

BOQ-1

3 X 660 MW NTPC NORTH KARANPURA- FGD CABLE TERM.& JOINT KITS

TECHNICAL SPECIFICATION - PE-TS-441-507-E014_Rev0

S. No.	Description	Quantity	To be filled by bidder (Quoted/Not Quoted)
1	TERM. KIT 11KV 1C-630 AL (UA) CU LUG	98	
2	TERM. KIT 11KV 3C-185 AL (UA) CU LUG	48	
3	TERM. KIT 3.3KV 3C-185 AL (UA) CU LUG	90	
4	JOINT KIT 11KV 1C-630 AL UNARMoured	2	
5	JOINT KIT 11KV 3C-185 AL UNARMoured	2	
6	JOINT KIT 3.3KV 3C-185 AL UNARMoured	2	
7	TERM. KIT 11KV 1C-630 AL (A) CU LUG	12	
8	TERM. KIT 11KV 3C-185 AL (A) CU LUG	4	
9	JOINT KIT 11KV 1C-630 AL ARMoured	6	
10	JOINT KIT 11KV 3C-185 AL ARMoured	2	
NOTES:-			
1	The ordered quantities indicated above shall be released for manufacture along with PO/LOI.		
2	Manufacturing of ordered quantities shall be done as per NIT.		
3	Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.		
4	Delivery shall be as per NIT.		
5	Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.		

BOQ-2**2X500 MW NTPC MAUDA STAGE I-FGD****CABLE TERM.& JOINT KITS****TECHNICAL SPECIFICATION - PE-TS-444-507-E014**

S. No.	Item Code	Description	UOM	Quantity	To be filled by bidder (Quoted/Not Quoted)	Remarks
1	507-24618-A	TERM KIT 11kV 1C-630 AI UNARMoured CU LUG	NOS.	40		HSN CODE : 8546
2	507-24608-A	TERM KIT 11kV 3C-150 AI ARMoured CU LUG	NOS.	5		HSN CODE : 8546
3	507-24619-A	TERM KIT 11kV 3C-150 AI UNARMoured CU LUG	NOS.	33		HSN CODE : 8546
4	507-24701-A	TERM KIT 3.3kV 3C-185 AI ARMoured CU LUG	NOS.	9		HSN CODE : 8546
5	507-24712-A	TERM KIT 3.3kV 3C-185 AI UNARMoured CU LUG	NOS.	36		HSN CODE : 8546
6	507-24071-A	JOINT KIT 11kV 1C-630 AI UNARMoured	NOS.	3		HSN CODE : 8546
7	507-24074-A	JOINT KIT 11kV 3C-150 AI ARMoured	NOS.	3		HSN CODE : 8546
8	507-24075-A	JOINT KIT 11kV 3C-150 AI UNARMoured	NOS.	1		HSN CODE : 8546
9	507-24122-A	JOINT KIT 3.3kV 3C-185 AI ARMoured	NOS.	1		HSN CODE : 8546
10	507-24123-A	JOINT KIT 3.3kV 3C-185 AI UNARMoured	NOS.	1		HSN CODE : 8546

Notes:

- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT.
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

BOQ-3
3x660 MW NPGCPL NABINAGAR STPP (FGD PKG)
CABLE TERM.& JOINT KITS
TECHNICAL SPECIFICATION - PE-TS-457-507-E014

S. No.	ITEM CODE	ITEM DESCRIPTION	UNIT	ORDER QUANTITY	To be filled by bidder (Quoted/Not Quoted)
1	507-24617-A	TERM. KIT 11KV 1C-500 AL UNARMOURED CU LUG	NOS.	99	
2	507-24619-A	TERM. KIT 11KV 3C-150 AL UNARMOURED CU LUG	NOS.	49	
3	507-24711-A	TERM. KIT 3.3KV 3C-150 AL UNARMOURED CU LUG	NOS.	106	
4	507-24700-A	TERM. KIT 3.3KV 3C-150 AL ARMOURED CU LUG	NOS.	5	
5	507-24067-A	JOINT KIT 11KV 1C-500 AL UNARMOURED	NOS.	3	
6	507-24075-A	JOINT KIT 11KV 3C-150 AL UNARMORED	NOS.	5	
7	507-24119-A	JOINT KIT 3.3KV 3C-150 AL UNARMOURED	NOS.	1	
8	507-24118-A	JOINT KIT 3.3KV 3C-150 AL ARMOURED	NOS.	1	

Notes:

- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT.
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

BOQ-4**4X250 MW BRBCL NABINAGAR FGD****CABLE TERM.& JOINT KITS****TECHNICAL SPECIFICATION - PE-TS-463-507-E014**

S. No.	Item Code	Description	UOM	Quantity	To be filled by bidder (Quoted/Not Quoted)	Remarks
1	507-24159-A	JOINT KIT 6.6KV 1C-630 AL UNARMoured	NOS.	40		HSN CODE : 8546
2	507-24664-A	TERM. KIT 6.6KV 1C-630 AL UNARM. CU LUG	NOS.	76		HSN CODE : 8546
3	507-24665-A	TERM. KIT 6.6KV 3C-150 AL UNARM. CU LUG	NOS.	172		HSN CODE : 8546

Notes:

- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT.
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

BOQ-5**2 X 250 MW NSPCL Bhilai TPP- FGD****CABLE TERM.& JOINT KITS****TECHNICAL SPECIFICATION - PE-TS-468-507-E014****Package: 507-24000-A**

S. No.	Item Code	Description	UOM	Quantity	To be filled by bidder (Quoted/Not Quoted)	Remarks
1	507-24652-A	TERM. KIT 6.6KV 1C-500 AL ARMOURED CU LUG	Nos	27		HSN CODE : 8546
2	507-24654-A	TERM. KIT 6.6KV 3C-150 AL ARMOURED CU LUG	Nos	66		HSN CODE : 8546
3	507-24154-A	JOINT KIT 6.6KV 1C-500 AL ARMOURED	Nos	3		HSN CODE : 8546
4	507-24162-A	JOINT KIT 6.6KV 3C-150 AL ARMOURED	Nos	1		HSN CODE : 8546

Notes:

- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT.
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

BOQ-6**3X200+3X500+1x500 MW NTPC KORBA TPP-FGD****CABLE TERM.& JOINT KITS****TECHNICAL SPECIFICATION - PE-TS-466-507-E014**

S. No.	Item Code	Description	UOM	Quantity	To be filled by bidder (Quoted/Not Quoted)	Remarks
1	507-24912-A	TERM. KIT 19/33KV 1C-500 AL ARMOURED CU LUG	NOS.	86		HSN CODE : 8546
2	507-24910-A	TERM. KIT 19/33KV 1C-240 AL ARMOURED CU LUG	NOS.	27		HSN CODE : 8546
3	507-24654-A	TERM. KIT 6.6KV 3C-150 AL ARMOURED CU LUG	NOS.	196		HSN CODE : 8546
4	507-24913-A	JOINT KIT 19/33KV 1C-500 AL ARMOURED	NOS.	12		HSN CODE : 8546
5	507-24911-A	JOINT KIT 19/33KV 1C-240 AL ARMORED	NOS.	15		HSN CODE : 8546
6	507-24162-A	JOINT KIT 6.6KV 3C-150 AL ARMOURED	NOS.	5		HSN CODE : 8546

Notes:


- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

BOQ-7**3X200 + 3X500 MW NTPC RAMAGUNDAM TPP FGD****CABLE TERM.& JOINT KITS****TECHNICAL SPECIFICATION - PE-TS-467-507-E014**

S. No.	Item Code	Description	UOM	Quantity	To be filled by bidder (Quoted/Not Quoted)	Remarks
1	507-24912-A	TERM. KIT 19/33KV 1C-500 AL ARMOURED CU LUG	NOS.	119		HSN CODE : 8546
2	507-24910-A	TERM. KIT 19/33KV 1C-240 AL ARMOURED CU LUG	NOS.	33		HSN CODE : 8546
3	507-24654-A	TERM. KIT 6.6KV 3C-150 AL ARMOURED CU LUG	NOS.	152		HSN CODE : 8546
4	507-24913-A	JOINT KIT 19/33KV 1C-500 AL ARMOURED	NOS.	3		HSN CODE : 8546
5	507-24911-A	JOINT KIT 19/33KV 1C-240 AL ARMORED	NOS.	18		HSN CODE : 8546
6	507-24162-A	JOINT KIT 6.6KV 3C-150 AL ARMOURED	NOS.	14		HSN CODE : 8546

Notes:

- 1 The ordered quantities indicated above shall be released for manufacture along with PO/LOI.
- 2 Manufacturing of ordered quantities shall be done as per NIT.
- 3 Subsequent lots, if any shall be cleared for manufacture based on progress of engineering and site requirements.
- 4 Delivery shall be as per NIT.
- 5 Bidder to offer higher voltage grade termination & jointing kits (for which applicable type test certificates are available with them), if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab.

	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS NORTH KARANPURA TPS-FGD	PE-TS-441-507-E014
		REVISION NO. 00 DATE 31/12/2021
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ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/11kV) and Jointing kits (Voltage Grade 3.3/11 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded push on [termination kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

1.	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2.	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3.	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4.	Vendor should have capacity to manufacture 125 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5.	Manufactured & supplied at least 250 nos. cable termination and jointing kits of applicable type in one or more orders.
6.	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type 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. For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor,

2. For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR): -

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:

a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
AVINASH KUMAR <small>Digitally signed by AVINASH KUMAR DN: cn=AVINASH KUMAR, o=BHEL, ou=PEM, email=avinashkumar@bhel.in, c=IN Date: 2021.12.31 12:42:50 +05'30'</small> NAME: AVINASH KUMAR DESIGNATION: ENGINEER	NARENDRA NATH JAJWARE <small>Digitally signed by NARENDRA NATH JAJWARE DN: cn=NARENDRA NATH JAJWARE, o=BHEL, ou=ELECTRICAL, email=nnjajware@bhel.in, c=IN Date: 2021.12.31 16:38:08 +05'30'</small> NAME: N N JAJWARE DESIGNATION: SR. MGR	PRAVEEN DUTTA <small>Digitally signed by PRAVEEN DUTTA DN: c=IN, ou=BHARATI HEAVY ELECTRICALS LIMITED, ou=PS PEM, ou=UTTAR PRADESH, ou=UTTAR PRADESH, o=UTTAR PRADESH, email=praveendutta@bhel.in, c=IN Date: 2022.01.01 09:59:59 +05'30'</small> NAME: PRAVEEN DUTTA DESIGNATION: AGM	NAME: DEBASISA RATH DESIGNATION: DH-ELECT(AGM)



**PRE-QUALIFICATION REQUIREMENTS FOR
CABLE TERMINATION & JOINTING KITS
NORTH KARANPURA TPS-FGD**

PE-TS-441-507-E014

REVISION NO. 00 DATE 31/12/2021

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b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

PREPARED BY

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KUMAR**

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DESIGNATION: AGM

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NAME: DEBASISA RATH
DESIGNATION: DH-ELECT(AGM)

**3 x 660 MW NORTH KARANPURA FGD
(FGD SYSTEM PACKAGE)**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-441-507-E014*

REVISION: 0



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

	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	SPECIFICATION NO. PE-TS-441-507-E014	
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Total nos. of sheets (including cover and separator sheets) = 12 sheets

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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

692805/2022/PS-PEM-EL



TECHNICAL SPECIFICATION FOR CABLE
TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-457-507-E014

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SECTION - I

SPECIFIC TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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SPECIFIC TECHNICAL REQUIREMENTS :-

1.0 PURPOSE

This specification is intended for finalization of contract between BHEL PEM and Bidder. Technical details as indicated in the specification shall be agreed upon between BHEL PEM and Bidder.

2.0 SCOPE OF ENQUIRY

2.1 Design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kits conforming to this specification.

2.2 It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions.

2.3 Technical requirements of Cable Termination & Jointing Kits are indicated in Data Sheet-A, section I & Section-II.

2.4 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A , section I & Section-II. The stipulation of section I shall prevail in case of any conflict between the stipulations of section I & Section-II.

3.0 BILL OF QUANTITIES

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

4.0 Technical requirements:-

a) Termination and jointing kits for , 11 kV, and 3.3 kV grade XLPE insulated cables shall be of proven design and make which have already been extensively used and type tested. Termination kits and jointing kits shall be Pre-moulded type or heat shrinkable type. Further Cold shrinkable type termination and jointing kits are also acceptable. The Cold shrinkable type kits shall be type tested as per relevant standards. Calculation to withstand the required fault level shall also be furnished in case of cold shrinkable type kits. 11 kV, and 3.3kV grade joints and terminations shall be type tested and Type test reports as per IS:13573 Part-II and IEC60502 shall be furnished. Also, heat shrink material shall comply with requirements of ESI 09-13 (external tests). Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Cable joints and terminations should be with FRLS properties as per IEC 60754-1&2. Kit contents shall be supplied from the same source as were used for type testing. The kit shall be complete with the tinned copper solderless crimping type cable lugs & ferrule or mechanical connectors (wherein bolts are tightened that shear off at an appropriate torque) as per DIN standard suitable for aluminium compacted conductor cables.

b) Straight through joint and termination shall be capable of withstanding the fault level of 40 kA for 0.12 sec with a dynamic peak of 100 kA for 11 kV & 3.3 KV system. Straight through joints shall have provisions for shield connection and earthing wherever required and complete with all accessories and consumables suitable for storage without deterioration at a temperature of 50 deg. C with shelf life of more than five years.



**TECHNICAL SPECIFICATION FOR
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c) Cable lugs/ferrules

Cable lugs/ferrules for power cables shall be tinned copper solderless crimping type suitable for aluminium compacted conductor cables. Cable lugs and ferrule shall conform to IS/DIN standards.

5.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

5.1 Documents required to be submitted by the bidder along with the Technical offer:-

a) Type test report for 3.3kV & 11kV. Test Report should not be older than 10 years from 22.06.2018.

b) Sign & stamped copy of following documents:-

- i. "Deviation Schedule" with "NO Deviations" and bidder's signature and company stamp.
- ii. Unpriced Price Schedule as enclosed with NIT with 'Quoted' word against items with bidder's signature and company stamp.
- iii. A copy of the sheet "Compliance Certificate" with bidder's signature and company stamp.
- iv. A copy of the sheet "Content Sheet" with bidder's signature and company stamp.

5.2 Documents/drawings shall be submitted after placement of order for BHEL and customer approval which has been specified in NIT.

NOTE-

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."

4.4 Drawings/ documents shall be submitted through Document Management System (DMS).



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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

Refer Section-I, Technical Requirement

2.0 TERMINATION KITS ((FRLS)

- 2.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to Refer Section-I, Technical Requirement.
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS (FRLS)

- 3.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to Refer Section-I, Technical Requirement.

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
- b) Conducting: Copper tape
- 4.6 Armour: Applicable (for applicable cables)



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- i. Single core: Round wire
- ii. Multi core: Round wire /strip

4.7 Inner sheath material: EXTRUDED PVC Type ST2

4.8 Outer sheath material: EXTRUDED FRLS PVC Type ST2

5.0 REQUIRED FAULT LEVEL:

Voltage Grade	3.3 kV (UE), 11 kV (UE)
RMS Value	40 kA for 0.12 sec
Peak Value	100 kA

6.0 TYPE TEST REQUIREMENT: Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II and cl. 4.0 of section-I of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

7.0 CABLE LUGS/ FERRULE (AS PER DIN): Tinned copper solderless crimping type cable lugs & ferrule suitable for aluminium compacted conductor cables.



**TECHNICAL SPECIFICATION FOR
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SECTION-II

STANDARD TECHNICAL REQUIREMENTS

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser 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 design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.
- 3.6 Cable lugs shall be of Tinned Copper/Aluminium & heavy duty type. Material of cable lug shall be as per project specific technical data sheet. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.

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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder 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.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.
- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.



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5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.

	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS BHILAI, NABINAGAR, KORBA, RAMAGUNDAM & MAUDA -FGD	PE-TS-466-507-E014
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ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/6.6/11//33 kV) and Jointing kits (Voltage Grade 3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded push on [termination kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

1.	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2.	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3.	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4.	Vendor should have capacity to manufacture 125 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5.	Manufactured & supplied at least 250 nos. cable termination and jointing kits of applicable type in one or more orders.
6.	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type 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. For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor (i.e. for up to which voltage grade and conductor cross-section area).

2. For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR): -

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:

a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

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<p>VINEETA PANGTEY</p> <p>Digitally signed by VINEETA PANGTEY DN: cn=VINEETA PANGTEY, o=BHEL, ou=PS-PEM, email=vineeta.pangtey@bhel.in, c=IN Date: 2022.02.02 17:40:56 +05'30'</p> <p>NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.</p>	<p>NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.</p>	<p>Sandeep Lodh</p> <p>Digitally signed by Sandeep Lodh DN: cn=Sandeep Lodh, o=BHEL, ou=PEM, email=sandeeplo@bhel.in, c=IN Date: 2022.02.02 17:43:17 +05'30'</p> <p>NAME: SANDEEP LODH DESIGNATION: Sr. DGM.</p>	<p>Debasisa Rath</p> <p>Digitally signed by Debasisa Rath DN: cn=Debasisa Rath, o=bhel, ou=pem, email=debasisa@bhel.in, c=IN Date: 2022.02.02 17:47:27 +05'30'</p> <p>NAME: DEBASISA RATH DESIGNATION: DH ELECT (AGM)</p>



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

PE-TS-466-507-E014

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b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

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2 X 500 MW MAUDA FGD STAGE-I

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-444-507-E014*

REVISION: 0



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

691219/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-444-507-E014

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SECTION

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	COMPLIANCE CERTIFICATE	01
	SPECIFIC TECHNICAL REQUIREMENTS	01
	DATA SHEET – A	02
2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	03

Total nos. of sheets including cover & separator sheets = 11 sheets

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**TECHNICAL SPECIFICATION FOR
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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

691219/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR CABLE
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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

- 2.1 Documents required to be submitted by the bidder along with the Technical offer: -
 - a) Type test report for 11kV and 3.3kV. Test Report should not be older than 10 years from date of bid opening i.e. 26.02.2018
- 2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

- 3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT
- 3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE: -

Drawings/ documents shall be submitted through document management system (DMS).



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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 11kV(UE)/ 3.3kV(UE)
- 2.2 Application: Indoor
- 2.3 Type: Heat Shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573 and IEC60502
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 11kV(UE)/ 3.3kV(UE)
- 3.2 Type: Heat Shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573 and IEC60502

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 11kV(UE)/ 3.3kV(UE)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non Metallic: Extruded Cross-linked Semi-conducting compound



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b) Metallic: Copper tape

4.6 Armour: As applicable

4.7 Inner sheath material: PVC Type ST2

4.8 Outer sheath material: FRLS PVC Type ST2

5.0 Required fault level:

For 3.3kV & 11kV

RMS Value – 40 kA for 0.12 sec

Peak Value – 100 kA

6.0 Type testing requirement: Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

7.0 CABLE LUGS/FERRULE (As per DIN): Crimping type solderless tinned Copper

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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



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1.0 INTENT OF SPECIFICATION

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	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS BHILAI, NABINAGAR, KORBA, RAMAGUNDAM & MAUDA -FGD	PE-TS-466-507-E014
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ITEMS: Cable termination and jointing kits.

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Notes:


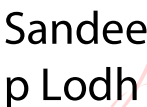

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**TECHNICAL SPECIFICATION FOR
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3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
<p>VINEETA PANGTEY</p> <p>Digitally signed by VINEETA PANGTEY DN: cn=VINEETA PANGTEY, o=BHEL, ou=PS-PEM, email=vineeta.pangtey@bhel.in, c=IN Date: 2022.02.02 17:41:15 +05'30'</p> <p>NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.</p>	<p>NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.</p>	<p>Sandeep Lodh</p> <p>Digitally signed by Sandeep Lodh DN: cn=Sandeep Lodh, o=BHEL, ou=PEM, email=sandeeplohdh@bhel.in, c=IN Date: 2022.02.02 17:43:38 +05'30'</p> <p>NAME: SANDEEP LODH DESIGNATION: Sr. DGM.</p>	<p>Debasisa Rath</p> <p>Digitally signed by Debasisa Rath DN: cn=Debasisa Rath, o=bhel, ou=peem, email=debasisa@bhel.in, c=IN Date: 2022.02.02 17:48:19 +05'30'</p> <p>NAME: DEBASISA RATH DESIGNATION: DH ELECT(AGM)</p>

**3x660 MW NPGCPL NABINAGAR STPP
(FGD SYSTEM PACKAGE)**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-457-507-E014*

REVISION: 0



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

	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	SPECIFICATION NO. PE-TS-457-507-E014	
		VOLUME II	
		SECTION	
		REVISION 00	DATE: 03.11.2021
		SHEET 1 OF 1	

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SI. No.	DESCRIPTION	NO. OF SHEETS
1.0	SECTION- I	
	COMPLIANCE CERTIFICATE	01
	SPECIFIC TECHNICAL REQUIREMENTS	01
	DATA SHEET – A	02
2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	03

Total nos. of sheets (including cover and separator sheets) = 11 sheets

	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	SPECIFICATION NO. PE-TS-457-507-E014	
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		SHEET 1 of 1	

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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

691219/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR CABLE
TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-457-507-E014

VOLUME II

SECTION I

REVISION 00

DATE: 03.11.2021

SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-457-507-E014	
VOLUME II	
SECTION I	
REVISION 00	DATE: 03.11.2021
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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer: -

- a) Type test report for 3.3 kV and 11kV as applicable. Test Report should not be older than 10 years from the date of bid opening i.e. 22.12.2017.

2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT

3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE:-

Document indicated above, shall be submitted through document management system (DMS).



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-457-507-E014

VOLUME II

SECTION I

REVISION 00

DATE: 03.11.2021

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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573 and IEC60502
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573 and IEC60502

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 3.3 kV(UE) / 11 kV(UE)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
- b) Conducting: Copper tape



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables)
- 4.8 Outer sheath material: PVC Type ST2

5.0 REQUIRED FAULT LEVEL:

Voltage Grade	3.3 kV (UE), 11 kV (UE)
RMS Value	40 kA for 0.12 sec
Peak Value	100 kA

- 6.0 TYPE TEST REQUIREMENT:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

- 7.0 CABLE LUGS/ FERRULE (AS PER DIN):** Crimping type solderless tinned Copper

691219/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-457-507-E014

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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-457-507-E014

VOLUME II

SECTION II

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DATE: 03.11.2021

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser 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 design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.
- 3.6 Cable lugs shall be of Tinned Copper/Aluminium & heavy duty type. Material of cable lug shall be as per project specific technical data sheet. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-457-507-E014

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DATE: 03.11.2021

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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder 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.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.
- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.



**PRE-QUALIFICATION REQUIREMENTS FOR
CABLE TERMINATION & JOINTING KITS
BHILAI, NABINAGAR, KORBA,
RAMAGUNDAM & MAUDA -FGD**

PE-TS-466-507-E014

REVISION NO. 00 DATE 02-02-2022

SHEET 1 OF 2

ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/6.6/11//33 kV) and Jointing kits (Voltage Grade 3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded push on [termination kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

1.	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2.	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3.	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4.	Vendor should have capacity to manufacture 125 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5.	Manufactured & supplied at least 250 nos. cable termination and jointing kits of applicable type in one or more orders.
6.	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type 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. For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor (i.e. for up to which voltage grade and conductor cross-section area).

2. For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR): -

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:

a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.	NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.	NAME: SANDEEP LODH DESIGNATION: Sr. DGM.	NAME: DEBASISA RATH DESIGNATION: DH ELECT(AGM)



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

PE-TS-466-507-E014

REVISION NO. 00 DATE 02-02-2022

SHEET 2 OF 2

b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

<u>PREPARED BY</u>	<u>CHECKED BY</u>	<u>REVIEWED BY</u>	<u>APPROVED BY</u>
NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.	NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.	NAME: SANDEEP LODH DESIGNATION: Sr. DGM.	NAME: DEBASISA RATH DESIGNATION: DH ELECT(AGM)

**4X250 MW BRBCL NABINAGAR FGD
(FGD SYSTEM PACKAGE)**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-463 -507-E014*

REVISION: 0



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

692065/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-463-507-E014

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2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	03

Total nos. of sheets (including cover and separator sheets) = 11 sheets



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-463-507-E014

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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

692065/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR CABLE
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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-463-507-E014

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DATE:23.11.2021

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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer: -

- a) Type test report for 3.3KV / 6.6 KV / 11KV as applicable. Test Report should not be older than 10 years from the date of bid opening

2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT

3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE:-

Document indicated above, shall be submitted through document management system (DMS).



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-463-507-E014

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DATE:23.11.2021

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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 6.6 KV (UE)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573 and IEC60502
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 6.6 KV (UE)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573 and IEC60502

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 6.6 KV (UE)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
- b) Conducting: Copper tape



**TECHNICAL SPECIFICATION FOR
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- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables)
- 4.8 Outer sheath material: PVC Type ST2

5.0 REQUIRED FAULT LEVEL:

Voltage Grade	6.6 KV (UE)
RMS Value	40 kA for 0.12 sec
Peak Value	100 kA

- 6.0 TYPE TEST REQUIREMENT:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

- 7.0 CABLE LUGS/ FERRULE (AS PER DIN):** Crimping type solderless tinned Copper

692065/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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SECTION-II**STANDARD TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser 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 design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.
- 3.6 Cable lugs shall be of Tinned Copper/Aluminium & heavy duty type. Material of cable lug shall be as per project specific technical data sheet. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-463-507-E014

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DATE: 23.11.2021

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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder 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.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.
- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-463-507-E014

VOLUME II

SECTION II


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5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.

	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS BHILAI, NABINAGAR, KORBA, RAMAGUNDAM & MAUDA -FGD	PE-TS-466-507-E014
		REVISION NO. 00 DATE 02-02-2022
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ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/6.6/11//33 kV) and Jointing kits (Voltage Grade 3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded push on [termination kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

1.	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2.	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3.	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4.	Vendor should have capacity to manufacture 125 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5.	Manufactured & supplied at least 250 nos. cable termination and jointing kits of applicable type in one or more orders.
6.	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type 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:


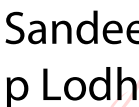

1. For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor (i.e. for up to which voltage grade and conductor cross-section area).

2. For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR): -

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:

a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

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**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

PE-TS-466-507-E014

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b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

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**2x250 MW NSPCL BHILAI TPP
(FGD SYSTEM PACKAGE)**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-468-507-E014*

REVISION: 0



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

691219/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-468-507-E014

VOLUME II

SECTION

REVISION 00

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Sl. No.	DESCRIPTION	NO. OF SHEETS
1.0	SECTION- I	
	COMPLIANCE CERTIFICATE	01
	SPECIFIC TECHNICAL REQUIREMENTS	01
	DATA SHEET – A	02
2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	03

Total nos. of sheets (including cover and separator sheets) = 11 sheets

	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	SPECIFICATION NO. PE-TS-468-507-E014	
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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

691219/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR CABLE
TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-468-507-E014

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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**

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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer:-

- a) Type test report for 6.6kV/11kV as applicable. Test Report should not be older than 10 years from the date of bid opening i.e. 04.12.2018.

2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT

3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE:-

Document indicated above, shall be submitted through document management system (DMS).



**TECHNICAL SPECIFICATION FOR
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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 6.6 kV(UE)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 6.6 kV(UE)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 6.6 kV(UE)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
- b) Conducting: Copper tape



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- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables)
- 4.8 Outer sheath material: PVC Type ST2

5.0 REQUIRED FAULT LEVEL:

Voltage Grade	6.6 kV (UE)
RMS Value	40 kA for 0.12 sec
Peak Value	100 kA

- 6.0 TYPE TEST REQUIREMENT:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573.

- 7.0 CABLE LUGS/ FERRULE (AS PER DIN):** Crimping type solderless tinned Copper

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**TECHNICAL SPECIFICATION FOR
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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser 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 design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.
- 3.6 Cable lugs shall be of Tinned Copper/~~Aluminium~~ & heavy duty type. Material of cable lug shall be as per project specific technical data sheet. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
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- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

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- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
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691219/2022/PS-PEM-EL

	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS BHILAI, NABINAGAR, KORBA, RAMAGUNDAM & MAUDA -FGD	PE-TS-466-507-E014
		REVISION NO. 00 DATE 02-02-2022
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ITEMS: Cable termination and jointing kits.

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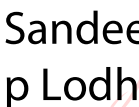

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**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

PE-TS-466-507-E014

REVISION NO. 00 DATE 02-02-2022

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**3x200 MW + 3x500 MW + 1x500 MW NTPC KORBA TPP STAGE I, II & III-
(FGD SYSTEM PACKAGE)**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-466-507-E014*

REVISION: 0



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



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-466-507-E014

VOLUME II

SECTION

REVISION 00

DATE: 03.11.2021

SHEET 1 OF 1

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Total nos. of sheets (including cover and separator sheets) = 11 sheets

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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

691219/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR CABLE
TERMINATION & JOINTING KITS**

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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer: -

- a) Type test report for 6.6kV/11kV & 33kV as applicable. Test Report should not be older than 10 years from the date of bid opening i.e. 14.02.2019.

2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT

3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE:-

Document indicated above, shall be submitted through document management system (DMS).



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573 and IEC60502
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573 and IEC60502

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
- b) Conducting: Copper tape



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- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables)
- 4.8 Outer sheath material: PVC Type ST2

5.0 REQUIRED FAULT LEVEL:

Voltage Grade	6.6 kV (UE)	33kV (E)
RMS Value	40 kA for 0.12 sec	21 kA for 0.12 sec
Peak Value	100 kA	52 kA

- 6.0 TYPE TEST REQUIREMENT:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

- 7.0 CABLE LUGS/ FERRULE (AS PER DIN):** Crimping type solderless tinned Copper

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STANDARD TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser 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 design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.
- 3.6 Cable lugs shall be of Tinned Copper/Aluminium & heavy duty type. Material of cable lug shall be as per project specific technical data sheet. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder 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.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.
- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.

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5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.

691219/2022/PS-PEM-EL

	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS BHILAI, NABINAGAR, KORBA, RAMAGUNDAM & MAUDA -FGD	PE-TS-466-507-E014
		REVISION NO. 00 DATE 02-02-2022
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ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/6.6/11//33 kV) and Jointing kits (Voltage Grade 3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded push on [termination kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

1.	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2.	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3.	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4.	Vendor should have capacity to manufacture 125 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5.	Manufactured & supplied at least 250 nos. cable termination and jointing kits of applicable type in one or more orders.
6.	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type 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:


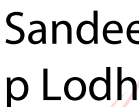

1. For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor (i.e. for up to which voltage grade and conductor cross-section area).

2. For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR): -

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:

a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
 <p>Digitally signed by VINEETA PANGTEY DN: cn=VINEETA PANGTEY, o=BHEL, ou=PS-PEM, email=vineeta.pangtey@bhel.in, c=IN Date: 2022.02.02 17:40:56 +05'30'</p> <p>NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.</p>	<p>NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.</p>	 <p>Digitally signed by Sandeep Lodh DN: cn=Sandeep Lodh, o=BHEL, ou=PEM, email=sandeeplohdh@bhel.in, c=IN Date: 2022.02.02 17:43:17 +05'30'</p> <p>NAME: SANDEEP LODH DESIGNATION: Sr. DGM.</p>	 <p>Digitally signed by Debasisa Rath DN: cn=Debasisa Rath, o=bhel, ou=pem, email=debasisa@bhel.in, c=IN Date: 2022.02.02 17:47:27 +05'30'</p> <p>NAME: DEBASISA RATH DESIGNATION: DH ELECT (AGM)</p>



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b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.

d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. 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.

5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
<p>VINEETA PANGTEY</p> <p>Digitally signed by VINEETA PANGTEY DN: cn=VINEETA PANGTEY, o=BHEL, ou=PS-PEM, email=vineeta.pangtey@bhel.in, c=IN Date: 2022.02.02 17:41:15 +05'30'</p> <p>NAME: VINEETA PANGTEY DESIGNATION: Dy. Mgr.</p>	<p>NAME: ABHAY AGRAWAL DESIGNATION: Sr. Mgr.</p>	<p>Sandeep Lodh</p> <p>Digitally signed by Sandeep Lodh DN: cn=Sandeep Lodh, o=BHEL, ou=PEM, email=sandeeplohdh@bhel.in, c=IN Date: 2022.02.02 17:43:38 +05'30'</p> <p>NAME: SANDEEP LODH DESIGNATION: Sr. DGM.</p>	<p>Debasisa Rath</p> <p>Digitally signed by Debasisa Rath DN: cn=Debasisa Rath, o=bhel, ou=peem, email=debasisa@bhel.in, c=IN Date: 2022.02.02 17:48:19 +05'30'</p> <p>NAME: DEBASISA RATH DESIGNATION: DH ELECT(AGM)</p>

**3x200 MW + 3x500 MW RAMAGUNDAM TPP STAGE- I & II
(FGD SYSTEM PACKAGE)**

**TECHNICAL SPECIFICATION
FOR
*CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-467-507-E014*

REVISION: 0



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

691219/2022/PS-PEM-EL

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Total nos. of sheets (including cover and separator sheets) = 11 sheets

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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' shall not be considered.

BIDDER'S STAMP & SIGNATURE

691219/2022/PS-PEM-EL

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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit 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 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer: -

- a) Type test report for 6.6kV/11kV & 33kV as applicable. Test Report should not be older than 22nd August 2009

2.2 List of documents and their submission / resubmission schedule after order placement shall be as per NIT

3.0 BILL OF QUANTITIES

3.1 Quantity requirement shall be as per BOQ-cum-price schedule attached with NIT

3.2 Supplier to give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

NOTE:-

Document indicated above, shall be submitted through document management system (DMS).



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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): Cable accessories for extruded power cables.
- 1.2 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 2.2 Application: Indoor / Outdoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573 and IEC60502
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 3.2 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.3 Sizes: As per BOQ.
- 3.4 Testing requirement conforming to As per IS 13573 and IEC60502

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 6.6 kV(UE) / 33 kV(E)
- 4.2 Conductor material: Stranded aluminium
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound
- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound
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- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables)
- 4.8 Outer sheath material: PVC Type ST2

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Voltage Grade	6.6 kV (UE)	33kV (E)
RMS Value	40 kA for 0.12 sec	21 kA for 0.12 sec
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- 6.0 TYPE TEST REQUIREMENT:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS: 13573 and IEC60502.

- 7.0 CABLE LUGS/ FERRULE (AS PER DIN):** Crimping type solderless tinned Copper

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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



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- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing 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 Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder 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.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.
- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

SPECIFICATION NO. PE-TS-467-507-E014

VOLUME II

SECTION II

REVISION 00

DATE: 29.10.2021

Sheet 3 of 3

5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.

DELIVERY SCHEDULE

PACKAGE: CABLE TERM.& JOINT KITS

PROJECT:

- 1) 3X660 MW NTPC NORTH KARANPURA STPP – FGD
- 2) 2X500 MW MAUDA STAGE-I - FGD
- 3) 3X660MW NPGCPL NABINAGAR STPP – FGD
- 4) 4X250MW BRBCL NABINAGAR – FGD
- 5) 2X250MW NSPCL BHILAI TPP – FGD
- 6) 3X200MW + 3X500MW + 1X500MW NTPC KORBA – FGD
- 7) 3X200MW + 3X500MW NTPC RAMAGUNDAM – FGD

1. Delivery Period:

Delivery period for sake of GeM bid is chosen as 999 days (maximum allowable delivery time) from PO date. However, this period shall not be considered for Delivery and Delay analysis purpose. For Delivery and delay analysis (LD) purpose, delivery schedule shall be as per Standard Delivery schedule mentioned as per below:-

Standard Delivery Terms for Supply Portion-

For Lot-1: Within Four (04) months from date of CAT-1 approval of Primary drawing/documents, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period. Delay in BHEL's comments/approval beyond 18 days shall also be considered for delay analysis.

For Subsequent Lots: Within 3 months from Lot clearance by BHEL.

Drawing No	Drawing Title	P/S	BHEL Inputs	Drg. Sch.
PE-V0-XXX-507-E031	TECHNICAL DATA SHEET OF CABLE TERMINATION & JOINTING KITS	Primary		R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.
PE-V0-XXX-507-E032	GA OF CABLE TERMINATION & JOINTING KITS	Primary		R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.
PE-V0-XXX-507-E033	TYPE TEST REPORT / CERTIFICATES	Primary		R-0 within 03 months of approval of other primary drawing/documents & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.
PE-V0-XXX-507-E904	QUALITY PLAN FOR CABLE TERMINATION & JOINTING KITS	Primary		R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.

DELIVERY SCHEDULE

Approval process of primary documents shall be completed within 90 days from Purchase Order. If there is delay from buyer side in approval of drawing - the delivery period shall be refixed without LD for the period of delay in approval of Drawing. Only primary documents shall be considered for refixation of delivery.

Further, following to be noted: -

- a) Vendor to start manufacturing activities only after obtaining specific manufacturing clearance from BHEL Purchase group.
- b) In case BHEL manufacturing clearance date is later than the date of CAT-1 approval of Primary drawings / documents, then the contractual delivery period will be calculated by setting off the time gap between CAT-1 approval date of Primary drawings / documents and the manufacturing clearance date, from any delay by vendor in submission / re-submission of Primary drawings / documents.

Risk & Cost Purchase clause- Annexure-II

BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor after due notice of a period of 14 days' by BHEL in any of the following cases:

- i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-à-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;
- ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;
- iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;
- iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;
- v) Termination of Contract on account of any other reason (s) attributable to Seller.
- vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;
- viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;
- ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;
- x) Non-compliance to any contractual condition or any other default attributable to Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

3.1 Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

Risk & Cost Purchase clause- Annexure-II

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time

of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

3.2 * Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract

quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk &

Cost amount.

3.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line with LD clause no. 16 of GCC, for the delay attributable to

contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination

of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below.

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of

Hold (if any) not attributable to contractor = T1

ii. Let the value of executed work till the time of termination of contract = X

Risk & Cost Purchase clause- Annexure-II

iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were

planned for execution till termination of contract = Y

iv. Delay in executed work attributable to contractor i.e. $T2 = [1-(X/Y)] \times T1$

v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

3.4. Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk & cost has been invoked shall be made from the following:

- a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
- b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
- c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.



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

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



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

Project/Package परियोजना/पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति मद् (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	PO ref no/date पीओ संदर्भ सं. /तिथि	Supplied Quantity आपूर्ति की मात्रा	Date of Supply आपूर्ति की तिथि

We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद् की आपूर्ति के लिए उपयुक्त है।

Name: नाम:	Desig: पद:	Contact No: दूरभाष सं.:	Sign: हस्ताक्षर:	Date: तिथि:
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Company's Seal/Stamp:- कंपनी का मुहर:-



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

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



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

8.	After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.) भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.4 विवरण अनुलग्नक -2.4 पर संलग्न है।			
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	Details attached at Annexure – F2.5 विवरण अनुलग्नक - F2.5में संलग्न है।			
10.	Sources of Raw Material/Major Bought Out Item कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	Details attached at Annexure – F2.6 विवरण अनुलग्नक - F2.6में संलग्न है।			
11.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	Details attached at Annexure – F2.7 विवरण अनुलग्नक - F2.7 पर संलग्न है			
12.	Manufacturing facilities (List of machines, special process facilities, material handling etc.) विनिर्माण सुविधा(मशीनों की सूची, विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	Details attached at Annexure – F2.8 विवरण अनुलग्नक - F2.8में संलग्न है।			
13.	Testing facilities (List of testing equipment) परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	Details attached at Annexure – F2.9 विवरण अनुलग्नक – F2. 9 में संलग्न है।			
14.	If manufacturing process involves fabrication then- यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- List of qualified Welders पात्र वेल्डर की सूची List of qualified NDT personnel with area of specialization विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.10 विवरण अनुलग्नक - F2.10में संलग्न है। (if applicable) लागू / लागू नहीं			
15.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure. –F2.11 विवरण अनुलग्नक - F2.10में संलग्न है। (if applicable) (यदि लागू हो)			
16.	Supply reference list including recent supplies नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	Details attached at Annexure – F2.12 विवरण अनुलग्नक - F2.12 में संलग्न है। (as per format given below) (नीचे दिए गए प्रारूप के अनुसार)			
Project/ package परियोजना /पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	PO ref no/date पीओ संदर्भ सं. / तिथि	Supplied Quantity आपूर्ति की मात्रा	Date of Supply आपूर्ति की तारीख
17.	Product satisfactory performance feedback letter/certificates/End User Feedback उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फीडबैक	Attached at annexure - F2.13 अनुलग्नक F2. 3पर संलग्न है			



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

18.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है Note:- Reports need not to be submitted	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.14 विवरण अनुलग्नक - F2.1 4में संलग्न है (if applicable) (यदि लागू हो)
19.	Statutory / mandatory certification for the proposed product प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.15 (if applicable) (यदि लागू हो)
20.	Copy of ISO 9001 certificate आईएसओ 9001 प्रमाण पत्र की प्रति (if available) (यदि उपलब्ध हो)	Attached at Annexure – F2.16 अनुलग्नक में संलग्न - F2.1 6 है
21.	Product technical catalogues for proposed item (if available) प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	Details attached at Annexure – F2.17 विवरण अनुलग्नक - F2.1 7 में संलग्न है
Name: Desig: Sign: Date: नाम: पद: हस्ता तिथि: क्षर:		

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