

Technical Specification for Heat Shrinkable Splice Closure

1. Scope

This Specification describes the essential requirements for a complete system of heat shrinkable splice closure and caps intended for environmental and mechanical protection for air cored and petroleum jelly filled local telephone cable for duct and direct buried application.

2. General requirement

The splice closure system consists of an inner supporting liner combined with heat shrinkable adhesive pre-coated parts assuring a bond to supporting liner and to the extended cable ends. The splice case is either re-enterable or removable for repair of the splice. Reclosure is completed by wrap-around, or a new heat shrinkable splice closure system. Branch-off clips for branching cables and continuity clip assembly shall be available.

- 2.1. The heat shrinkable parts used in the kits shall be manufactured from a cross-link thermally stabilized modified polythelene material.
- 2.2. The inner heat shrinkable parts shall completely be coated with a flexible heat activated adhesive Particles with a thin plastic removable sheet.
- 2.3. The whole part shall be capable of being stored at temperature of at least as high as +60° c and as low as -30 °c
- 2.4. The heat shrinkable parts shall be coated with a temperature indicating point, which disappears when the proper boldline temperature has been reached.
- 2.5 The supplier shall provide dimensions of major parts.
- 2.6 The closure channel shall be manufactured from stainless steel in accordance with DIN 17740 (mat. 14303)
- 2.7 The alloy of the branch –off clip shall be Mg 9, Almg 35 or equivalent. A thermos hardening coating. The coating shall be bonded to the clip shall protect the clip.
- 2.8 The complete splice closure system shall be supplied in kit, which consists of all-important parts, and ancillaries as indicated below. Other necessary parts could be included in the kit:

- Heat shrinkable sleeve
- Metal canister
- Flexible channel, retention clip
- Branching clips (three-finger type)
- Abrasive strip
- Cleaning clothes
- Shield continuity
- Armor Continuity
- Aluminum cable tape
- Self sheathing
- Drying agent
- Instruction leaflet in English

3. Delivery Condition

- 3.1. The joint closure shall be packed in a card board box.

3.2. In order to protect the cardboard box from external damage during loading, it should be packed in hard carton or wooden case containing not more than 50 boxes.

3.3. Each kit shall have a label with following information:

- Supplier's Name
- Product Designation
- Batch Number
- Order Number

Technical Specification for terminal joint Closure

(for 1800 pairs)

1. Scope

The terminal joint closure is to be used to connect multi-pair feeder plastic cable with primary cable in cable vault or riser installations.

2. General requirement

The bidder shall specify the plastic closure housing material.

2.1 The closure shall be mechanical type.

2.2 The holes for the feeder cable shall support 100 pair plastic cables.

2.3 Special plugs shall close the unused holes.

2.4 The closure system shall provide ample space to allow the use of waterproof connectors.

2.5 The closure shall be preferably capable of re-closing without using additional sealing material.

2.6 It shall be capable of being stored at a temperature of at least as high as +60 °c and as low as--30 °c.

2.7 The joint closure system shall be supplied in kit, which consists all important parts and accessories. All the required components shall be specified by the bidder and shall provide instruction leaflet in English.

3. Delivery Condition

3.1 The joint closure shall be packed in a card board box.

3.2 In order to protect the cardboard box from external damage during loading and unloading it should be packed in hard carton or wooden case containing not more than 30 boxes.

3.3 Each Kit/Box shall have the following information

- Supplier's Name
- Product Designation
- Batch Number
- Order Number

Specification for Foam Skinned Jelly Filled Cable cleaning kit

1. Scope

The kit is used for cleaning jelly compound from jelly filled cable after sheath has been removed during splicing of cables.

2. Technical Specifications

- 2.1 The compound shall be capable to remove cable-filling compound from conductors with no damage.
- 2.2 The residue shall be eliminated easily without causing any harm
- 2.3 The compound after cleaning shall be easily dry.
- 2.4 The compound shall not have any negative impact on human health, any living creature, environment, and so on.

3. Delivery condition

- 3.1 The compound shall be delivered in a can as follows
 - For up to 200 pair cable cases 0.5 lit/can with transparent plastic bag capable of holding the compound inside for removing jelly field compound of the cable.
 - For 200 to 600 pair cable case 1lit/can
 - For over 600 pair 1.5lit/per can with If there is any deviation the supplier has to state it.
- 3.2 The following information shall be written on each can
 - Manufacturer's name
 - Packing list
 - Manufacturing and expired date.
 - Quantity in litres or grams per can.

Specification for 25 pair splicing module and 25 pair pluggable module

1. Scope

The 25 pair-splicing modules are proposed to be used for cable splicing work for directly buried and duct cables above 200 pair. The pluggable modules are used for cutover of cables; these products will enhance the efficiency and productivity of cable splicing works. As these materials are to be buried underground they should be of highest standard and quality.

2. Technical Specification

- 2.1 The module should be of filled type.
- 2.2 cover transparent the color of the module shall be as follows.
 - Body top is yellow
 - Body bottom is dark gold
 - Base is transparent,

- 2.3 Each contact should strip the insulation from the positioned wire and securely grip the conductor as a module is crimped.
- 2.4 The module shall not be breakable.
- 2.5. The contact resistance for the module shall not be greater than 2.5m

3. Delivery condition

- 3.1 The splicing and pluggable module shall be packed as:
 - 3.1.1 Each module in a case
 - 3.1.2 12 cases of splicing module in a carton. The supplier can state his proposal if this is not appropriate.
- 3.2 The following information shall be written on each package.
 - Identification or designation number.
 - Manufacturer name
 - Packing list
 - No of modules per each package

Specification for warning tape

1. Scope

The warning tape is used to indicate underground telecom facilities so as to find easily and to prevent any damage.

2. Technical requirement

- 2.1 The warning tape to be used for telecommunications underground burial outside plant cable network shall be made of polyethylene tape
- 2.2 The polyethylene is chemically inert and will not degrade when exposed to alkalis
- 2.3 The warning tape shall have width of approximately 15 cm and minimum thickness of 0.15mm
- 3.4 The tape shall be orange in color and shall be durably printed with letters indicating telephone facility saying “Attention telephone cables buried below” at intervals of one meter.

3. Delivery condition

- 3.1 The warning tape shall be packed in a cardboard box.
- 3.2 Each tape shall be delivered in rolls of 1500 meters.
- 3.3 In order to protect the cardboard box from external damage during loading and unloading it should be packed in hard carton or wooden case
- 3.4 The following information shall be written on each carton or wooden case
 - Manufacturer's name
 - Packing list
 - Quantity in rolls and length per roll.

Specification for wire Clamps

1. Scope

The wire clamp is used for attachment or bonding of earth wire with suspension wire.

2. Technical requirements

- 2.1. The wire clamp shall be made of bow of round steel rod, seat of malleable cast iron, hot dip galvanised.
- 2.2. It shall have the dimensions described in the table and the shape shall be according to attached table.
- 2.3. It shall be capable of withstanding extreme weather conditions and give long service without corrosion.

Type	For wire diameter(inch)	A (mm)	B (mm)	C (mm)	D (mm)
1	5/16	33	18	40	¼
2	3/8	38	21	48	5/16

Specifications for stay wires

1. Scope

The stay wires are used for anchoring of poles, used with the necessary stay accessories and the stay block, which is placed in the ground.

2. Technical requirement

- 2.1 The stay wires shall be made of hot dip galvanized wires.
- 2.2 Steel wires
 - 2.2.1 The steel wires shall be manufactured from tempered wire with the diameter mentioned in the table before galvanization is applied.
 - 2.2.2 The total minimum breaking strength of the finished stranded steel wires shall be according to the table.
 - 2.2.3 It shall be possible to wind the single wire over its own diameter and then to unwind with out breaking.
- 2.3 Galvanization of wire
 - 2.3.1 Each wire shall be galvanized with pure zinc as specified in the table the table.
 - 2.3.2 The zinc coating shall be as even as possible, not flaking off, when the wire is winding around a cylinder with diameter 10 times the wire diameter.
- 2.4 Stranding of wire
 - 2.4.1 The twist length of the wires shall be as specified in the table.

2.4.2 The stranding shall be made in such a way that the stay wire become firm without a tendency to coil, when it is laid a straight line.

2.4.3 The strands of the steel wire shall not unwind, when the stay wire is cut.

3. Delivery

3.1. The stay wire shall be delivered incoils with the length specified in the table.

3.2. The coil shall have inner eye diameter of approximately 750mm and shall be tied at least at four places with soft galvanized binding wire.

3.3. In order to avoid trouble during unwinding of the coil the starting end of the first five turns shall be bound together in three places.

3.4. The ends of the stranded wire shall be secured with 1mm soft galvanized binding wire at least 10 turns about 10mm from each end.

3.5. Each coil shall be marked with metal or plastic label noting the following:

- Type and diameter of wire
- The length and weight of the coil
- The manufacturer's name
- The date of manufacturing

Type (ton)	Breaking Strength (ton)	Number of strands	Wire or strand diameter(mm)	Twist length (mm)	Weight of galvanization min. g/m	Stay wire weight gk/m	Delivery coil length (m)	Max diameter (mm)
3	3	7	2.15	125	1.5	0.20	250	7.0
6	6	7	3.0	175	2.1	0.40	125	9.5

Specification for rigid PVC bend pipe

1. Scope

PVC bend pipe is used for leading cables in to cabinets and for rising cables in to buildings.

2. Technical requirement

The PVC bend pipe shall be made from PVC materials and it shall be provided with 90° angle 800mm bending radius and straight lengths of 400mm and 150 mm at both ends of the pipe.

3. Delivery conditions

The supplier shall state the delivery.

Specification for PVC duct Spacer

1. Scope

The spacer shall be made of plastic or similar materials. The dimension and forms of the spacer is shown below.

2. Technical Requirement

The spacer is used for supporting PVC pipes in underground cable construction. The spacers required are of two types 4- ways and 8-ways.

3. Delivery Condition

The supplier shall state the delivery condition

Specification for termination sleeve

1. Scope

The termination sleeve is used in combination with distribution support is intended for attachment of self-supporting aerial telephone cables at termination or intermediate suspension point on poles or walls.

2. Technical requirements

2.1 The termination sleeve shall be made of zinc-electroplated steel.

2.2 On the inside surface, it shall be coated with an abrasive compound in order to give better strength between the termination sleeve and suspension wires.

2.3 It shall be capable of withstanding extreme weather condition and shall give long service without corrosion.

2.5 The termination sleeve shall have the shape and dimension shown in the following figure

Specification for support for drop wire clamp

1. Scope

The support for drop wire clamp is intended for attachment on wooden poles at the point of subscriber distribution.

2. Technical specification

2.1 The support for drop wire clamp shall be made of hot dip galvanized steel. It is simply consists of a chain of length 0.65mt.

2.2 The dimensions for the support for drop wire clamps are attached herewith.

Specification for Distribution Support

1. Scope

Distribution support is used to support self-supporting cables. It used in conjunction with termination sleeve for attachment of self-supporting aerial telephone cables termination or intermediate suspension poles.

2. Technical Requirements

- 2.1 The-distribution support shall be made of zinc or chrome-electroplated steel.
- 2.2 It shall have high strength so that it can with stand the tensile force applied by termination sleeve.
- 2.3 It shall be capable of with standing extreme weather conditions and shall give long service without corrosion.
- 2.4 The distribution support shall have the shape and dimension of the provided sample with this spec.
- 2.5 The screw shall be capable enough to fit the distribution support to the pole.
- 2.6 The flat part should be slightly bent so that fixing shall be as simple as possible.

Specification for cross connection cabinet (CCC)

1. Scope

The cross connection cabinet is required to connect primary and secondary cables for flexibility purpose.

2. Technical Specification

- 2.1 The cross connection cabinet shall have enough space for accommodation of 1,800 pairs or 2,400 pairs of terminal box.
- 2.2 The housing shall be made of steel at least 22mm thickness processed with hot dipped galvanizing for sufficient corrosion resistance.
- 2.3 The frame of housing shall be carefully structured to avoid any strain of wrap.
- 2.4 The cabinet shall have two doors.
- 2.5 The outsider shall securely fix the doors to the housing with a locking device, which does not permit access of handling or opening the door.
- 2.6 The doors shall always be opened and closed smoothly, and shall not deteriorate with age.
- 2.7 The cabinet shall have ventilation holes to avoid dew condensing inside. These holes should be equipped with simple replaceable filters, which provide protection against dust and insects. The holes shall not allow any raindrops to penetrate inside.
- 2.8 The housing shall be able to be protected from moisture.
- 2.9 The block holder shall feature vertical and horizontal wire guides, for easy drawing of jumper wires.

- 2.10 The cabinet shall be installed quickly and easily on its base.
- 2.11 A durable cabinet card to record and identify the pair allocation and jumping between cables shall be provided on the backside pocket of the doors.
- 2.12 The abbreviation of Ethiopian Telecommunication Corporation, ie. ETC shall indelibly be stenciled on the doors.
- 2.13 The color of the cabinet shall be gray or white.
- 2.14 Two types of cabinets shall be offered in accordance with the number of pairs that it is used for. (Either for a 1,800 pair or a2, 400 pair.)

3. Dimension

- 3.1 The cabinet for a 1,800 pair shall have a height of about 1mts,width of about 0.5 Mts. and a depth of about 0.40mts.
- 3.2 The cabinet for a 2,400 pair shall have a height of about 1mts. Width of about 0.70mts and a depth of about 0.40mts.

4. Delivery Conditions

- 4.1 The following information shall be written on each package
 - 4.1.1 Identification or Designation number.
 - 4.1.2 Manufacturer’s name.

Specification for drop wire clamp with metal hook

1. Scope

The drop wire clamp with metal hook is intended for attachment of self-supporting drop wire at distribution points on poles. It is also intended for attachment of self-supporting drop wire at intermediate points.

2. Technical Requirements

- 2.1 The drop wire clamp is made of carbonate plastic which shall be extremely resistant to ultraviolet light, moisture, salts, gases, temperature changes etc.
- 2.2 The plastic material shall be suitable even in extremely corrosive climatic conditions. The clamp shall be accompanied with hot dip galvanized metal hook.
- 2.3 The dimension of the drop wire clamp with metal hook is described below and the figure is attached herewith.

Type	A (mm)	B (mm)	C (mm)	D (mm)
1	89	27	37	6.5
2	106	33	35	8.5

Specification for Outdoor Terminal Box of 10 Pairs

1. Scope

The outdoors-terminal box is used for telecommunication outside plant network distribution point on poles or walls.

2. General Requirements

2.1 The terminal box shall consist of a frame with bushings, a 10pair terminal block, a tightening block, a tightening gasket and a cover with hinged lid.

2.2 Terminal block

2.2.1 The terminal block shall be made of gray or black non-hygroscopic highly insulating carbonate plastic material.

2.2.2. It shall have soldering tags on the rear side for the incoming pairs and terminal screws on the front side for outgoing lines, or screw terminals for both incoming and outgoing pairs. The screw terminals shall be shaped to permit the wire ends to be laid straight under the screws. The terminal screws shall be able to take individual wires with a maximum of 1.3mm diameter.

2.2.2.1 All metal components shall be non-ferrous and anticorrosion treated.

2.2.2.2 The terminal block shall have numerals 1-5 and 6-10 for identifying the individual wires. The numerals shall be molded in the body of the terminal block.

2.2.2.2 It shall be ventilated in order to prevent moisture.

Specification for grounding pole

1. Scope

As known lightning and others subject to the hazards of high voltages and currents cause outside plants. There fore the grounding pole is used for diversion of excess caveat from communication conductor to ground.

2. Technical requirement

2.1.The rod shall be made from steel or appropriate material and electroplated by copper or zinc material

2.2.The rod shall withstand corrosion

2.3. The supplier shall state the rod conductor resistance.

2.4 It shall have a length of 2.4 meter.