THE BRIHAN-MUMBAI ELECTRIC SUPPLY & TRANSPORT UNDERTAKING
(OF THE BRIHANMUMBAI MAHANAGARPALIKA)

SPECIFICATION FOR HEAT SHRINKABLE STRAIGHT JOINTS AND BRANCH JOINTS FOR 1.1kV HRPVC / XLPE CABLES

SPECIFICATION NO:. 17 (B1) 0115 (H.S.)

Notice for Revision of Specification (Summery sheet)

Attention of tenderers for - the tender is invited with following additions / amendments made in the specification.

Sr. No.	Existing Specification No.	Revised Specification No.	Date of Revision
1	17 (B1) 0214 (H.S.)	17 (B1) 0115 (H.S.)	02/07/15

Sr. No.	Existing Section/ Clause No.	Description of Existing Clause .	Revised Section/ Clause No.	Description of Additions / Amendments
1.	Clause No. 3.1.1 Sr. No. 07	kit contents of 1.1kV Heat Shrinkable straight joints for various sizes.	Clause No. 3.1.1 Sr. No. 02 & 07	Modified description of items at Sr. No. 02 & 07 of 1.1kV H.S straight jointing kit. Provided non adhesive tape for reinstatement of inner sheath. Also specified IS applicable , quantity and dimensions of PVC adhesive and non adhesive tape to be provided
2.	Clause No. 3.2.1 Sr. No. 06	kit contents of 1.1kV Heat Shrinkable branch joints for various sizes.	Clause No. 3.2.1 Sr. No. 02 & 06	Modified description of items at Sr. No. 02 & 06 of 1.1kV H.S branch jointing kit. Specified dimensions and IS applicable of PVC adhesive and non adhesive tape to be provided .
3	Clause No. 3.4	For dimensions details (Inner diameter, Outer diameter) of aluminium in line ferrules refer drawing No.: ES/PL-A-388 Rev. 'F'	Clause No. 3.4	The dimensions of aluminium in line ferrules specified in existing drawing No.: ES/PL-A-388 Rev. 'F' has been revised. Accordingly the drawing no. specified in Clause No. 3.4 has been revised as ES/PL-A-388 Rev. 'G'.
4.	Clause No. (C) of section 8	Dimensional details of 1.1kV heat shrink tubing components		Deleted dimensional details of corrosion protection tube (for inner sheath) specified in clause no. (C) of section 8 : dimensional details of 1.1kV heat shrink tubing components of 1.1kV heat shrink straight through joints

SECTION 1 : GENERAL

1.1 The word Cable jointing kits referred hereunder shall include all the components / material required for Heat Shrinkable Straight Jointing or branch Jointing of LV power cables as the case may be.

1.2 The term `Heat Shrinkable Straight Jointing or Heat Shrinkable branch Jointing' means includes insulation / insulating heat shrinkable tubes provided between live parts and between live parts and earth is applied by heat shrinkable method to withstand system voltage during normal and fault conditions.

1.3 The heat shrinkable tubings /components shall shrink uniformly on inner substrate and wrinkle free with inner components clearly defined. A well shrunk heat shrink part shall have uniform thickness across any given cross section.

1.4 The maximum symmetrical short circuit level on the 415 Volts system will be 25 MVA. The cable jointing kit installed in electricity distribution system shall perform its function without distress under normal loading, cyclic loading, mechanical impact and electrical stresses developed during fault conditions and the resultant increase in temperature caused by the flow of short circuit currents. It shall be capable of carrying without damage, the system earth faults currents.

1.5 The procedure of cable jointing shall be simple, easy to install and require less time for charging, thereby restoring the electric supply faster.

1.6 The cable joints should have good electrical and thermal characteristic and shall provide proper mechanical protection, moisture imperviousness.

1.7 It is expected that material to be used shall be capable of resisting degradation during the service life of the cable system.

1.8 The components of the kit shall have minimum shelf life of five years under normal storage conditions at ambient temperature prevalent in Mumbai.

1.9 The tenderer shall furnish the complete list of components describing functioning/use of each component of the kit along with the offer.

1.10 The tenderer shall give demonstration of at least one no. of Heat Shrinkable straight joint or branch Joint on free of cost basis at site. Also, the tenderer shall submit the undertaking letter for rendering technical and supervisory assistance for making joints at site for at least 05 nos. for each item (for which P.O. is placed) on free of cost basis, at a short notice.

1.11 If required, the successful tenderer shall give training to jointers, supervisors and staff of Operation and Maintenance & Erection divisions.

1.12 The tenderer shall submit the list of power utilities / public undertaking / private organisation to whom they have supplied the said kit.

1.13 Only manufacturer and authorised distributor should quote.

1.14 The successful tenderer shall have to supply additional ferrules (1% of the total quantity of ferrules supplied per item, per lot of straight joints or minimum 5 nos. of ferrules per item, per lot, whichever is higher) for testing purpose.

1.15 All the kit contents shall be sufficient (in dimensions/quantity) for making the 1.1kV Heat shrinkable straight , Branch joints.

1.16 Following Indian & International standards shall be followed for 1.1kV straight joints and branch joints.

(A) Indian standards	
IS 13573 (Part 1) :2011	Specification for cable accessories for extruded power cable with rated voltage up to and including 3.3 kV (E) Part 1 Test requirements and test Methods.
IS 1554(Part 1): 1988	PVC insulated (heavy duty) electric cables: For working voltages upto and including 1100V (Amended upto date)
IS 7098(Part 1):1988	Cross-linked polyethylene insulated thermoplastic sheathed cables - Specification: For working voltages up to and including 1100 V (Amended up to date)
IS 5831:1984	PVC insulation and sheath of electric cables (Amended up to date)
IS 8308:1993	Compression type tubular in-line connectors for aluminium conductors of insulated cables (Amended up to date)
IS 10810: 1984	Method of Test for cables (Amended up to date)
(B) International standards	
Engineering Recommendation C-81	Type tests for joints for 600/1000 volts CNE Cable Systems. (Amended up to date)

SECTION 2 : REQUIREMENTS

2.1 Sizes and Quantities

2.1.1 The following sizes and quantities of 1.1kV Heat Shrinkable straight joints are required:-

Sr. No.	L.F. No.	Description	Qty. in Nos.
1.	29213	1.1kV Heat Shrinkable straight jointing kit suitable for 4C X 300 sq. mm. with 4C X 300 sq. mm. 1.1kV aluminium conductor, HRPVC / XLPE strip armoured Cable.	
2.	29214	1.1kV Heat Shrinkable straight jointing kit suitable for 4C X 120/70 sq. mm. with 4C X 120/70 sq. mm. (of any combination), 1.1kV aluminium conductor HRPVC / XLPE strip armoured cable.	
3.	29215	1.1kV Heat Shrinkable straight jointing kit suitable for 4C X 25 sq. mm. / 2C X 25 sq. mm. with 4C X 25 sq. mm. / 2C X 25 sq. mm., (of any combination) 1.1kV aluminium conductor HRPVC / XLPE strip armoured cable	

2.1.2 The following sizes and quantities of 1.1kV Heat Shrinkable branch joints are required:-

Sr. No.	L.F. No.	Description	Qty. in Nos.
1.	29216	1.1kV Heat Shrinkable Branch jointing kit suitable for 4C X 120/70/25 sq. mm. with 4C X 300 sq. mm. (of any combination) 1.1kV aluminium conductor HRPVC/ XLPE strip armoured cable	
2.	29217	1.1kV Heat Shrinkable Branch jointing kit suitable for 4C X 70/25 sq. mm./ 2C X 25 sq. mm. with 4C X 120 sq. mm. (of any combination) 1.1kV aluminium conductor HRPVC/XLPE strip armoured cable	
3.	29218	1.1kV Heat Shrinkable Branch jointing kit suitable for 4C X 25 sq. mm./ 2C X 25 sq. mm. with 4C X 25 sq. mm. (of any combination) 1.1kV aluminium conductor HRPVC/ XLPE strip armoured cable	

2.2 Quantity variation

The General Manager at his discretion may alter the above quantity by –25% or +25% after the contract is awarded and before delivery of material is completed.

SECTION 3 : KIT CONTENTS

3.1 The Heat shrinkable straight jointing kit required for straight jointing of 4 core 1.1kV Aluminium Conductor HRPVC / XLPE insulated, Strip armoured cable of different sizes as mentioned in clause No. 2.1.1 of specification.

3.1.1 The contents of each kit shall include the following components:

Sr. No.	**Material**	**Quantity**		
		4C x 300 sq.mm	**4C x 120 sq.mm. / 4C x 70 sq.mm.**	**4C x 25 sq.mm. / 2C x 25 sq.mm.**
1.	Aluminium Inline ferrules (Compression Type)	04 Nos.	04 Nos.	04 Nos.
2.	Adhesive PVC Tape Minimum Thickness 0.125mm Minimum Width : 18 mm. ***(As per IS : 7809/1996 Part : 3 / Section: 01)***	***16.0 Meters***	10.0 Meters	5.0 Meters
3.	Black Mastic Tape Minimum Length – 400mm Minimum Width : 35 mm.	06 Nos.	04 Nos.	03 Nos.
4.	Non Conducting Water Blocking (Water Swellable) Tape Minimum Width : 50 mm.	8.0 Meters	6.0 Meters	5.0 Meters
5.	Thick Wall Connector H.S. Insulating Tubing (Hot Melt Adhesive Coated)	04 Nos.	04 Nos.	04 Nos.
6.	G.I. Metalic Canister (01 no.) with S.S. Hose Clips / Jubilee Clamps (02 nos.) OR G.I. Wire Mesh (Minimum Width: 50 mm)	01 Set	01 Set	01 Set
		08 Meters	05 Meters	02 Meters
7.	***Non Adhesive Vinyl Tape 20 mm wide , 0.15 mm thick (As per IS : 13262/1992)***	***15 Meters***	***10 Meters***	***05 Meters***

Sr. No.	Material	Quantity		
		4C x 300 sq.mm	**4C x 120 sq.mm. / 4C x 70 sq.mm.**	**4C x 25 sq.mm. / 2C x 25 sq.mm.**
8.	Hot Melt Adhesive Coated Corrosion Protection Tubing for Outer sheath	02 Nos.	01 No.	01 No.
9.	Core Spacer	01 No.	01 No.	01 No.
10.	S.S. Hose Clips / Jubilee Clamps	04 Nos.	02 Nos.	02 Nos.
11.	Aluminium Supporting Ring / Backup Ring (split type) (Minimum Thickness : 1mm)	02 Nos. of (Width : 50 mm)	02 Nos. of (Width : 50 mm)	02 Nos. of (Width : 40 mm)
12.	Insulated Flat Copper Braid / Insulated Copper wire of sufficient length for earthing (For continuity of armour) Minimum cross sectional area to be provided is specified in Parenthesis.	01 No. ($50\ mm^2$)	01 No. ($35\ mm^2$)	01 No. ($16\ mm^2$)
13.	G.I. Binding Wire	02 Meters	02 Meters	01 Meter
14.	Aloxite tape	02 Nos.	02 Nos.	01 Nos.
15.	Identification Tag	1 No.	1 No.	1 No.
16.	Core Cleaning Solvent (40 ml.)	01 No.	01 No.	01 No.
17.	Cleaning Tissue (6 ml.)	06 Nos.	04 Nos.	04 Nos.
18.	Cleaning Cloth	02 Nos.	01 Nos.	01 No.
19.	Any other item as prescribed by supplier	Adequate	Adequate	Adequate
20.	Instruction Sheet / Installation Manual	01 No.	01 No.	01 No.
21.	List of kit contents / Packing list	01 No.	01 No.	01 No.

3.2 The Heat shrinkable Branch jointing kit required for Branch jointing of 2 nos. of 4 core 1.1kV Aluminium Conductor HRPVC/XLPE insulated, Strip Armoured cable of different sizes as mentioned in clause No. 2.1.2 of specification.

3.2.1 The contents of each kit shall include the following components

Sr. No.	**Material**	**Quantity**		
		4C x 120 sq.mm. / 4C x 70 sq.mm. / 4C x 25 sq.mm. / 2C x 25 sq.mm. with 4C x 300 sq.mm.	**4C x 70 sq.mm. / 4C x 25 sq.mm./ 2C x 25 sq.mm. with 4C x 120 sq.mm.**	**4C x 25 sq.mm. / 2C x25 sq.mm. with 4C x 25 sq.mm.**
1.	Inner Wrap Around H.S. Sleeve (Hot Melt Adhesive Coated) With S. S. channel	04 Nos.	04 Nos.	04 Nos.
2.	Adhesive PVC Tape Minimum Thickness 0.125mm Minimum Width : 18 mm. ***(As per IS:7809/1996. Part : 3 / Section: 01)***	20.0 Meters	15.0 Meters	10.0 Meters
3.	Black Mastic Tape Minimum Length : 400 mm Minimum Width :35mm.	10 Nos.	08 Nos.	06 Nos.
4.	Core Spacer	02 Nos.	02 Nos.	02 Nos.
5.	Cable Tie / Tie Wrap	04 Nos.	04 Nos.	04 Nos.
6.	***Non Adhesive Vinyl Tape 20 mm wide, 0.15 mm thick (As per IS : 13262/1992)***	***15 Meters***	***10 Meters***	***05 Meters***
7.	Non Conducting Water Blocking (Water Swellable) Tape Minimum Width : 50 mm.	10.0 Meters	8.0 Meters	5.0 Meters
8.	Hot Melt Adhesive Coated Outer Wrap around H.S. Sleeve with S.S. Channel	01No.	01 No.	01 No.
9.	Branch Off Clip	01 No.	01 No.	01 No.
10.	S.S. Hose Clips / Jubilee Clamps	05 Nos.	03 Nos.	03 Nos.

Sr. No.	Material	Quantity		
		4C x 120 sq.mm. / 4C x 70 sq.mm. / 4C x 25 sq.mm. / 2C x 25 sq.mm. with 4C x 300 sq.mm.	**4C x 70 sq.mm. / 4C x 25 sq.mm./ 2C x 25 sq.mm. with 4C x 120 sq.mm.**	**4C x 25 sq.mm. / 2C x25 sq.mm. with 4C x 25 sq.mm.**
11.	G.I. Wire Mesh (Minimum Width : 50mm)	12 Meters	10 Meters	6 Meters
12.	Aluminium Supporting Ring / Backup Ring (Split type) (Minimum Thickness : 1mm)	03 Nos. of Width : 50 mm	03 Nos. of Width : 50 mm	03 Nos. of (Width : 40 mm)
13.	Insulated Flat Copper Braid / Insulated Copper wire of sufficient length for earthing (For continuity of armour of main & branch cable) Minimum cross sectional area to be provided is specified in Parenthesis	01 No. (50 mm^2)	01 No. (35 mm^2)	01 No. (16 mm^2)
14.	G.I. Binding Wire	03 Meters	02 Meters	01 Meter
15.	Aloxite Tape	02 Nos.	02 Nos.	01 No.
16.	Identification Tag	1 No.	1 No.	1 No.
17.	Core Cleaning Solvent (40 ml.)	01 No.	01 No.	01 No.
18.	Cleaning Tissue (6 ml.)	06 Nos.	06 Nos.	04 Nos.
19.	Cleaning Cloth	02 Nos.	02 Nos.	01 No.
20.	Any other item as prescribed by supplier	Adequate	Adequate	Adequate
21.	Instruction Sheet / Installation Manual	01 No.	01 No.	01 No.
22.	List of kit contents / Packing list	01 No.	01 No.	01 No.

3.3. The kit contents given are specified for general guidance, however tenderer / supplier shall include necessary components in the jointing kit for improving performance and thorough jointing of cables thereby restoring continuity of the 1.1kV cable parts giving same performance as that of cable. The tenderer shall give full justification for inclusion of necessary components of the jointing kit in the SECTION 7: SCHEDULE OF DEPARTURES FROM SPECIFICATION.

3.4 In case of straight jointing, aluminium inline ferrules (Compression Type) of different sizes of cables for which the kit is designed are to be provided. The rating and grade of aluminium ferrules shall be as per IS:8308-1993, IS:5082-1981 with latest amendments. Hardness Index of aluminium ferrules/lugs used shall be between 18 – 21 Vickers Hardness Number (VHN). ***Refer drawing no. ES/PL-A-388 Rev. 'G'.***

3.5 Earth continuity connection of armour shall Insulated Copper Braid / Insulated Copper wire of suitable rating for carrying earth fault currents without damage to cable joints and accessories.

3.6 Heat Shrinkable insulating tubes for providing as a barrier between live parts and between live parts and earth parts, for withstanding system voltage during normal and earth fault condition.

3.7 Components / material to provide protection to cable joints from mechanical injury, impacts, water ingress etc.

3.8 The kit shall contain detailed procedure of cable jointing giving dimensions and diagram wherever necessary for cable end preparation. List of kit contents with quantity of material shall be provided in the kit.

3.9 Any other jointing accessory as recommended by tenderer for making reliable cable joint and improving performance of the joint.

3.10 The kit contents shall fulfill all the requirements for making the complete cable joint.

3.11 Dimensional details of vital H.S. tubing components of 1.1kV Heat Shrinkable Straight & branch joint shall be furnished with the offer as per Section- 8 of specification.

3.12 For identification purpose, a suitable name plate made of acrylic sheet (Thickness : 04 to 05 mm , Size:- Width: 50 mm, Length: 70 mm) shall be provided at either end of the completed straight / Tee joint. Nameplate (Identification tag) shall be suitably packed in polyethylene bag / aluminium foil pouch (with sealing arrangement at one end) shall be provided in the jointing kit**.** Following information shall be engraved on the identification tag. Also holes shall be provided at four corners of identification tag for fixing the tag.

Make --------, Brand--------

P.O.no./date ----------, Lot no.---------- Supply month/year --------.

SECTION 4: PERFORMANCE TESTS CERTIFICATES AND ACCEPTANCE CRITERIA

4.1 Type Tests

4.1.1 Type Test Certificates for 1.1kV Heat shrinkable straight and branch Joints.

4.1.1.1 The Tenderer who had supplied specified material in the past to the Undertaking and carried out any changes in design

AND

The tenderer who has not supplied specified material in the past to the Undertaking i.e. New suppliers of 1.1kV heat shrinkable cable joints (Straight joint or branch Joint) which are offered by the tenderer, shall submit type test certificates from NABL accredited laboratory like CPRI, ERDA etc. along with the offer in respect of offered 1.1kV heat shrinkable cable joints (Straight joint or branch Joint) for the records of purchaser.

4.1.1.2 For 1.1kV Heat shrinkable cable joints , type tests shall be carried out in accordance with IS 13573 (Part 1):2011 / UK Engineering recommendations C-81 or any other equivalent Indian / International standard amended to date (whichever is applicable) covering the performance requirement and test on LV cable joints and accessories. However, test certificate shall be submitted atleast for HV test, insulation resistance test and conductor resistance test, failing which, the offers will be overlooked.

4.1.2 Type Test Certificates for Vital 1.1kV Heat shrinkable straight and branch Jointing kit components:

4.1.2.1 The Tenderer who had supplied specified material in the past to the Undertaking and carried out any changes in design

AND

The tenderer who has not supplied specified material in the past to the Undertaking i.e. New suppliers of 1.1kV heat shrinkable cable joints (Straight joint or branch Joint) which are offered by the tenderer, shall submit type test certificates for vital tubing & moulding components and also for important sealants to confirm their important properties as per requirement of this specification for the records of purchaser.

4.1.2.2 Testing shall be carried out at CPRI Banglore or at any other government recognized laboratories in line with relevant Indian Standard/ International Standard amended to-date , whichever is applicable.

4.2 The undertaking reserve the right to ask for any other certificate which is deemed fit for technical evaluation of heat shrinkable straight joints or Branch joints during the process of tender or at the time of delivery of the material.

4.3 Tenderer shall submit test certificates for Vickers Hardness Number (VHN) along with tender documents for aluminium ferrule and lug.

4.4 Undertaking reserve right to carry out acceptance test as per relevant IS at the time of acceptance of material, if required.

4.5 The tenderer shall submit the import documents or documentary evidence for genuine purchase of any material which is imported by the tenderer and is used as a component of their kit.

4.6 ACCEPTANCE CRITERIA

4.6.1 Initially, tenderer shall deliver 1 no. of 1.1kV Heat shrinkable straight and branch Joints (1 no. each of every item for which the successful tenderer has received acceptance letter / Purchase Order) to our Kussara Stores, Mazgaon, Mumbai 400 010 as a proto-type for approval of Undertaking's accepting authority within 3 weeks from date of receipt of acceptance letter/Purchase Order.

4.6.2 PROTO INSPECTION / TESTING OF JOINTING KITS / KIT COMPONENTS:

4.6.2.1 Over and above the various requirements specified in this specification, physical inspection of proto-type of 1.1kV Heat shrinkable straight and branch Joints delivered by successful tenderer/s shall be carried out by the Undertaking's accepting authority to ascertain component's quality, quantity, and dimensions supplied as per Undertaking's specification , proper marking/labeling for component identification and ensuring adequate packing.

4.6.2.2 The aluminium inline ferrules supplied along with 1.1kV Heat shrinkable straight Joints shall be tested in the Undertaking's laboratory in accordance with IS 8308: 1993 and IS:5082- 1981 amended to date. Also VHN test shall be carried out on aluminium ferrules to confirm hardness.

4.6.2.3 In case of rejection of prototype at our end, the manufacturer shall attend /rectify defects/shortfalls within 10 days from the date of receipt of rejection memo, failing which, the delayed period will be reckoned for counting L.D. charges.

4.6.3 After the approval of proto-type of 1.1kV Heat shrinkable straight and branch Joints, the successful tenderer shall deliver the 1ST Lot within 4 weeks from date of approval of proto type and remaining kits as per our schedule. However the Undertaking reserves the right of revising the delivery schedule & also intimating the required quantity to be delivered.

4.6.4 For acceptance of lot/s of 1.1kV Heat shrinkable straight and branch Joints supplied by vender/s, physical inspection / testing of random samples selected from lot/s shall be carried out to ascertain material properties, component's quality, quantity, and dimensions supplied as per Undertaking's specification and as per prototype accepted earlier. Any lot is liable for rejection during lot inspection by the Undertaking, if test results are not satisfactory and there are deviations from our specification or jointing kits offered are found to be incomplete. In such cases, the manufacturer has to offer fresh lot for re inspection.

4.6.5 Additional Tests/Inspection:

4.6.5.1 Purchaser reserves the right of carrying out any inspection and testing at the manufacturer's works/laboratory during all the stages of manufacture.

4.6.5.2 Purchaser also reserves the right to select complete 1.1kV Heat shrinkable straight and branch Jointing kit and/or some of the components from the kits, at random from the supply made and subject them for testing at government recognized laboratories as per relevant standards applicable, for confirmation of material properties and ensuring reliability of jointing kits. If the same fails in the testing, whole lot would be rejected.

SECTION 5 : GUARANTEE

5.1 The offered 1.1kV Heat Shrinkable straight and branch Joints shall be guaranteed against manufacturing and material defect for a period of 15 months from the date of acceptance or 12 months from the date of installation, whichever is earlier. In case if the tenderer is authorized distributor/dealer, he/she shall submit the undertaking letter from the manufacturer stating that abovementioned guarantee of 15 months from the date of acceptance or 12 months from the date of installation, remains valid even if, the authorized agent / dealer is changed during the guaranteed period.

5.2 Also Tenderer shall submit the undertaking letter stating that "In the event of failure of a straight joint within guarantee period, he/she shall replace it with two joints, free of cost and in case of failure of a Branch joint within guarantee period, he/she shall replace it with one straight joint and one branch joint, free of cost. Also the successful tenderer shall submit the report of failure analysis of failed joints.

SECTION 6 : DISPATCH INSTRUCTIONS

6.1 Routine Test Certificates:

Certificates regarding routine tests carried out in India, by the supplier on randomly selected H.S. & other components generally representing the lot/supply; shall be furnished along with the lot offered for the records of the purchaser. Routine tests may comprise measurement of heat shrink ratio, tensile strength, ultimate elongation, longitudinal shrinkage, wall thickness , dimensions , dielectric strength , volume resistivity etc. and physical checking.

6.2. Packing of the kit and marking of kit components:

6.2.1 Each component shall be supplied in separately sealed package. All components together shall form complete jointing kit.

6.2.2 For the purpose of identification, each component shall bear legible description such as name of the component, supplier's name, component serial number, batch reference, shrink ratio (for tubings)

6.2.3 Adhesive coated components shall have means to prevent the coated surfaces from adhering to each other. Individual components and complete kit packing shall be designed to protect against ingress of moisture and mechanical damage during transport, storage and handling.

6.2.4 Instruction manual and bill of materials strictly as per kit contents indicating component dimensions and quantity supplied shall be furnished with the kit.

6.2.5 Instruction manual shall clearly bring out detailed procedure in steps for cable preparation and jointing kit installation with the help of necessary drawings.

6.2.6 Non Conducting Water Blocking (Water Swellable) Tape supplied in the 1.1kV H.S jointing kits shall be provided in effective sealed packing to protect against moisture absorption, dust and mechanical damage.

SECTION 7: SCHEDULE OF DEPARTURES FROM SPECIFICATION

SPECIFICATION NO. 17(B1)0115 (H.S.)

Tenderers shall mention in this schedule all the departures from the various clauses/sections of this specification If any. In absence of any mention in this schedule, compliance with this specification is taken for granted and shall be binding on tenderer.

Sr No	Ref. to Clause/Section No of Specification	Departures & Remarks on departures

SEAL & SIGNATURE
OF THE TENDERER _____

DATE : _____

SECTION 8 : DIMENSIONAL DETAILS OF 1.1kV HEAT SHRINK TUBING COMPONENTS

1.1kV HEAT SHRINK STRAIGHT THROUGH JOINT

(A)	CONNECTOR INSULATING TUBE							
Sr. No.	Dimensional Details	Unit	4C x 300 sq.mm		4C x 120 sq.mm. / 4C x 70 sq.mm.		4C x 25 sq.mm. / 2C x 25 sq.mm.	
			Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered
1	Length & Quantity	mm	250 / 4Nos.		200 / 4Nos		150 / 4Nos	
2	Minimum Wall Thickness Before Shrinkage	mm	1.2		1.2		1.2	
3	Minimum Wall Thickness After Shrinkage	mm	2.0		2.0		2.0	
4	Internal Diameter (Expanded)	mm	50		35		20	
5	Internal Diameter (After Recovery)	mm	16		12		06	
6	Shrinkage Ratio		3:1		3:1		3:1	
7	Longitudinal Change	%	+/- 10		+/- 10		+/- 10	

SECTION 8 :			1.1kV HEAT SHRINK STRAIGHT THROUGH JOINT					
(B)	**CORROSION PROTECTION TUBE/ OUTER PROTECTION TUBE FOR OUTER SHEATH**							
Sr. No.	Dimensional Details	Unit	4C x 300 sq.mm		4C x 120 sq.mm. / 4C x 70 sq.mm.		4C x 25 sq.mm. / 2C x 25 sq.mm.	
			Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered
1	Length & Quantity	mm	750 / 2Nos.		900 / 1No.		500 / 1No.	
2	Minimum Wall Thickness Before Shrinkage	mm	1.2		1.2		1.2	
3	Minimum Wall Thickness After Shrinkage	mm	2.5		2.5		2.5	
4	Internal Diameter (Expanded)	mm	130		110		56	
5	Internal Diameter (After Recovery)	mm	37		34		18	
6	Shrinkage Ratio		3:1		3:1		3:1	
7	Longitudinal Change	%	+/- 10		+/- 10		+/- 10	

SECTION 8 :					1.1kV HEAT SHRINK BRANCH JOINT			
(C)	INNER WRAP AROUND INSULATING SLEEVE							
Sr. No.	Dimensional Details	Unit	4C x 300 sq.mm. with 4C x 120 sq.mm. / 4C x 70 sq.mm. / 4C x 25 sq.mm. / 2C x 25 sq.mm.		4C x 120 sq.mm. with 4C x 70 sq.mm. / 4C x 25 sq.mm./ 2C x 25 sq.mm.		4C x 25 sq.mm. with 4C x 25 sq.mm. / 2C x25 sq.mm.	
			Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered
1	Length	mm	250		200		150	
2	Minimum Wall Thickness Before Shrinkage	mm	1.2		1.2		1.2	
3	Minimum Wall Thickness After Shrinkage	mm	2.0		2.0		2.0	
4	Internal Diameter (Expanded)	mm	76		52		42	
5	Internal Diameter (After Recovery)	mm	22		16		8	
6	Shrinkage Ratio		3:1		3:1		3:1	
7	Longitudinal Change	%	+/- 10		+/- 10		+/- 10	

SECTION 8 :					1.1kV HEAT SHRINK BRANCH JOINT			
(D)	**OUTER WRAP AROUND CORROSION PROTECTION SLEEVE**							
Sr. No.	Dimensional Details	Unit	4C x 300 sq.mm. with 4C x 120 sq.mm. / 4C x 70 sq.mm. / 4C x 25 sq.mm. / 2C x 25 sq.mm.		4C x 120 sq.mm. with 4C x 70 sq.mm. / 4C x 25 sq.mm./ 2C x 25 sq.mm.		4C x 25 sq.mm. with 4C x 25 sq.mm. / 2C x25 sq.mm.	
			Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered	Undertaking's Minimum Requirement	Offered
1	Length	mm	1200 / 1No.		900 / 1No.		500 / 1No.	
2	Minimum Wall Thickness Before Shrinkage	mm	1.1		1.1		1.1	
3	Minimum Wall Thickness After Shrinkage	mm	2.5		2.5		2.5	
4	Internal Diameter (Expanded)	mm	140		115		76	
5	Internal Diameter (After Recovery)	mm	38		38		22	
6	Shrinkage Ratio		3:1		3:1		3:1	
7	Longitudinal Change	%	+/- 10		+/- 10		+/- 10	