

SPECIFICATION NO. 6.2.1

PILOT CABLE JOINT BOXES **(Issued in July, 1996)**

1.0 Specification for compound filled straight through joints for 20 twin twisted pair of cores of 1.13 mm copper conductor 250/440V extruded polyethylene insulated sheathed, galvanized steel wire armoured and extruded PVC over sheathed of 0.8mm. insulation thickness and can withstand 15KV induced voltage

1.1 General:

The joint boxes should be suitable for following climatic conditions:

Altitude	:	Sea Level.
Maximum temperature	:	50 deg.C.
Maximum humidity	:	100%

The joint boxes shall be suitable for operation when buried in highly corrosive soil with very high saline water content or installed in exposed conditions of high humidity. The joints, therefore, shall not allow any ingress of moisture.

The joints should preferably have a double envelope construction. Alternative arrangement of following type would be also considered.

- a) The tape wrapping (for inner PE sheath) with injection fitting complete with check valve, air vents, etc. for filling of the waterproof epoxy resin compound.
- b) Individual copper connectors for each/pair of core with a polycarbonate housing filled with a sealing compound.

Tenderer shall elaborate completely, if required, by a component list or drawings for offer with any of alternatives shown above.

1.2 Copper Sleeves:

Tinned copper sleeves, offered for splicing of the polyethylene insulated cores, shall be of crimping type.

1.3 Insulating Sleeve:

- a) For Core Joints:

Insulating sleeves required to cover the core joints shall be preferably heat shrinkable. The sleeve shall be of length not less than 4 times the length of the copper sleeve.

- b) For Inner PE Sheath:

The insulating sleeve shall be heat shrinkable and of rigid PVC or Polyethylene. The sleeve shall be supplied complete with adequate quantity of sealing/ adhesive/self bonding tapes to seal the core joints.

1.4 Armour clamping device:

Armour clamping arrangement for rigid connection of steel wire armour shall be provided with armour clamp, tie rods, clamping bolts, etc.

1.5 Outer Box:

The cable joint shall be protected with rigid PVC, or cast iron or FRP protection box with necessary sealing tape, space tape, self bonding tape, adhesive tape and any other tape, if required to ensure complete sealing of the joint.

1.6 Filling Compounds:

Adequate quantity of waterproof epoxy resin compound shall be supplied for filling of heat shrinkable PVC or polyethylene sleeve used for jointing of core/inner PVC sheath.

Adequate quantity of polyurethane resin cold compound shall be supplied for filling of outer protection box of the joint.

1.7 Shelf Life:

The compound or any type of tape offered with the joint shall be with a shelf life of not less than 24 months when stored under the climatic condition shown in Clause-1.1.

The compound tins and tapes shall be marked with date of manufacture and date of expiry for the components where shelf life is not indefinite.

1.8 Accessories:

Any other accessories required as per manufacturer's design for satisfactory working of the joint shall be supplied with the joint. Such accessories if required shall be of high engineering material/quality. Complete details shall be furnished with the offer for such accessories offered by the tenderer.

1.9 Instruction Manual:

Tenderer shall submit along with the tender a detailed jointing instruction manual along with the set of drawings for the specified type of joints. Each jointing kit shall contain one set of instruction manual.

2.0 Packing of Materials:

All jointing materials and accessories including compound shall be packed in one sturdy cardboard box to facilitate ease of handling and avoid displacement of materials. Compound Tins shall be supplied duly palletted with each consignment of the joint.

Tapes and insulating compound should have minimum shelf life of 24 months from date of manufacture and these should be manufactured after award of contract to the successful contractor.

Containers/Tin containing compound tapes should bear date of manufacture of the material packed in. When consignments are shipped in containers, these shall be canvas top type to facilitate unloading of materials.

2.1 Inspection and Tests:

The FEWA reserves the right to nominate inspectors/Inspection Agencies to inspect and carry out necessary tests and/or measurements, at any stage of the manufacture and to reject all or any part of the equipment/materials not in accordance with the technical specifications as described in the Contractor's offer.

- 2.2 For the purpose of inspection, the contractor shall accord the FEWA's authorized inspectors/inspection agencies access to all parts of the factory concerned with the manufacture of the equipment/materials and shall provide FEWA's authorized inspectors/inspection agencies with such inspection facilities, testing apparatus and services as may reasonably be required.
- 2.3 For inspection involving tests and facilities outside normal working procedure of the contractor or for tests which cannot be conducted in the contractor's manufacturing premises, the contractor shall highlight and notify the same in his offer.
- 2.4 Should any re-inspection of the equipment/materials be required due to failure of the contractor to provide the equipment/materials according to the specification, or should there be any additional involvement of the inspectors due to equipment being not offered for inspection as per contractual delivery schedule, then any charges/costs of such re-inspection or additional involvement will have to be borne by the Contractor.
- 2.5 Equipment/materials once rejected shall not be considered as having been delivered under the contract and the contractor shall within the appropriate time, for delivery provided by the contract or such further time FEWA may allow, deliver at contractor's expenses satisfactory equipment/materials in replacement of the rejected equipment/materials.
- 2.6 FEWA reserves the right to reject the equipment/materials or any part thereof after acceptance if it found not to conform to the contract specification by reason of some defect latent or otherwise of materials or workmanship which was not discoverable after a reasonable examination of the equipment/materials.
- 2.7 All the relevant drawings, specification and other such details as required as per contract shall be sent to the FEWA at sufficiently early date to enable FEWA Engineers and/or their authorized inspectors to become fully acquainted with the equipment/materials prior to the inspection and/or testing within the time stipulated in the contract.
- 2.8 The contractor shall ensure that FEWA's authorized inspector/inspection agencies shall have the same inspection rights in respect of any sub-contractor the FEWA's authorized inspection/inspection agencies has in respect of contractor.
- 2.9 All materials, which are specified for tests at the manufacturer's works shall satisfactorily pass tests before being painted/shipped.
- 3.0 All instruments used for the purpose of testing shall be approved and if required shall be calibrated at the expense of the contractor by such body as may be approved.
- 3.1 Where type tests are specified below, such shall be carried out in the presence of FEWA's representative or alternatively, if the inspection is waived by the purchaser, the contractor shall provide certificates from a recognized international testing authority showing that such tests have been carried out satisfactorily on apparatus similar to that being supplied.

- 3.2 The following tests/checks shall be carried out in accordance with the details specified, to determine whether the material apparatus comply with specification.
- a) Dimensions and material check for each component/part.
 - b) Configuration check for each component.
 - c) Visual examination of each component to check application/suitability.
 - d) Coating thickness measurement and closing test (hardness) for tinned copper sleeves.
 - e) Review of test certificates mill charts of the sub-supplier, if any.
 - f) Verification of the contents in sealed containers for one consignment, if applicable.
 - g) Weight check of cable jointing compound for one consignment.
 - h) Inspection of packing/containerization of at least one consignment.

SCHEDULE 'A'

SUB-MANUFACTURERS

The Tenderer shall state below the names of the sub-manufacturers to the main manufacturer and details of the equipment proposed to be manufactured or supplied by them:

Name & Address of the Sub-Manufacturer	Description of Equipment

Signature : _____

Designation : _____

Name of Tenderer ; _____

Date : _____

SCHEDULE 'B'

PLACE OF MANUFACTURE, TESTING AND INSPECTION

The Tenderer to complete the following schedule for all materials he proposes to supply

Item No.	Description	Manufacturer	Place of manufacture	Place of testing and inspection

Signature : _____

Designation : _____

Name of Tenderer ; _____

Date : _____

SCHEDULE 'C'

DEVIATION FROM TENDER SPECIFICATION

The Tenderer to state in the following schedule the deviations from the tender specifications proposed in his offer. Deviations other than those specifically listed below will not be taken note of:

Item No.	Description	Precise Details of the Deviations

Signature : _____

Designation : _____

Name of Tenderer : _____

Date : _____

SCHEDULE 'D'

GUARANTEED PARTICULARS FOR HEAT SHRINKABLE JOINTS

Tenderers are to give the following particulars for the straight through joints.

Sl. No.	Description	Straight Joints
1.	Nominal voltage in Volts	
2.	15 Minutes wet withstand voltage in KV r.m.s	
3.	D.C. withstand voltage for 5 minutes in KV	
4.	Impulse withstand voltage dry in KV (Peak value) for 10 positive and 10 negative impulses with 1.2/50 Micro second wave form	
5.	Material of the heat shrinkable kit	
6.	Dielectric strength KV/mm	
7.	Volume resistivity Ohm/cm.	
8.	Dielectric constant	
9.	Dissipation factor	
10.	Tensile strength	N/sq.mm
11.	Elongation	%
12.	Moisture absorption	%
13.	Brittle temperature	Deg. C
14.	Standards	
15.	Safe continuous operating temp.	Deg. C
16.	Maximum permissible temp. for short circuit	Deg.C
17.	Tail length	
18.	Stress control distribution, attach literature for joints	
19.	Provision of catalogues for joints	

Signature : _____

Designation : _____

Name of Tenderer : _____

Date : _____

SCHEDULE 'E'

DETAILS OF PAST EXPERIENCE OF MANUFACTURER

Name and address	Qty.	Year of supply	Remarks

Signature : _____

Designation : _____

Name of Tenderer : _____

Date : _____