Bharat Heavy Electricals Limited

(A Government of India Enterprise)
High Pressure Boiler Plant
Tiruchirappalli – 620 014

MATERIALS MANAGEMENT

4th Floor, 24 Bldg. HPBP BHEL, Trichy-620014

Phone: 0431 – 257 8109, 7446; E-mail: kevin@bhel.in, mohann@bhel.in; www.bhel.com

NOTICE INVITING e-TENDER

Bid No.: GEM/2021/B/1378828 **23.07.2021**

Subject: TWO-PART E-TENDER INVITING TECHNO-COMMERCIAL AND PRICE BID FOR SUPPLY OF ARMOURED EXTENSION CABLE (TYPE-KX) FOR COAL FIRED THERMAL POWER PLANT / BHUSAWAL UNIT-6 (660MW) PROJECT.

General Instructions

- The tender documents shall be deemed to form an integral part of the purchase order.
- Tender can be cancelled at any stage due to unavoidable circumstances.
- Bidders are advised not to wait till the last minutes w.r.t tender closing time to submit their offer to avoid complications related with internet connectivity / network problem/ power failure etc.
- Bidders are advised take due care while quoting the technical and price bid. Bidders, those who tampers with tendering procedure affecting ordering process or misusing the technical information of the tender document or withdrawing their offer after price bid opening, will be penalized as per BHEL guidelines on suspension of business dealings with suppliers/ contractors. Abridged version of the guideline is available in www.bhel.com.
- It is advised that all the documents to be submitted are kept scanned or converted to PDF format in a separate folder on your computer before starting online submission.
- The qualification of vendors will be based Pre-Qualification Requirement (PQR) document. Subsequently techno-commercial evaluation will be done; hence, it is mandatory to submit the documents sought in PQR.
- DISCLAIMER CLAUSE: Neither Bharat Heavy Electricals Ltd nor the service provider for e-tendering is responsible for any failure of submission of bids, due to failure of internet or other connectivity problems or reasons thereof.
- Deviations, if any, may be indicated in the Sub-Delivery Enquiry Deviation Format.
- Customer approval of Bidder is applicable. Techno-commercially qualified Bidders will be asked to submit the credentials for customer approval. The Part-2 bids (Price bid) of the Bidder will be opened, subject to fulfilment of Pre-Qualification Requirement, successful techno-commercial (Part-1 bid) evaluation and Customer acceptance, based on the credentials.
- In order to avail benefits as per MSE clause. Bidders have to upload the Udyam Registration certificate.
- The Annexure-A / Additional Terms & Conditions (ATC) & Annexure-B / Vendor Details Questionnaire shall be submitted.
- Any pre-bid query, kindly contact: Mr. Kevin Ark Kumar, Manager/Materials Management/BOI Tel: 0431-2578109, email: kevin@bhel.in; Mr. N Mohan, Deputy Engineer/Materials Management/BOI Tel: 0431-2577446, email: mohann@bhel.in and get your queries cleared before submitting the offer in EPS.

For **Bharat Heavy Electricals Limited**

Kevin Ark Kumar
Manager / Materials Management
Fourth floor, 24 Building
B.H.E.L., Tiruchirappalli – 620 014, Tamil Nadu
Phone: 0431-2578109 / Email: kevin@bhel.in

Package Details

SL No,	MATLCD	SHORT TEXT	DESCRIPTION	UOM	QTY	DESTINATION	STATUS
10	L172719509107001	2P X 1.31 SQ.MM EXTENSION CABLE-KX	2 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/ BHUSAWAL REV 00 AND QUALITY PLAN CQP CI:QA:1727:CQP:16 REV 01	M	4,500.00	**PROJECT SITE, BHUSAWAL**	**QUOTED / NOT QUOTED**
20	L172719509107002	12P X 1.31 SQ.MM EXTENSION CABLE-KX	12 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/ BHUSAWAL REV 00 AND QUALITY PLAN CQP CI:QA:1727:CQP:16 REV 01	M	1,800.00	**PROJECT SITE, BHUSAWAL**	**QUOTED / NOT QUOTED**
30	L17271SC10408001	2P x 1.31 MM² EXTENSION CABLE - KX	2 Pair x 1.31 mm² Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/ BHUSAWAL/ 00 Quality plan ref.: CI:QA:1727:CQP:16/ 01	M	100.00	**PROJECT SITE, BHUSAWAL**	**QUOTED / NOT QUOTED**
40	L17271SC10408002	4P x 1.31 MM² EXTENSION CABLE - KX	4 Pair x 1.31 mm² Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/ BHUSAWAL/ 00 Quality plan ref.: CI:QA:1727:CQP:16/ 01	M	800.00	**PROJECT SITE, BHUSAWAL**	**QUOTED / NOT QUOTED**
50	L1727S9509105001	2P X 1.31 SQ.MM EXTENSION CABLE-KX	2 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/ BHUSAWAL REV 00 AND QUALITY PLAN CI:QA:1727:CQP:16 REV 01.	M	450.00	**BHEL STORES, TRICHY**	**QUOTED / NOT QUOTED**
60	L1727S9509105002	12P X 1.31 SQ.MM EXTENSION CABLE-KX	12 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/ BHUSAWAL REV 00 AND CI:QA:1727:CQP:16 REV 01.	M	180.00	**BHEL STORES, TRICHY**	**QUOTED / NOT QUOTED**
70	L1727SSC10403001	2P X 1.31 MM² EXTENSION CABLE - KX	2 Pair x 1.31 mm² Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/ BHUSAWAL/ 00 Quality plan ref.: CI:QA:1727:CQP:16/ 01	M	10.00	**BHEL STORES, TRICHY**	**QUOTED / NOT QUOTED**
80	L1727SSC10403002	4P X 1.31 MM² EXTENSION CABLE - KX	4 Pair x 1.31 mm² Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/ BHUSAWAL/ 00 Quality plan ref.: CI:QA:1727:CQP:16/ 01	M	80.00	**BHEL STORES, TRICHY**	**QUOTED / NOT QUOTED**
			TOTAL		**7,920.00**		

NOTE:

1. **The tender is floated as a Single Package**
2. **Partial Offer will be rejected**
3. **Do Not mention the prices here**
4. **Sl No. 50 TO 80 are Spares requirement & the cable length to be despatched in separate drums & shall be clearly marked "NS-S (Mandatory Spares)"**

TECHNICAL DETAILS-1

MATERIAL CODE	L172719509107001
ITEM NAME	7001 2P X 1.31 SQ.MM EXTENSION CABLE-KX (4500M)
DESCRIPTION	2 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL REV 00 AND QUALITY PLAN CQP CI:QA:1727:CQP:16 REV 01
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-2

MATERIAL CODE	L172719509107002
ITEM NAME	7002 12P X 1.31 SQ.MM EXTENSION CABLE-KX (1800M)
DESCRIPTION	12 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL REV 00 AND QUALITY PLAN CQP CI:QA:1727:CQP:16 REV 01
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-3

MATERIAL CODE	L1727S9509105001
ITEM NAME	5001 2P X 1.31 SQ.MM EXTENSION CABLE-KX (450M)
DESCRIPTION	2 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL REV 00 AND QUALITY PLAN CI:QA:1727:CQP:16 REV 01.
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-4

MATERIAL CODE	L1727S9509105002
ITEM NAME	5002 12P X 1.31 SQ.MM EXTENSION CABLE-KX (180M)
DESCRIPTION	12 PAIR X 1.31 SQ.MM, ARMOURED, EXTENSION CABLE AS PER DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL REV 00 AND CI:QA:1727:CQP:16 REV 01.
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-5

MATERIAL CODE	L1727SSC10403001
ITEM NAME	3001 2P X 1.31 MM^2 EXTENSION CABLE – KX (10M)
DESCRIPTION	2 Pair x 1.31 mm^2 Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/BHUSAWAL/00 Quality plan ref.: CI:QA:1727:CQP:16/01
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-6

MATERIAL CODE	L1727SSC10403002
ITEM NAME	3002 4P X 1.31 MM^2 EXTENSION CABLE – KX (80M)
DESCRIPTION	4 Pair x 1.31 mm^2 Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/BHUSAWAL/00 Quality plan ref.: CI:QA:1727:CQP:16/01
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-7

MATERIAL CODE	L17271SC10408001
ITEM NAME	8001 2P x 1.31 MM^2 EXTENSION CABLE – KX (100M)
DESCRIPTION	2 Pair x 1.31 mm^2 Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/BHUSAWAL/00 Quality plan ref.: CI:QA:1727:CQP:16/01
UNIT OF MEASUREMENT	METER

TECHNICAL DETAILS-8

MATERIAL CODE	L17271SC10408002
ITEM NAME	8002 4P x 1.31 MM^2 EXTENSION CABLE – KX (800M)
DESCRIPTION	4 Pair x 1.31 mm^2 Armoured Extension Cable as per Technical Spec ref.: DS:TCI:254:EXTNCABLE/BHUSAWAL/00 Quality plan ref.: CI:QA:1727:CQP:16/01
UNIT OF MEASUREMENT	METER

Pre-Qualification Requirement
Compensating Cables

1) All machineries and facilities that are required for the complete manufacture of cables, such as wire drawing, stranding, bunching, sheathing (extrusion/wrapping) and armouring processes shall be available in-house.

2) All measuring instruments and testing facilities required to carry out the necessary tests that are to be conducted in process and on finished cables shall be available in-house.

3) None of the stages/processes involved in the manufacturing of the cable, shall be off loaded or out-sourced.

4) Vendor should have facilities to carry out acceptance, routine and type tests as per Quality plan, either in-house or at NABL accredited labs.

5) Vendor should have supplied similar design/rating & varieties of Compensating cables to power plant / industrial installations in India or abroad with satisfactory performance for the past 2 years.

6) Vendor to submit copy of largest purchase order executed by them in terms of quantity & value, in the last three years.

BHARAT HEAVY ELECTRICALS LIMITED
HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.
CONTROLS AND INSTRUMENTATION/FB

DATA SHEET FOR THERMOCOUPLE EXTENSION CABLE (TYPE - KX) & COMPENSATING CABLE (TYPE - RX)

DATASHEET No. TCI:254:EXTNCABLE/BHUSAWAL REV 00

Revision History

Rev. No.	Date	Description	Prepared	Reviewed	Approved
00	18-09-2020	Initial Release	K. Sudharsan	K Rajbabu	Aswini Kumar Panda

DATA SHEET FOR EXTENSION CABLE

DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL, Rev 00

Name and Address of the Manufacturer				
1.	**Applicable Standards**			ANSI MC 96.1, IS-8784-1987, IS-1554 (Part-I), IS-5831-1984, IS-8130, IS-10418, IS-10810, IEC-332, IEC-754-1, IEEE-383, ASTM-D-2843, ASTM-D-2863, SS-4241475-Cl.-F3, BS 5308-2, IS-3975
2.	**Voltage grade**	V		300 V / 500 V RMS (Core-Earth / Core-Core)
3.	**Temperature Rating**	^{o}C		85
4.	**Construction of cable**			As per Constructional diagram enclosed with this Data sheet.
5.	**Codes & Standards**			ANSI MC 96.1, IEC 332-1 & IS 8784-1987
6.	**Conductor:-**			
7.	**No. Of Pairs**	No.		2 Pair, 4 Pair, 8 Pair & 12 Pair (As Applicable)
8.	**Area of Cross-section**	Sq.mm		1.31 (16 AWG)
9.	**No. of Strands / Strand diameter (for finished cable)**			Solid Conductor (1 / 1.29 mm)
10.	**Conductor Type**			ANSI MC 96.1 Type KX Extension -Type RX Compensating
11.	**Material**		KX Type	Positive Lead → Chromel Negative Lead → Alumel
			RX Type	Positive Lead → Copper Negative Lead → Copper Alloy
			JX Type	Positive Lead → Iron Negative Lead → Constantan
12.	**Accuracy (From 0°C to 200°C)**	°C		± 2.2
13.	**Insulation :-**			
a.	**Material**			HRPVC, heavy duty, self-extinguishing type

b.	**Type and Standard**		Type-C, as per IS-5831,1984
c.	**Thickness –Nominal.**	mm	0.6
d.	**Method of application**		Extruded
e.	**Volume Resistivity**	Ω-cm	1 x10^{13} @ 27 °C 1 x 10^{10} @ 85 °C
14.	**Pairing & Twisting :-**		
a.	**Lay**		Pair Twisted with Lay of 60mm (max)
b.	**Direction of lay (for pairing)**		All pairs in the same direction. Lapped to form bunch with Mylar tape.
c.	**Lay for laid up pairs**	Twist/ metre	4 to 6
15.	**Binding Material :-**		
a.	**Type of Material**		Mylar Tape
b.	**Thickness (min)**	Micron	28
c.	**Coverage**	%	100
d.	**Overlap (Minimum)**	%	25
e.	**Filler Material (wherever applicable)**		Flame Retardant, Non-Hygroscopic, moisture resistant material, suitable for the operating temperature of the cable with FRLS property. Fillers shall not stick to the insulation and inner sheath.
16.	**Shielding:-**		
a.	**Type of Material**		Aluminium Backed Mylar Tape
b.	**Thickness**	mm	For Pair Shielding → 60 Microns For Overall Shielding → 75 Microns
c.	**Coverage**	%	100
d.	**Overlap (Minimum)**	%	25

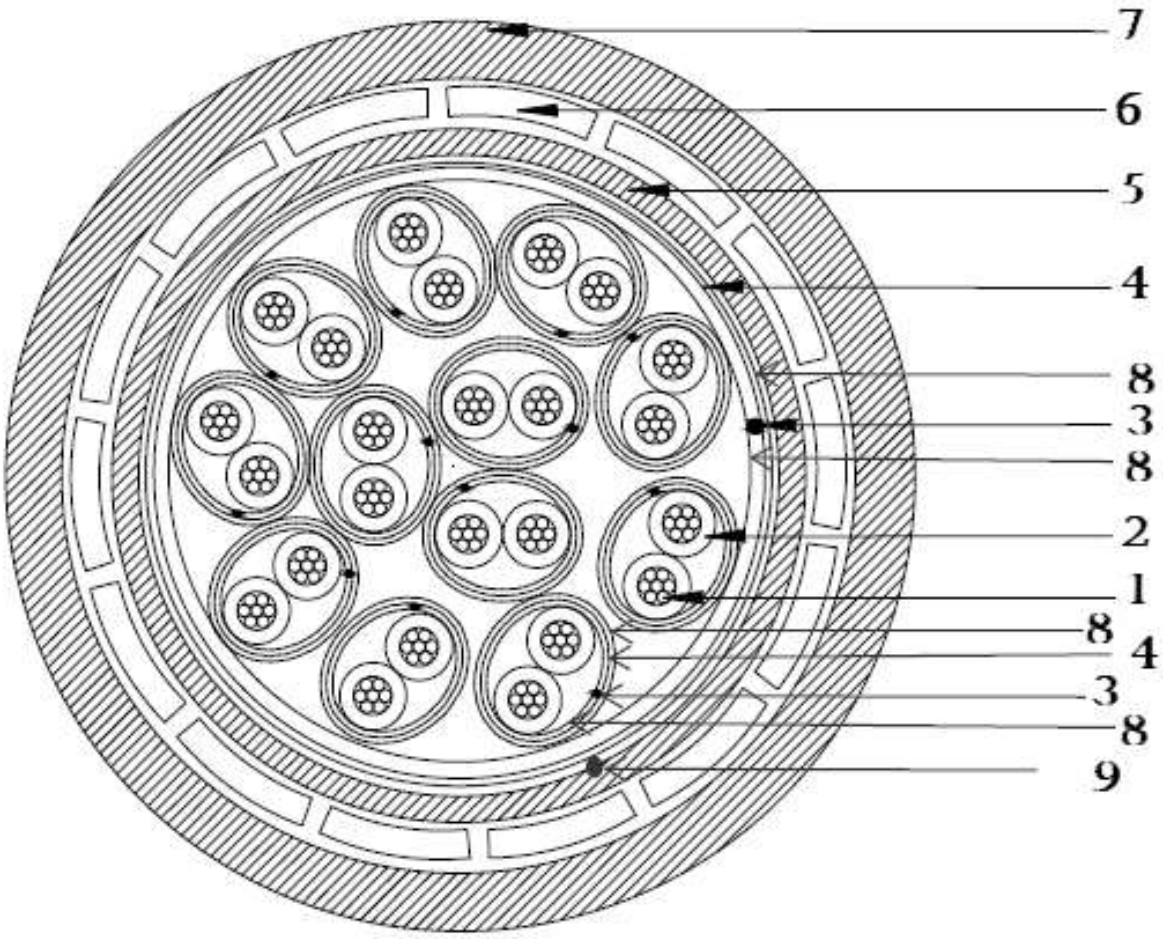
17.	**Drain wire for Shielding :-**		
a.	**Material**		Annealed, Tinned Stranded Copper
b.	**No. of strands / Diameter**	No./mm	7 / 0.3
c.	**Area of cross section**	Sqmm	0.5
d.	**Rip cord**		Non-metallic ripcord shall be provided below the Inner Sheath
18.	**Inner Sheath:-**		
a.	**Material**		PVC with FRLS properties
b.	**Type and Standard**		Type-ST2, as per IS-5831
c.	**Thickness (Minimum)**	mm	As per IS-1554 Part-I
d.	**Method of application**		Extruded
e.	**Colour**		Black
19.	**Armouring :-**		
a.	**Material**		Galvanized Steel wire / strip
b.	**Standard**		As per IS-3975 & IS-1554
c.	**Direction of lay**		Left Hand
20.	**Outer Sheath:-**		
a.	**Material**		PVC, with FRLS Properties, Resistant to Water, Fungus, Termite & Rodent attack
b.	**Type and Standard**		Type-ST2, as per IS-5831
c.	**Thickness (Minimum)**	mm	As per IS-1554 Part-I
d.	**Method of application**		Extruded
e.	**Colour**		Yellow
21.	**Cable Marking on Outer sheath**		"Manufacturer's name, Year of manufacture, Voltage rating, Type of Insulation, No. of pairs & Conductor size, Voltage rating, Type of Cable, FRLS" embossed @ 2 metre interval.

22.	**Sequential length marking**		Every 1 Metre for Progressive Length by Printing on Outer sheath.
23.	**Tolerance on Outer diameter**	mm	± 2
24.	**Tolerance on Outer diameter for the entire length**	mm	1
25.	**Ovality**	mm	1
26.	**Recommended Installation Radius**		12 times the OD of the Cable
27.	**Standard Packing Length**	m	1000
28.	**Tolerance on standard packing length**	%	± 5%
29.	**Non-standard Length**		Last length shall be supplied in single length
30.	**Marking on Cable Drum**		Each drum shall carry manufacturer's name, purchaser's name, address and contact number, item Description, Conductor size, Insulation material, Number of pairs, Type of cable, Year of manufacture, Purchase order Number, Length of cable, net and gross weight stencilled on both sides of the drum. A tag containing same information shall be attached to the leading end of the cable. An arrow and suitable accompanying wording shall be marked on one end of the reel indicating the direction in which it should be rolled. Drum numbers are to be indicated on the Cable drums.
31.	**Electrical Parameters :-**		
a.	**Conductor loop resistance @ 20° C (Maximum)**	Ω/km	760
b.	**Mutual Capacitance @ 0.8 kHz (maximum)**	nF/km	120

c.	**Insulation Resistance (minimum)**	MΩ/km	100
d.	**Cross-Talk Figure @ 0.8 kHz (minimum)**	dB	60
e.	**Attenuation @ 1kHz (maximum)**	dB/km	1.2
f.	**EMF @ 100 ^{0}C**	mV	4.095
g.	**EMF @ 200 ^{0}C**	mV	8.137
32.	**Test Voltage - Between Conductor- Conductor (minimum.)**	kV/ minute	1.5 kV for 1 Minute
33.	**Test Voltage - Between Conductor - Shield (minimum.)**	kV/ minute	1.0 kV for 1 Minute
34.	**FRLS Properties of Inner & Outer Sheath :-**		
a.	**Oxygen Index @ ambient temperature as per ASTM-D-2863**	%	Not Less than 29
b.	**Temperature Index @ oxygen index 21 As per ASTM-D-2863**	°C	Not Less than 250
c.	**Smoke density rating As per ASTM-D-2843**	%	Shall not be more than 60 %
d.	**Acid gas generation As per IEC 754 Part I**	%	Shall not be more than 20% by weight
e.	**Flammability Tests As per IEEE-383 Part I, IEC-332-3, Category-B & Swedish Chimney Test SS-4241475, Clause-F3**		Shall pass
35.	**Anti-rodent, Anti termite and Moisture resistance properties for Inner and Outer Sheath**		Shall be present. Presence of lead will be confirmed

36.	**Insulation Resistance shall be tested shall read minimum**			100 Mega Ohm/km	
37.	**Quality Plan**			QA:CI:STD:QP:29 Rev 06	
38.	**Packing Details**			Cables shall be supplied in Non-returnable wooden drums of heavy construction. The surface of the drum and the outer most cable layer shall be covered with waterproof cover. Both the ends of the cables shall be properly sealed with heat shrinkable PVC/Rubber caps secured by 'U' nails so as to eliminate ingress of water during transportation, storage and erection. Drums shall be anti-rodent, anti-termite treated and smooth finished. Wooden drums shall comply with IS-10418.	
39.	**Pair Identification**			Both cores of a pair shall be printed with Pair Number at an interval of 50 mm. Example: "1" will be printed on both cores of Pair-1. In the same way, other pair numbers will be printed, as applicable. Number Printing shall be legible and indelible. The colour of number printing shall be in contrast with the core colour.	
40.	**Cable**	**Outer Sheath**	**Wire**	**Insulation Color**	**Conductor Material**
	KX	YELLOW	Positive	Yellow	Nickel/Chromium
			Negative	Red	Nickel/Aluminium
	JX	BLACK	Positive	White	Iron
			Negative	Red	Constantan
	RX	GREEN	Positive	Black	Copper
			Negative	Red	Copper Nickel Alloy

12P X 16 SWG INDIVIDUAL AND OVERALL SCREENED ARMOURED RX TYPE T/C CABLE



LEGEND :

1- MULTI STRANDED CU-CU ALLOY (RX) CONDUCTOR

2 - EXTRUDED PVC INSULATION

3- MULTI-STRANDED 0.5 SQMM ATC DRAIN WIRE

4- AL MYLAR SCREEN

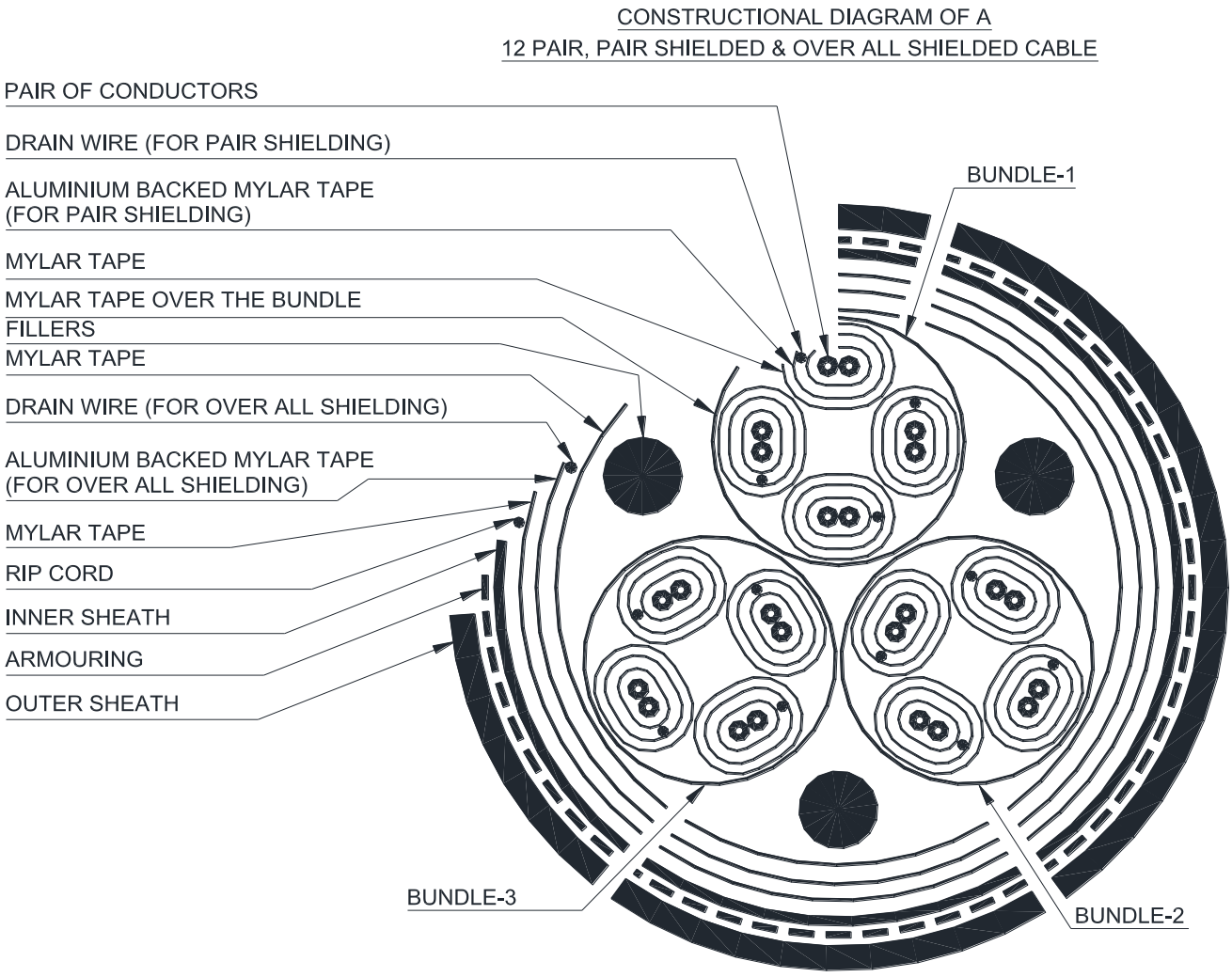
5- EXTRUDED PVC INNER SHEATH

6-GALVANISED STEEL STRIP ARMOURED

7-EXTRUDED FRLS PVC OUTER SHEATH

8-MYLAR TAPE

9-RIP CORD



Constructional details of a 12 Pair cable has been shown.
Fillers shall be provided wherever applicable.
Position, Shape and Number of fillers shall be suitably decided by the vendor for all the varieties of Cables.

SITE CONDITIONS :- Atmosphere	Dusty, Salty, corrosive & Heavily polluted
Over all Quantity Tolerance	+ 0 % / - 2 %
Guarantee	A Guarantee Certificate for 18 months of trouble-free operation/performance from the date of shipment or 12 months from the date of commissioning whichever is earlier shall be furnished.
General	All the parameters shall comply with the respective IS, wherever applicable.

Confirmation to be given by the vendor.	1. Any deviation to this Data sheet requirement shall be clearly brought out in the offer, separately in the Sub-Delivery Enquiry Deviation format. 2. In case of No deviation, the Sub-Delivery Enquiry Deviation format has to be filled in as "No Deviation" and furnished along with the offer, indicating the Data sheet No. and Quality Plan No. 3. Within 15 days of placement of a Purchase order, vendor shall submit the Filled in, Signed copy of the Data sheet, and get it approved by BHEL(T) before start of manufacture.

TOLERANCE ON OUTER DIAMETER

Definition:-

This is the allowable Limits on the diameter of the actual cable from the Data sheet value /Design value.

The Data sheet indicates ± 2 mm. This means that if the Data sheet value / Design value of the cable diameter is 'X' mm, then all the actual cable diameter measured over the entire length / quantity shall fall within the Upper Limit 'X + 2' mm and the Lower Limit 'X - 2' mm. However, the following clauses must also be satisfied.

Example:-

Let the Data sheet value / Design value of the cable diameter be 14 mm (X)

Then, the measurements of the actual cable diameter taken over the entire length shall fall between the limits 16 mm and 12 mm.

(X + 2) (X - 2)

TOLERANCE ON OUTER DIAMETER FOR THE ENTIRE LENGTH

Definition:-

This is the maximum allowable difference between the Highest actual cable diameter and the Lowest actual cable diameter measured over a drum length.

The Data sheet indicates 1 mm. This means that if the Highest actual cable diameter is say, 'D1' mm, and the Lowest actual cable diameter is 'D2' mm, then, 'D1 - D2' shall be maximum 1 mm and 'D1' and 'D2' shall also fall within the Upper and Lower limits as above.

Example:-

Let the Highest actual cable diameter measured be 16 mm (D1).
Let the Lowest actual cable diameter measured be 15 mm (D2).
Then, Tolerance for the entire length is 16 mm - 15 mm = 1 mm
(D1) (D2)

Comment :-

As the Highest actual cable diameter and Lowest actual cable diameter falls within the Upper and Lower Limits as above, and the difference between them is 1 mm maximum, the diameter values are acceptable.

OVALITY

Definition:-

This is the maximum allowable difference between the measurements of the actual cable diameter in 'x' and 'y' directions in any particular section.

The Data sheet indicates 1 mm. This means that if the actual cable diameters measured are say, 'D3' mm, and 'D4' mm, in 'x' and 'y' directions respectively in one particular section. Then, the difference between 'D3' and 'D4' shall be maximum 1 mm. Also 'D3' and 'D4' shall fall within the Upper and Lower limits as above.

Example :-

Let the actual cable diameter in 'x' direction in one section be 16 mm (D3).

Let the actual cable diameter in 'y' direction in the same section be 15 mm(D4).

Then, Ovality is 16 mm - 15 mm = 1 mm
(D3) (D4)

Comment :-

As the actual cable diameters measured in 'x' and 'y' directions of the same section falls within the Upper and Lower limits as above, and the difference between them is 1 mm maximum, the diameter values are acceptable.

-------End of Technical Specifciation-------

DATA SHEET FOR EXTENSION CABLE

DATASHEET NO. TCI:254:EXTNCABLE/BHUSAWAL, Rev 00

Annexure to be filled by Bidder

Datasheet Requirement			2 P x 1.31 Sq.mm	4 P x 1.31 Sq.mm	8 P x 1.31 Sq.mm	12 P x1.31 Sq.mm
1.	Diameter over Conductor	mm				
2.	Diameter over insulated conductor	mm				
3.	Diameter Over laid up Pair	mm				
4.	Diameter under Inner sheath	mm				
5.	Thickness of Inner Sheath	mm				
6.	Diameter over Inner sheath	mm				
7.	Shape & Dimension of Armour wire					
8.	Diameter over Armour	mm				
9.	Diameter over Outer Sheath	mm				
10.	Conductor loop Resistance @ 20 ^{0}C (maximum)	Ω/ km				
11.	Drain Wire Resistance (maximum)	Ω/ km				
12.	L/R ratio	μH/Ω				
13.	Mutual Inductance (maximum)	mH/ km				

DEVELOPMENT CONSULTANT PVT. LTD.

Reviewed only for general conformance with contract drawings and specifications; Contractor to be responsible for any error and for fulfilment of details requirements of contract documents.

CODE:– 1 DATE:– 03-05-2021

DISTRIBUTED BY:– YUGANT

1	Approved	4	For information only
2	Approved Subject to compliance to comments, Proceed with manufacturing/construction. Revised document required to be submitted after incorporating the comments.	V	Null and Void (Not applicable)
3	Not Approved. Resubmission required		

SEE COVERING LETTER

LETTER REF.NO.:– 18V06-I01-LOT-BHEL-0213

)NTROLS AND INSTRUMENTATION/QA/FB

BHUSAWAL TPP – 1 X 660MW

RASHTRA STATE POWER GENERATION CO. LTD.

CONTRACT QUALITY PLAN FOR COMPENSATING/EXTENSION CABLE

REV	DATE	PREPARED	REVIEWED	APPROVED	REVISION HISTORY
00	28/03/2021	Sd/-	Sd/-	Sd/-	Initial release.
01	29/04/21.	B ARUNKUMAR B. Arunkumar.	G V CHILAMBARASAN	B MUTHUKUMARAN	Revised based on customer comments.

Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
A	**RAW MATERIAL & BOUGHT OUT ITEMS INSPECTION**											
01	Conductor	a. Size	Major	MEAS	OSPL	--	Spec., BHEL Approved Data Sheet	LGB	P	-	-	
		b. Resistance check	Major	ELEC	OSPL	--		LGB	P	-	-	
		c. Thermo emf	Critical	ELEC	OSPL	--	ANSI MC 96.1	LGB	P	-	-	
		d. Specific resistance, Temperature coefficient	Major	ELEC MECH	OSPL	--	Mfr. Standard	LGB	P	-	-	
		e. Chemical composition	Major	CHEM	OSPL	--	Mfr. Standard	LGB	P	-	-	
02	PVC compound (For insulation, Inner & outer sheath)	a. Make	Major	VISU	100%	--	IS 5831	LGB	P	-	-	
		b. Type / Grade	Major	VISU	100%	--	IS 5831	LGB	P	-	-	
		c. Thermal Stability	Critical	CHEM	OSPL	--	IS 5831, IS 10810 Pt-60	LGB	P	-	-	
03	Steel wire / strip	a. Material,Dimension	Major	VISU	100%	--	IS 10810, IS 5831	LGB	P	-	-	
		b. Tensile strength & Elongation	Major	MECH	100%	--	IS 3975	LGB	P	-	-	
		c. Mass of zinc coating	Major	CHEM	OSPL	--	IS 3975	LGB	P	-	-	
		d. Uniformity of Zinc coating	Major	CHEM	OSPL	--	IS 3975	LGB	P	-	-	
		e. Resistivity	Major	ELEC	OSPL	--	IS 3975	LGB	P	-	-	
04	Tapes / Binders (Aluminium Mylar, Melinex & Binders)	a. Thickness	Major	MEAS	OSPL	--	Spec. /BHEL approved Data Sheet	LGB	P	-	-	
		b. Size	Major	MEAS	OSPL	--		LGB	P	-	-	
B	**IN PROCESS INSPECTION**											
01	Wire drawing and Annealing	a. Size	Major	MEAS	One Sample/ Setting of each size	--	Spec.., BHEL Approved Data Sheet	LGB	P	-	-	

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
		b. Surface finish	Major	VISU	100%	--	Smooth & Free from Scratches	LGB	P	-	-	
		c. % of Elongation	Major	MECH	One Sample/ Setting of each size	--	IS 8130	LGB	P	-	-	
02	Tinning (Only for Drain wire)	a. Size	Major	MEAS	One Sample/ Setting of each size	--	Spec.., BHEL Approved Data Sheet	LGB	P	-	-	
		b. % of Elongation	Major	MECH		--		LGB	P	-	-	
03	Bunching / Stranding	a. Number of wires & Dia of wires	Major	MEAS	One Sample/ Setting of each size	--	IS 1554 Pt.1, Spec. BHEL Approved Data Sheet	LGB	P	-	-	
		b.Direction of Lay	Major	VISU		--		LGB	P	-	-	
		c. DC Resistance	Critical	ELEC		--		LGB	P	-	-	
04	PVC Insulation	a. Thickness	Major	MEAS	100%	--	IS 1554 Pt.1, Spec. BHEL Approved Data Sheet	LGB	P	-	-	
		b. Concentricity	Major	VISU	100%	--		LGB	P	-	-	
		c. Colour of Cores	Major	VISU	100%	--		LGB	P	-	-	
		d.Surface Finish	Major	VISU	100%	--		LGB	P	-	-	
		e. Spark test	Major	ELEC	100%	--		LGB	P	-	-	
05	Twisting	a. Lay length and Direction	Major	MEAS	OSPL	--	Spec.., BHEL Approved Data Sheet	LGB	P	-	-	
		b. Size / Dimension	Major	MEAS	OSPL	--		LGB	P	-	-	
		c. Pair Colour	Major	VISU	100%	--		LGB	P	-	-	
06	Laying of pairs / Tapping / Shielding (Wherever Applicable)	a. Construction	Major	VISU	100%	--	Spec.., BHEL Approved Data Sheet	LGB	P	-	-	
		b. Dimension	Major	MEAS	OSPL	--		LGB	P	-	-	
		c. Coverage / Overlap	Major	MEAS	OSPL	--		LGB	P	-	-	
		d. Continuity	Major	ELEC	OSPL	--		LGB	P	-	-	

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
07	Inner Sheath	a. Thickness	Major	MEAS	One Sample/ Setting of each size	--	IS 1554 Pt.1, Spec. BHEL Approved Data Sheet	LGB	P	-	-	
		b. Dia over inner sheath	Major	MEAS		--		LGB	P	-	-	
		c. Eccentricity, surface finish & Colour	Major	VISU		--		LGB	P	-	-	
08	Armouring	a. Dimension (Diameter over armouring)	Major	MEAS	One Sample/ Setting of each size	--	IS 1554 Pt.1	LGB	P	-	-	
		b. No. of Wires/ Strip	Major	VISU		--	IS 1554 Pt.1	LGB	P	-	-	
		c. Direction of Lay	Major	VISU		--	IS 1554 Pt.1	LGB	P	-	-	
		d. Coverage	Major	VISU	100%	--	IS 1554 Pt.1	LGB	P	-	-	
09	Outer sheath	a. Dia over sheath, Thickness	Major	VISU	One Sample/ Setting of each size	--	IS 1554 Pt.1, Spec. BHEL Approved Data Sheet	LGB	P	-	-	
		b. Eccentricity, surface finish & Colour	Major	VISU		--		LGB	P	-	-	
		c. Embossing Quality & Sequential marking	Major	PHYS	100%	--		LGB	P	-	-	
10	Drum	a. Marking & Dimension	Major	PHYS	100%	--	IS 10418 Mfr Standard	LGB	P	-	-	
		b. Anti termite, fungus treatment	Major	CHEM	100%	--		LGB	P	-	-	
C	**FINAL INSPECTION**											
01	Routine tests	a. Conductor resistance	Critical	ELEC	100%	--	IS1554 Pt.1, Spec. BHEL Approved Data Sheet	TR	P	V	V	
		b. High voltage test	Critical	ELEC	100%	--		TR	P	V	V	
		c. Drain wire continuity	Critical	ELEC	100%	100%		TR	P	W	W	
02	Type tests	**a. Test on conductor**										
		i. Resistance	Major	ELEC	OSPL	OSPL	VDE 0815 / BHEL Approved Data sheet	TC	P	V	V	
		ii. Diameter	Major	MEAS	OSPL	OSPL	IS 10810 / BHEL Approved Data sheet	TC	P	V	V	

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
		iii. Tin coating test for Drain wire	Major	CHEM	OSPL	OSPL	IS 10810 / BHEL Approved Data sheet	TC	P	V	V	
		b. Test for armouring wires/ strips	Major	MECH	OSPL	OSPL	IS 3975	TR	P	V	V	
		c. Test for thickness of Insulation and sheath										
		1. Thickness	Major	MEAS	OSPL	OSPL	IS 5831	TR	P	V	V	
		2. Tensile Strength & Elongation before and after ageing	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		3. Ageing in air oven	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		4. Shrinkage test	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		5. Hot Deformation test	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		6. Loss of mass in air oven	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		7. Heat shock test	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		8. Thermal stability	Major	MECH	OSPL	OSPL	IS 5831	TR	P	V	V	
		d. Test for Aluminium – Mylar shield										
		1.Continuity test	Major	ELEC	OSPL	OSPL	Mfr. Standard	TR	P	V	V	
		2.Shield thickness test	Major	MEAS	OSPL	OSPL	Mfr. Standard	TR	P	V	V	
		3.Overlap test	Major	VISU	OSPL	OSPL	Mfr. Standard	TR	P	V	V	
		e. Test on finished cables										
		1. Insulation resistance test	Major	ELEC	OSPL	OSPL	IS 1554 Pt-1	TC	P	V	V	
		2. High voltage test										
		i.Water Immersion test	Major	ELEC	OSPL	OSPL	IS 1554 Pt-1	TC	P	V	V	
		ii.At room temperature	Major	ELEC	OSPL	OSPL	IS 1554 Pt-1	TC	P	V	V	
		3. Noise interference	Major	ENVI	OSPL	OSPL	IEEE Standard	TC	P	V	V	
		4. Dimensional checks	Major	MEAS	OSPL	OSPL	Data sheet	TC	P	V	V	
		5. Cross talk	Major	ENVI	OSPL	OSPL	IEEE Standard	TC	P	V	V	
		6. Mutual capacitance	Major	ELEC	OSPL	OSPL	VDE 0472/ Data sheet	TC	P	V	V	

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
		7. Drain wire continuity	Major	ELEC	OSPL	OSPL	Mfr. Standard/ Data sheet	TC	P	V	V	
		8. Attenuation	Major	ENVI	OSPL	OSPL	VDE 0472	TC	P	V	V	
		9. FRLS Properties (inner & outer sheath) A. Oxygen index/ Temperature index B. Smoke density C. Acid gas generation	Major	THER	OSPL	OSPL	 ASTM D 2863 ASTM D 2843 IEC 60754 Pt-1	TR	P	V	V	
		10. Flammability test	Major	THER	OSPL	OSPL	IEC 60332 Pt-3	TR	P	V	V	
03	Acceptance Test	a. Conductor resistance (Cable & Drain wire)	Major	ELEC	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		b. Constructional and dimensional check	Major	MEAS MECH	100%	As per IS 1554		TR	P	W	W	
		c. Outer sheat – Colour, Marking/ Embossing & End sealing	Major	VISU	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		d. Length checking	Major	MEAS	100%	As per IS 1554		TR	P	W	W	
		e. Core – Band marking / Numbering, Colour.	Major	VISU	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		f. Overall Coverage / overlap of shield & Continuity of drain wire	Major	VISU	100%	As per IS 1554		TR	P	W	W	Continuity shall be checked as per Manufacturer's practice.
		g. Thermal Stability (Insulation & Sheath)	Major	CHEM	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		h. Electrical Parameters (Mutual capacitance, Cross talk, Attenuation, Characteristic Impedance as applicable)	Major	ELEC	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	

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Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
		i. Per Sulphate test (For Drain wire)	Major	CHEM	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		j. FRLS Properties (inner & outer sheath) i. Oxygen index/ Temperature Index ii. Smoke density iii. Acid gas generation	Major	THER	OSPL	OSPL	ASTM D 2863 ASTM D 2843 IEC 60754 Pt-1	TR	P	W	W	
		k. Flammability test	Major	THER	OSPL	OSPL	IEC 60332 Pt-3	TR	P	W	W	
		l. Tensile Strength and % Elongation test of Insulation & Sheath (Before & After aging)	Major	MECH	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		m. Volume Resistivity (At room and Elevated Temperature)	Major	ELEC	100%	As per IS 1554		TR	P	W	W	
		n. Armouring Dimension & Zn coating. (if applicable)	Major	MEAS	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		o. Insulation resistance test	Major	ELEC	100%	As per IS 1554		TR	P	W	W	
		p. High voltage test	Major	ELEC	100%	As per IS 1554	IS 1554/8784, Spec. BHEL Approved Data sheet	TR	P	W	W	
		q. Swedish chimney test (Overall cable)	Major	CHEM	OSPL	OSPL	SS 4241475 class F3	TR	P	W	W	
		r. Rodent and Termite repulsion test	Major		OSPL	OSPL	Manufacturer standard	TR	P	V	V	

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B.NOTES:

1.LEGENDS:

MECH	:	Mechanical	MEAS	:	Measurement
ELEC	:	Electrical	LGB	:	Log Book
CHEM	:	Chemical	TC	:	Test certificate
VISU	:	Visual	TR	:	Test Report
OSPL	:	One sample per offered lot	ENVI	:	Environmental

2. The vendor at their works shall arrange all testing facilities. Tests for which facilities are not available are to be carried out at recognized National Test Houses like ETDC/CIL/NPL/ERTL etc., at vendor cost.
3. Through Log Book / any other documents available at the vendor's works, it shall be possible to correlate the finished products with raw material and in process stage checks / inspection carried out.
4. All Measuring and Testing Instruments shall be periodically calibrated from recognized test houses & certificates made available during inspection for verification.
5. Test certificates for routine type tests are to be furnished by the vendor.
6. Type test certificate shall not be earlier than 5 years from the date of Purchase enquiry.
7. Vendor to give tentative inspection program in advance and confirm exact date two weeks in advance for arranging BHEL's inspection.
8. Cable ends shall be sealed with heat shrinkable type PVC caps to avoid ingress of moisture.
9. PVC compound and other raw material shall be procured from reputed manufacturers only. If special insulation and sheath compounds (e.g. Low smoke Low Halogen type) are being used, manufacturer guaranteed technical particulars and TC shall be available for review at the time of inspection.
10. Process records for all stages shall be certified by vendor's QC and are subjected to verification during inspection.
11. Packing shall be as per "PACKING PROCEDURE" indicated in the specification.

C. REFERENCE STANDARDS:

(For Indicated Standards Refer the Latest Version)

IS 1554 Pt.1	:	Specification for PVC insulated electric cable (heavy duty) for working voltages up to and including 100V
IS 3975	:	Mild steel wires, strips, and tapes for armouring cables
IS 5831	:	PVC insulation and sheath of electric cables
IS 8130	:	Conductors for insulated electric cables and flexible cables.
IS 10810	:	Method of test for cables
ASTM-D 2843	:	Standard test method for density of smoke from burning and decomposition of plastics.
ASTM-D 2863	:	Standard test method for measuring Oxygen / Temp. Indexes.
IS 8784	:	Specification for Thermocouple Compensating Cables
IEC 60754-1	:	Test on gases evolved during combustion of electric cables – Determination of the amount of halogen acid gas evolved during the combustion of polymeric materials taken from cables.
IEC 60332-3	:	Tests on electric cables under fire conditions.
IS 5082	:	Wrought aluminium and aluminium alloy bars, rods, tubes and sections for electrical purposes
IS613	:	Copper Rods and Bars for Electrical Purposes – Specification
VDE 0815	:	Wiring cables for telecommunication and BHEL Approved Data processing systems
VDE 0472	:	Testing of cables, wires and flexible cords
VDE 0207	:	Insulating and sheathing compounds for cables and flexible cords.

PURCHASE / MM / BOI
ENQUIRY DEVIATION

429-024

SCHEDULE OF DEVIATION ENQUIRY NO:	**BID NO: GEM/2021/B/1378828**	**DATE**	**23.07.2021**
DESCRIPTION	**ARMOURED EXTENSION CABLE (TYPE-KX) FOR COAL FIRED THERMAL POWER PLANT**		
SPECIFICATION	**DS:TCI:254:EXTNCABLE/BHUSAWAL/00**		
QUALITY PLAN	**CI:QA:1727:CQP:16/01**		
PACKING PROCEDURE	**As per Spec**		
DRAWINGS	**As per Spec**		

DOCUMENT REFERENCE	BHEL ENQ. CALLED FOR	FIRM'S ALTERNATIVE OFFER

CERTIFIED THAT OTHER THAN THE ABOVE DEVIATIONS, WE ARE ACCEPTING ALL THE OTHER SPECIFICATIONS AND REQUIREMENTS IN FULL TO YOUR ENQUIRY.

STATION:

DATE: SIGNATURE OF COMPANY REPRESENTATIVE COMPANY SEAL

NOTE 1. Deviations should be taken only in the extreme case.

2. If necessary, use additional sheets with page control number.

ANNEXURE-A

ADDITIONAL TERMS & CONDITIONS (ATC)

Description of the Material	ARMOURED EXTENSION CABLE (TYPE-KX) FOR COAL FIRED THERMAL POWER PLANT
BHEL Tender No. & Date	**BID NO: GEM/2021/B/1378828 DT 23.07.2021**

GENERAL INFORMATION

The bidder has to keep track of any changes by viewing the Corrigendum's issued by the Buyer on time-to- time basis in the Government e Marketplace (GeM) portal. The Company calling for tenders shall not be responsible for any claims/problems arising out of this. Any pre-bid query, kindly contact: **Mr. Kevin Ark Kumar**, Manager/Materials Management/BOI Tel: 0431-2578109, email: kevin@bhel.in ; **Mr. N Mohan**, Dy Engineer/Materials Management/BOI Tel: 0431-2577446, email: mohann@bhel.in.

Sl. No.	Terms and conditions	Vendor's confirmation
1	**Firm Price:** The quoted / finalised rates shall be Firm till execution of the supplies.	Accepted
2	The tender is floated as a **Single Package**.	Accepted
3	**Delivery term:** F.O.R basis Inclusive of Packing, Forwarding, Freight & all taxes (GST) upto Destination	Accepted
4	**Guarantee / Warranty Period** : Guarantee / Warranty clause is 18 months from the date of delivery or 12 months from the date of actual put in use; whichever is earlier.	Accepted
5	**Delivery Period: 60 days** from manufacturing clearance / document approval. Vendor quoted delivery period shall include all activities i.e. manufacturing / production, Inspection, Packing, Forwarding, dispatch. (15 DAYS FOR DOCUMENT APPVL)	Accepted
6	Techno-Commercial bids of vendors will be evaluated; however, the Price bid will be opened, subject to our customer's approval, else the offer will be rejected. Vendors shall submit credentials for taking up with customer, for their approval.	Accepted
7	**Document Submission (to be uploaded in GeM)** 1. The documents called for in Pre-Qualification Requirement (PQR) shall be mandatorily submitted. 2. All the technical documents which have been attached along with this tender i.e Specification, Drawings, Data Sheet, QP, packing procedure etc..; signature to be endorsed on all pages with company seal on all Technical documents & Sub-delivery enquiry deviation format. 3. Filled-in/signed Annexure-A, Commercial terms and conditions. (Mandatory for Commercial evaluation) 4. If MSE vendor, please attach Udyam Regn Certificate. 5. Self-Certification for Make In India Clause as per Format.	Submitted/ Not Submitted
8	Any deviation on technical/QP/packing requirements shall specifically be indicated in the "sub-delivery enquiry deviation format" attached along with the enquiry. Deviations / clarifications declared elsewhere will not be evaluated. **Also, any deviations from the commercial terms and conditions shall be clearly spelt out in this format itself**. Deviations / clarifications declared elsewhere will not be evaluated. Deviations taken, if any, by vendor as per our requirement above shall be clearly got accepted by BHEL in writing during enquiry stage itself. In the event of an order no deviations, unless accepted by BHEL in writing during enquiry stage will be entertained and all other techno-commercial requirements will be binding on successful bidder and failure to execute the terms will lead to disciplinary action by BHEL against the said bidder.	No Deviation Format Submitted/ Not Submitted
9	Technical / commercial clarification, if any, will be initiated through EPS / email. Vendor to respond to the clarifications within 3 working days. If the vendor fails to respond, even after three reminders, then the vendor will be considered as **non-responsive and the offer is liable to be rejected.**	Accepted

10	Technical / commercial clarification, if any, will be initiated through EPS / email. Vendor to respond to the clarifications within 3 working days. If the vendor fails to respond, even after three reminders, then the vendor will be considered as non-responsive and **the offer is liable to be rejected.**	Accepted
11	**RISK PURCHASE:** In case of abnormal delays (beyond the maximum late delivery period as per LD clause) or non-fulfilment of any other terms and conditions given in work order, BHEL may cancel the work order in full or part thereof, and may also make a contract of such work/service from elsewhere / alternative source at the risk and cost of the original contractor. BHEL will take all reasonable steps to complete the contract obligations from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract. Risk & cost clause, in line with conditions of contract may be invoked in any of the following cases: 1. Contractor's poor progress of the work vis-à-vis execution timeline as stipulated in the contract, backlog attributable to contractor/ supplier including unexecuted portion of work/ supply does not appear to be executable within balance available period (#) considering its performance of execution. 2. Withdrawal from or abandonment of the work by contractor before completion of the work as per contract. 3. Non completion of work / Non-supply by the contractor within scheduled completion/delivery period as per contract or as extended from time to time, for the reason attributable to the contractor. 4. Termination of contract on account of any other reason (s) attributable to contractor. 5. Assignment, transfer, subletting of contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL. 6. Non-compliance to any contractual condition or any other default attributable to contractor. Risk and Cost amount against balance work will be calculated as follows: Risk & Cost Amount= [(A-B) + (A x H/100)] Where, A= Value of Balance scope of Work/ Supply (*) as per rates of new contract B= Value of Balance scope of Work/ Supply (*) as per rates of old contract being paid to the contractor/ supplier 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). *(Balance scope of work/ supply) 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/ Supply 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, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work/supply' for calculating Risk & Cost amount.	Accepted
12	Technical / Commercial clarification, if any, will be initiated through GeM / email. Vendor to respond to the clarifications within 3 working days. If the vendor fails to respond, even after three reminders, then the vendor will be considered as, **non-responsive and their offer is liable to be rejected.**	Accepted
13	**PO Acknowledgement:** Within 7 days from the date of issue of GeM contract.	Accepted

14	**Fraud Prevention Policy** Suppliers involving in fraudulent practices or delayed supply (or) non-Supply will be dealt with provision as indicated in "Guidelines for Suspension of Business Dealings with Suppliers / Contractors" which is hosted in website www.bhel.com The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com. 1.0 Integrity commitment, performance of the contract and punitive action thereof: 1.1 Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in transparent and fair manner, and with equity. 1.2 Commitment by Bidder / Supplier / Contractor: 1.2.1. The bidder / supplier / contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India. 1.2.2. The bidder / supplier / contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issues from time to time by Govt. of India / BHEL. 1.2.3. The bidder / supplier / contractor will perform / execute the contract as per the contract terms & Conditions and will not default without any reasonable cause, which causes loss of business / money / reputation, to BHEL. If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then action may be taken against such bidder / supplier / contractor as per extant guidelines of the company available on www.bhel.com and / or under applicable legal provisions.	Accepted
15	**Repair & replacements:** Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end. All incidental charges like freight, insurance and customs duty / GST are to vendor account only. The defective parts and components shall be collected by your Indian agent or / authorized person, only after completing the replacement / repairs. The defective parts / components will not be returned back to vendor works by us due to procedural problems.	Accepted
16	**BHEL reserves the right to cancel / modify the tender, if the need so arises, without assigning any further notice or reason therefore.**	Accepted
17	**JURISDICTION:** In case of any suit or other legal proceedings arising under or relating to this Contract, the courts at Trichy, Tamil Nadu only shall have the Jurisdiction and is only after exhausting the arbitration clause.	Accepted
18	**SECRECY OF CONFIDENTIAL INFORMATION:** The Contractor undertakes and agrees that he/it will not disclose or reveal in part or full the proprietary/confidential information, which terms shall mean and include patents, trademarks, service marks, registered designs, copyright, design rights, know-how, confidential information, trade and business names and any other similar protected information of BHEL received during negotiation or currency of the contract to any third party or governmental authorities without written permission from BHEL. In the event of termination or expiry of the contract, the contractor shall return all proprietary/confidential information to BHEL. This clause shall survive termination or expiry of the contract. All the input details: transmittals and sample drawings supplied for preparation of drawings are confidential information of BHEL for specific purpose only. The contractor shall never pass on / part with the information to anybody and shall maintain the secrecy of the information. As soon as the bills are certified by BHEL, all the relevant drawing files shall be erased from PCs and shall not be made use under any circumstances. BHEL reserves the right to initiate appropriate action including legal proceeds / termination of contract, recovery of damages, penalties etc., if the contractor is found guilty / wrong usage of the documents given by BHEL for any unauthorized activity.	Accepted

By signing this Annexure, the vendor consents the above Additional Terms & Conditions (ATC) are accepted, this Annexure-A, shall be binding between BHEL and the Vendor; and no other terms quoted / mentioned by vendor, elsewhere in the Offer / Quotation will be considered or accepted by BHEL.

This document is part of Tender terms & Conditions and shall be mandatorily uploaded along with the offer documents in GeM Portal in ATC.

ANNEXURE-B

1	GEM ID NO	
2	ITEM	

VENDOR DETAILS

Sl No	DESCRIPTION	DETAILS TO BE FILLED
1.	VENDOR / FIRM NAME	
2.	BHEL VENDOR CODE (IF ANY)	
3.	QUOTATION REFERENCE & DATE	
4.	CONTACT PERSON NAME	
5.	CONTACT PERSON MOBILE NO	
6.	CONTACT PERSON EMAIL ID	
7.	WORKS ADDRESS & TELE NO	
8.	OFFICE ADDRESS & TELE NO	
9.	PAN NO	
10.	GST NO	
11.	MSE VENDOR / NON MSE VENDOR	MICRO / SMALL

Sign & Seal of Company

Sl no	Terms	Questions	Vendor confirmation
1	HSN CODE	Pl mention	
2	GST	Pl Mention	%
3	MII	Pl mention the percentage of Local content	%
4	Attachments 1	Have you submitted the Udyam registration certificate? (applicable only for Micro & Small Enterprises)	Yes / No
5	Attachments 2	Have you submitted the point wise supporting documents required against Pre-Qualification Report (PQR)?	Yes / No
6	Attachments 3	Have you submitted the filled-in, signed / with company seal "NIL Deviation Format ".	Yes / No
7	Attachments 4	Have you submitted the signed / with company seal, all pages of "Technical Specification, Drawing, datasheet & Quality Plan" with respect to this tender along with your quoted offer.	Yes / No
8	Attachments 5	Have you submitted the filled-in, signed, sealed "Self declaration format for MII clause" as per format in your company letter head. (Indicate the % of Local Content)	Yes / No

PLEASE UPLOAD THIS DOCUMENT IN GEM PORTAL DULY FILLED SIGNED AND STAMPED ALONG WITH YOUR OFFER

Sign & Seal of Company