A & Section-II.
- 1.3 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A & Section-II.

2.0 BILL OF QUANTITIES


The bidder to quote for items as per price schedule attached with NIT.

3.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

- 3.1 Documents shall be submitted after placement of order for BHEL & customer's approval as specified in NIT.
- 3.2 Documents shall be furnished through BHEL's document management system (WRENCH) portal.

Notes:

1. Vendor shall submit the dates for drawing/document submission/BHEL comments/resubmission after approval of documents.
2. In BOM each of the item to be uniquely identified with item code no. or item Sl. No. Supplier to ensure that all the items which will find separate mention in the packing list are covered in detailed BOM. Supplier to give following undertaking in BOM: " The BOM provided here completes the scope (in content and intent) of material supply under PO no. ---- dtd ----- Any additional material which may become necessary for the intended application of supplied item/package will be supplied free of cost in most reasonable time."

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DATA SHEET-A

1.0 APPLICABLE STANDARDS & CODES

- a) IS:694 PVC insulated unsheathed and sheathed cables/cords with rigid and flexible conductor.
- b) IS:5831 PVC insulation and sheath of electric cables.
- c) IS:8130 Conductors for insulated electric cables and flexible cords.
- d) IS:10810 Methods of tests for cables.

2.0 MAKE ☒ BIS approved ☐ As per enclosed sub-vendor list

3.0 TYPE OF WIRE :
☒ NON-FRLS ☒ FIRE-RESISTANT (FR) ☐ FIRE-RESISTANT LOW SMOKE (FRLS)

4.0 CONDUCTOR

- a) NO. OF CORES : 1
- b) MATERIAL : Aluminium and High conductivity untinned annealed copper
- c) Type : Stranded conductor
- d) CLASS : Class-2 as per IS: 8130
- e) MINIMUM NUMBER OF STRANDS : As per IS: 8130 (table-2)
- f) MAX. RESISTANCE OF CONDUCTOR : As per IS: 8130 (table-2)

5.0 INSULATION

- a) INSULATION MATERIAL : PVC, Type-A as per IS :5831
- b) NOMINAL INSULATION THICKNESS : As per IS: 8130 (table-3)

6.0 MAX. OVERALL DIA. : As per IS: 8130 (table-3)

7.0 STANDARD BUNDLE LENGTH : 90-100 meters (For all sizes)



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TECHNICAL PARTICULARS FOR PVC INSULATED WIRES – DATA SHEET-C

(to be submitted by successful bidder after award of contract)

S.No.	Particulars	Unit	Description
1	Manufacturer's name	-	
2	Reference design standards	-	
3	Type of wire		
4	Rated Voltage	V	
5	No. of Cores	No.	
6	Conductor cross section area (nominal)	sq. mm	
7	Conductor		
	a) Material	-	
	b) Reference Standard	-	
	c) Class		
	d) No. of strands	No.	
	e) Diameter of strands (nom.)	mm	
	f) Approx. dia of conductor	mm	
	h) Maximum conductor resistance per Km at 20°C	ohm	
8	Insulation		
	a) Reference Standard	-	
	b) Material composition	-	
	c) Minimum thickness	mm	
	d) Nom. Thickness	mm	
	e) Max. thickness	mm	
	f) Minimum volume resistivity as per IS 5831	Ohm cm	
	g) Dielectric constant	-	
	h) Maximum conductor temperature withstand capacity	°C	
	i) Minimum conductor temperature withstand capacity	°C	
	j) Maximum diameter including insulation	mm	
9	Length of single bundle	M	
10	Details of Marking/ label provided as per specification	Yes/ No	



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CHECK LIST FOR SUBMITTING TECHNICAL PQR DOCUMENTS

Bidder to submit signed & stamped copy of checklist shall be submitted alongwith technical offer to ensure completeness of PQR documents.

Checklist		Remarks	Tick as applicable [√]
1.	Valid BIS certificate enclosed	Specify date of validity	Yes [] No []
2.	Internal (in-house) type test report submitted	<ul style="list-style-type: none"> •Routine test •Type test • Acceptance test To be Included in internal test report	Yes [] No [] Yes [] No [] Yes [] No []
3.	Capacity of manufacturing 100Km of PVC wire per month	Proof of manufacturing such as <ul style="list-style-type: none"> •NSIC certificate •MSME certificate •Chartered engineer certificate •Any other document submitted <i>Note: chartered accountant certificate is not a valid proof for establishing manufacturing capacity</i>	Yes [] No []
4	Manufactured & supplied at least 1 Km of PVC FR copper wire	Proof of manufacturing & supplied FR copper wire such as <ul style="list-style-type: none"> •Purchase order submitted and •Dispatch documents (Performa invoice, dispatch details) submitted 	Yes [] No [] Yes [] No []
5	Manufactured & supplied at least 100 Km of PVC copper wire in one or more orders	Proof of manufacturing & supplied copper wire such as <ul style="list-style-type: none"> •Single or multiple Purchase order copies submitted and •Single or multiple Dispatch documents (Performa invoice, dispatch documents) submitted 	Yes [] No [] Yes [] No []
6	Copy of min two PO for PVC wires submitted	•Copy of Purchase order submitted	Yes [] No []

Note: Bidder already registered with BHEL-PEM for PVC wires shall submit documents for criteria no.6 only.



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PVC INSULATED WIRES

SPECIFICATION NO. PE-TS-417-558-E003A

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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR PVC INSULATED WIRES

SPECIFICATION NO. PE-TS-417-509-E003A

VOLUME II

SECTION II

REVISION 0

02-08-2021

1.0 INTENT OF SPECIFICATION

The intent of specification is not to specify all details of design & construction of material. The material shall, however, conform in all aspects to high standard of design, engineering and workmanship and be capable of performing in continuous operation up to & after bidder's guarantee period in manner acceptable to purchaser who will interpret the drawings & specification and shall have power to reject any work or material which in his judgement is not in full accordance with this specification.

2.0 CODES AND STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.
- 2.2 The material, construction, manufacture, inspection and testing of PVC wires shall conform to the latest revision of relevant standards as per Data Sheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, stringent requirement shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Lighting wires shall be single core, 1100 V grade, light duty PVC insulated, stranded copper wire for fixed wiring installation.
- 3.2 Wire shall be made with the Colour Codes specified below :

a) 3 phase AC Connections

- Phase 1 (R) Red
- Phase 2 (Y) Yellow
- Phase 3 (B) Blue
- Neutral Black

b) DC Connections

- Positive White
- Negative Grey


c) Earth Connection Green

The Colour wise quantity of PVC wires shall be as specified in 'BOQ cum Price schedule'.

- 3.3 Cross-sectional area of PVC wires shall be as specified in 'BOQ cum Price schedule'.
- 3.4 Technical particulars of PVC wires shall be as specified in Data Sheet – A.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 Bidder shall confirm compliance with the BHEL's Standard Quality Plan (QP.no. PE-QP-999-558-E003) as attached with the specification without any deviations. At contract stage, the

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successful bidder shall submit the Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Quality Plan agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of Quality plan approval.

4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan.

4.3 The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification. Charges for all these tests for all the equipments & components shall be deemed to be included in the bid price.

In case ordered quantities are manufactured and offered for inspection in more than one lot, BHEL reserves the right to witness testing on all lots without any commercial implications.

5.0 PACKING

5.1 The material shall be packed to ensure protection against damage during transit, storage for prolonged periods and handling.

5.2 The wire shall be clean and dry prior to packaging.

5.3 The wire shall be supplied in packed coils. The tapes used for packing shall not bleed, leave residue, or damage the item when removed.

5.4 The inside coil diameters shall not be smaller than the minimum safe allowable bending diameter for wires.

5.5 The coil shall be placed in a corrugated paperboard/ fibreboard container/ mono carton.

5.6 The mono cartons shall be wrapped or bagged or tied in place in master cartons. The master carton shall be taped and then wrapped with cushioning material.

5.7 The dimensions of cartons shall be as per manufacturer's recommendations.

6.0 MARKING:

6.1 The wire shall carry the following information either stencilled on the reel or contained in a label attached to it:

6.2 Reference of IS 694;

6.3 Manufacturer's name, brand name or trade-mark;


6.4 Type of wire (FR or FRLS , if applicable, to be used) and voltage grade;

6.5 Number of cores & Nominal cross-sectional area of conductor;

6.6 Colour of wire

6.7 Length of wire on the reel or coil;

6.8 Number of lengths on the reel or coil (if more than one);

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
			CUSTOMER :				QP NO.: PE-QP-999-558-E003, R01		DATE: 10.07.2020	
			PROJECT:				PO NO.:		DATE:	
			ITEM: PVC Wires		SYSTEM: STATION LIGHTING SYSTEM		SECTION: II		SHEET 1 OF 4	


SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	

1.0 RAW MATERIAL/BOUGHT OUT ITEMS

1.1	CONDUCTOR	1. Physical properties	MA	Physical Tests	Sample/ Batch	-	IS:8130	IS:8130	Certificate of conformance	✓	P/V	V	-	
		2. Elec. Properties	MA	Electrical Tests	Sample/ Batch	-	-do-	-do-	-do-	✓	P/V	V	-	
1.2	PVC Compound for insulation	1. Material Properties	MA	Physical Tests	Sample/ Batch	-	IS 5831	IS 5831	Certificate of conformance	✓	P	V	-	


2.0 ROUTINE/ ACCEPTANCE/ TYPE TEST

2.1	PVC Wires	SURFACE DEFECTS	MA	Visual	IS 694 Annex A	-	IS:694	IS:694	Insp. And test report from manuf.	✓	P/V	V	-	BIS APPROVED MAKE
2.2		CONSTRUCTION OF WIRE	MA	Visual/ Measurement	-DO-	-	IS-694 (table-3) IS-8130 (table-2) Appd DS	IS-694 (table-3) IS-8130 (table-2) Appd DS	-DO-	✓	P/V	V	-	
2.3		TYPE TESTS	CR	Tests	One sample	One sample of	IS:694 (TABLE-1)	IS:694 (TABLE-1)	Test cert.	✓	P	W		1) Type test shall be conducted on first

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	Checked by:		KUNAL GANDHI
Reviewed by:	PRAVEEN DUTTA	PRAVEEN DUTTA	Reviewed by:	Digitally signed by RITESH KUMAR JAISWAL Date: 2020.07.30 13:36:25 +05'30'	R. K. JAISWAL


BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
			CUSTOMER :				QP NO.: PE-QP-999-558-E003, R01		DATE: 10.07.2020	
			PROJECT:				PO NO.:		DATE:	
			ITEM: PVC Wires		SYSTEM: STATION LIGHTING SYSTEM		SECTION: II		SHEET 2 OF 4	


SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	

					of each wire type & size	each wire type & size								project Order supply from rate Contract. 2) Refer note 1 & 2
2.4		ACCEPTANCE TESTS a) Annealing test b) Conductor Resistance test c) Thickness of Insulation d) Tensile strength and elongation at break of insulation e) IR test f) HR Test g) Flammability test h) Oxygen index test i) Temperature index j) Halogen acid	MA	CR	IS 694 Annex A	IS 694 Annex A	IS 694/ IS 8130	IS 10810	Test Report	√	P	W		Refer note-1

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	Checked by:	 Digitally signed by Kunal Gandhi DN: cn=Kunal Gandhi, o=BHEL, email=k.gandhi@bhel.co.in, c=IN, date=2020.07.29 19:23:10 +05'30'	KUNAL GANDHI
Reviewed by:	PRAVEEN DUTTA	PRAVEEN DUTTA	Reviewed by:	Digitally signed by RITESH KUMAR JAISWAL Date: 2020.07.30 13:37:13 +05'30'	R. K. JAISWAL

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
			CUSTOMER :				QP NO.: PE-QP-999-558-E003, R01		DATE: 10.07.2020	
			PROJECT:				PO NO.:		DATE:	
			ITEM: PVC Wires		SYSTEM: STATION LIGHTING SYSTEM		SECTION: II		SHEET 3 OF 4	

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	


		gas k) Smoke density												
2.5		ROUTINE TESTS	MA	-DO-	100%	-	-DO-	-DO-	-DO-	√	P/V	V		
2.6		MARKING	MA	VISUAL	IS 694 Annex A	IS 694 Annex A	APPD DS	APPD DS	INSP. REPORT	√	P/V	W		

3.0 PACKING

	PACKING	Soundness of Packing against transit damage	Major	Visual	100%	100%	BHEL approved document	BHEL approved document	Inspection report	√	P	W	-	
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NOTES:

1. In case of FR type wires, FR properties test (Oxygen Index & Temp. Index) are also applicable.
2. Type test report of successfully conducted test on First project of rate contract shall be referred for subsequent purchase orders & further conduction of type test is not required.
3. Project specific QP shall be based on customer requirement. In case, any changes in QP commented by customer at contract stage shall be carried out by bidder without any implication to BHEL/ Customer.
4. For export jobs, BHEL technical specification for seaworthy packing for export jobs is to be followed.
5. Packing shall be suitable for storage at site in tropical climatic conditions. **Refer Annexure-I for packing specification.**
6. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) Indicated in QP shall be referred.
7. BHEL reserves the right for conducting repeat test if required.
8. After packing and prior to issue MDCC, photographs of items to be dispatched shall be sent to BHEL purchase group for review.

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	Checked by:	 R. K. GANDHI	R. K. GANDHI
Reviewed by:	PRAVEEN DUTTA	PRAVEEN DUTTA	Reviewed by:	Digitally signed by RITESH KUMAR JAISWAL Date: 2020.07.30 13:37:53 +05'30'	R. K. JAISWAL

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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			CUSTOMER :				QP NO.: PE-QP-999-558-E003, R01		DATE: 10.07.2020				
			PROJECT:				PO NO.:		DATE:				
			ITEM: PVC Wires		SYSTEM: STATION LIGHTING SYSTEM		SECTION: II		SHEET 4 OF 4				
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY	REMARKS	
1	2	3	4	5	6		7	8	9	* D	**		
					M	C/ N					M	C	


LEGENDS:

*RECORDS, IDENTIFIED WITH "TICK"(√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** **M:** SUPPLIER/ MANUFACTURER/ SUB-SUPPLIER, **C:** MAIN SUPPLIER/ BHEL/ THIRD PARTY INSPECTION AGENCY, **N:** CUSTOMER,


P: PERFORM, **W:** WITNESS, **V:** VERIFICATION, AS APPROPRIATE

MA: MAJOR, **MI:** MINOR, **CR:** CRITICAL, **D:** DOCUMENTATION

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	MUDIT CHOPRA MEET SAGAR SINGH RAJPAL	Checked by:		KUNAL GANDHI
Reviewed by:	PRAVEEN DUTTA	PRAVEEN DUTTA	Reviewed by:	RITESH KUMAR JAISWAL	RITESH KUMAR JAISWAL

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

4. 
 Ritesh Kumar Jaiswal
 BHEL Ltd.
 Date: 2020.07.20 13:38:39 +05'30'



PRE-QUALIFYING REQUIREMENTS FOR
PVC WIRES

PE-PQ-999-558-E003

REV. 1

DATE: 27/12/2017

SHEET 1 OF 1

ITEMS: PVC WIRES

SCOPE:

Supply : YES

Erection & Commissioning: No

1	Vendor should be a BIS approved manufacturer of PVC wire as per IS-694.
2	Availability of test reports of PVC insulated copper wire to establish in-house capability at manufacturer's works to carry out all routine, type & acceptance tests as per relevant IS.
3	Capacity of manufacturing 100 km of PVC wire per month.
4	Manufactured and supplied at least one (1) km of PVC FR copper wire.
5	Manufactured and supplied at least 100 km of PVC copper wire in one or more orders.
6	Minimum two (2) nos. purchase orders for PVC copper wire shall be submitted which should not be more than five (5) years old from the date of application for registration or date of techno- commercial bid opening (as applicable) for establishing continuity in business.

Notes:

1.0 The vendor can offer PVC copper wire of any BIS approved make meeting criteria S.No. 1 to 5 above. The vendor to furnish the following documents:

- Undertaking from BIS approved manufacturer of offered make to get the inspection & testing of wires carried out at manufacturer's works.
- Credentials of the manufacturer of offered make to meet the PQR requirements of S no 1.0 to 5.0 above.
- Vendor's Credentials to meet Sl. no 6.0.

General Points of PQR:

- Consideration of offer shall be subject to customer's approval of bidders, if applicable.
- 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.
- Any other project specific requirement shall be as per Annexure – I and bidder shall submit relevant supporting documents.
- Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/ collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
- After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all other terms of the tender.

PREPARED BY <i>Himanshu</i> 27/12/17 HIMANSHU BHARDWAJ (SR. ENGR)	REVIEWED BY <i>Praveen</i> 27/12/17 PRAVEEN DUTTA (DGM)	APPROVED BY <i>Praveen Dutt</i> 27/12/17 PRAVEEN DUTTA (DGM)
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BHEL PEM-ELECTRICAL

PRE-QUALIFYING REQUIREMENTS FOR PVC WIRES

ANNEXURE –I

PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY

PROJECT: 5X800 MW YADRADRI TPS

1. W.r.t. clause 1 to 5 of main PRE-QUALIFYING requirements (PQR), aluminium wire credentials are also acceptable.
2. W.r.t. clause 6 of main PRE-QUALIFYING requirements (PQR), additionally minimum 2 nos. purchase orders for PVC aluminium wire shall be submitted.

Note: Cable credentials for clause 3 to 6 are also acceptable.

**SURYA
DEV**

[Dealing Engineer]

Digitally signed by SURYA DEV
DN: c=IN, o=BHARAT HEAVY
ELECTRICALS LIMITED, ou=BHEL PS-PEM-
Noida, postalCode=201301, st=Uttar
Pradesh,
2.5.4.20=b6b8c6b33f4b40cde4e50fa1f6
8a72e80fec0b5e942b25843608773f4f349
14, cn=SURYA DEV
Date: 2021.07.29 15:52:11 +05'30'

**NARENDRA
NATH
JAJWARE**

[Controlling Officer]

Digitally signed by NARENDRA
NATH JAJWARE
DN: cn=NARENDRA NATH
JAJWARE, o=BHEL, ou=ELECTRICAL,
email=nnjajware@bhel.in, c=IN
Date: 2021.07.29 16:02:35 +05'30'

**PRAVEEN
DUTTA**

[Section Head]

Digitally signed by PRAVEEN DUTTA
DN: c=IN, o=BHARAT HEAVY ELECTRICALS
LIMITED, ou=PS PEM, postalCode=201301,
st=UTTAR PRADESH,
2.5.4.20=d8948a0c3e2703a98a3a2a2e0d01
d86880f6c576429c5c374e3b47b930,
cn=PRAVEEN DUTTA
Date: 2021.07.31 11:05:22 +05'30'

**DEBASISA
RATH**

[DH-Electrical]

Digitally signed by DEBASISA RATH
DN: c=IN, o=BHARAT HEAVY ELECTRICALS
LIMITED, ou=BHEL PS PEM Noida,
postalCode=201301, st=UTTAR PRADESH,
2.5.4.20=d6841891ec623b339e0779ae76
405328e0770576a8f6c0a8a422083ea7f
d, cn=DEBASISA RATH
Date: 2021.08.02 11:25:15 +05'30'

ON COMPANY LETTER HEAD

TO,

**M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex,
Plot No 25, Sector-16 A, Noida-201301**

KIND ATTN.:

Dear Sir,

This has reference to :

- 1. Our offer for** **PACKAGE NAME** **for** **PROJECT NAME**
- 2. Order no. F.No. 6/18/2019-PPD dt. 23.07.2020 issued by Ministry of Finance, Department of Expenditure Public Procurement Division.**
- 3. BHEL mail reference:**

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India. I hereby certify that **Company name**, is not from such a country and is eligible to be considered.

Thanking You,

Yours faithfully,

(COMPANY SEAL AND SIGNATURE)

Letter head of Company (<Rs. 10 Cr value)

Ref.....

Date.....

To,

Bharat Heavy Electricals Limited

PEM, PPEI Building, Plot No 25,

Sector -16A, Noida (U.P)-201301

Subject: - Certification regarding local content

Reference: Tender Enquiry No-.....

Name of Package:

Dear Sir,

We hereby certify that items offered by us of(package name).....for.....(Project Name/Rate contract)..... meets the requirement of minimum local content in line with Cl. No..... of NIT No..... dated..... and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018 & 29.05.2019.

We further confirms that details of location at which the local value addition is made will be our registered works at(address of the works)

Yours very truly

..... (authorized signatory of company)

..... (firm name)

authorized signatory
of company

Guidelines for Remote Inspection of PEM BOIs

1) OBJECTIVE:

To lay down the procedure for carrying out Remote Inspection of Bought-out Items (BOIs) for PEM suppliers wherever applicable.

2) SCOPE:

It will cover suppliers for packages of PEM BOIs for various project requirements.

Invitation is sent to the suppliers for remote inspection on applications like MS Teams, Webex, etc. by BHEL.

3) MINIMUM REQUIREMENTS AT SUPPLIER'S WORKS:

- i. Uninterrupted internet services
- ii. Good internet bandwidth (Min 100 Mbps)
- iii. Good resolution camera (2 nos) – one preferably CCTV (static at one place) and one hand hold (moving)
- iv. Smart phone with minimum 8MPi camera front and back both with optical zoom facility suitable for using web applications like Webex, MicroSoft (MS) Teams, etc.
- v. Computer and Scanner with good resolution
- vi. Digital signatures of supplier's Quality Engineer
- vii. Availability of web applications like Webex, MicroSoft (MS) Teams, as required.
- viii. All Test certificates, internal test reports, calibration reports, etc. for the items offered for inspection.
- ix. Availability of the above to be submitted to BHEL two days in advance before inspection.
- x. Dedicated team from supplier side for facilitating inspection requirements.
- xi. For ensuring proper visibility, the suggested Portable lighting sources (torch/ electric LED bulb of minimum 15 W) with no glare is to be ensured at offered job, location for remote inspection/testing. This is to be verified before start of the inspection.
- xii. The GPS location co-ordinates or any method to locate inspection location shall be captured indicating the location of the Vendor-Premises of remote inspection/testing.

4) MINIMUM REQUIREMENTS AT BHEL and CUSTOMER LOCATION :

- i. Uninterrupted internet services
- ii. Suitable internet bandwidth
- iii. Digital signatures wherever required.
- iv. Availability of web applications like Webex, MS Teams, etc. as required.
- v. Clearance from customer for conducting remote inspection

5) PROCEDURE:

- i. Supplier will raise the inspection call in BHEL - CQIR portal.
- ii. Supplier shall ensure availability of minimum requirements at supplier's works as mentioned above at point 3.

- iii. Before starting the inspection, the supplier shall submit the documents (TCs, internal test reports and calibration certificates as per approved QAP) two days before the date of inspection for review by BHEL and supplier shall coordinate with BHEL and if found satisfactory, inspection shall be considered for remote.
 - iv. Prior to commencement of remote inspection a pre inspection meeting shall be organised by BHEL inspector with supplier to ascertain the readiness for remote inspection.
- 6) During inspection, supplier shall share the location on Google maps for verifying the address of the manufacturer. Location may be captured by BHEL as screenshot.
- i. Inspection shall be on the basis of approved Quality Plans and associated reference documents mentioned.
 - ii. For witnessing inspection, supplier shall bring the mobile video camera near to the surface of the equipment or as per requirement of the inspector for clarity in viewing the test/ equipment which shall be the responsibility of supplier. Supplier shall ensure that proper lighting is available during live video streaming.
 - iii. Before start of the inspection, inspector shall ensure that all instruments shall have valid calibration report. Supplier shall ensure use of digital instruments preferably for inspection to the extent possible.
 - iv. Details of suppliers's dedicated team handling the remote inspection shall also be incorporated in the CQIR.
 - v. All details of inspection/ testing referred documents shall be mentioned in the CQIR. Recording of remote inspection shall be maintained by the BHEL inspector and this recording (unedited) shall be maintained at BHEL system for a minimum period of 3 years or till the warranty period whichever is later.
 - vi. PEM (Engineering) shall accord final technical clearance, in case of any deviation in inspected item noticed during inspection.
 - vii. Inspection shall be conducted by PEM-Q&BE assigned inspector along with PEM-Engg (if required). CQIR shall be prepared and maintained by PEM-Q&BE.
 - viii. PG will issue MDCC on the basis of acceptance of inspected items along with accepted packing photographs as per contract provisions.
- 7) **UNDERTAKING BY VENDOR:** Material inspected through remote inspections is meeting all technical requirements of BHEL. In case of any discrepancy from the above procedure/ material inspected, if found later, vendor will replace the materials without any cost implication to BHEL.
- 8) Vendor shall provide the signed and stamped of the above guidelines to BHEL as a token of acceptance.

UNPRICED FORMAT : PVC WIRE FOR 5 X 800 MW YADADRI TPS (TSGENCO)

Sr. No.	Item code	Item description	Unit	Order Quantity	QUOTED/NOT QUOTED	FREIGHT PERCENTAGE	GST PERCENTAGE	GST TYPE
1.0		PVC WIRES						
(i)	558-16002-A	WIRES 1X2.5 MM2 CU PVC	MTR	10,000				
(ii)	558-16003-A	WIRES 1X4.0 MM2 CU PVC	MTR	31,200				
(iii)	558-16007-A	WIRES 1X10.0 MM2 AL PVC	MTR	1,06,000				

NOTE: Colour-wise breakup of PVC wire shall be as below:

For 2.5 SQMM CU PVC wires:

RED: 1500 meters, YELLOW: 1500 meters, BLUE: 1500 meters, BLACK: 4500 meters, WHITE: 500 meters, GREY: 500 meters

For 4.0 SQMM CU PVC wires:

RED: 5200 meters, YELLOW: 5200 meters, BLUE: 5200 meters, BLACK: 15600 meters

For 10.0 SQMM AL PVC wires:

RED: 16000 meters, YELLOW: 16000 meters, BLUE: 16000 meters, BLACK: 48000 meters, WHITE: 5000 meters, GREY: 5000 meters