

SECTION 16124
SPLICES AND TERMINATIONS – MEDIUM-VOLTAGE CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Terminations, 5 kv and 15 kv insulated cables.
 - 2. Splices, 5 kv and 15 kv insulated cables.
 - 3. Taps, 5 kv and 15 kv insulated cables.
 - 4. Potheads.
 - 5. Separable insulated connectors.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 16121, Medium Voltage Cable – 5 kv Insulated and 15 kv Insulated.
 - 2. Section 16960, Electrical Testing.

1.3 REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. ANSI/IEEE C2-97, National Electric Safety Code.
- B. Institute of Electrical and electric Engineers (IEEE)
 - 1. IEEE 400-91, Making High-Direct-Voltage Tests on Power Cable Systems in the Field, Guide, 14 pages.
 - 2. IEEE 48-90, Class 1 Terminations for Medium-Voltage Cables.
 - 3. IEE 386-95, Standard for Separable Insulated Connectors System for Power Distribution Systems Above 600V.
- C. National Fire Protection Association (NFPA)
 - 1. NFPA 70, 1999, National Electrical Code, NEC.

1.4 SUBMITTALS

- A. Submit product data for approval.
- B. Submit test reports for approval.

1.5 QUALITY ASSURANCE

- A. UL and NEMA Compliance: Provide splice kits and terminations that are listed and labeled by UL and comply with applicable NEMA standards.
- B. Comply with NFPA 70 for electrical components devices and accessories installation.
- C. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.
 - 1. The Terms “Listed” and “Labeled”: As defined in the National Electrical Code (NEC), Article 100.

2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulations 1910.7.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver equipment and materials to the job site in their original, unopened, labeled containers or packaging.

PART 2 - PRODUCTS

2.1 SOLID-DIELECTRIC, SHIELDED POWER CABLES (XLP AND EPR)

- A. 5-kV Cable Terminations: IEEE 48; 5-kV, premolded termination kits; RAYCHEM "HVT"-series kits or 3M Company "Quick Term" 5600-series kits.
- B. 5-kV Cable Straight (180°) Splices: 5-kV cables with 5-kV heat-shrinkable splice kits; RAYCHEM "HVS-800" kits.
- C. 5-kV Cable Taps ("wye" and "tee"): 5-kV tape-splice kits; 3M Company Scotch Brand 5700-series kits.
- D. 15-kV Cable Terminations: 2 IEEE 48; 15-kV premolded termination kits; RAYCHEM "HVT"-series kits or 3M Company "Quick Term" 5600-series kits.
- E. 15-kV Cable Straight (180°) Splices: 15-kV heat-shrinkable splice kits; RAYCHEM "HVS-1520"-series kits.
- F. 15-kV Cable Taps ("wye" and "H"): 15-kV heat-shrinkable splice kits; RAYCHEM "HVS-1520" series kits.
- G. Potheads: As specified on drawings.
- H. Insulating Compound:
 1. EPR to EPR, XLP to XLP, and EPR to XLP indoor and outdoor cable splice sleeves: PLM 227.
 2. EPR or XLP cable in indoor or outdoor potheads: PLM 227.

2.2 SEPARABLE INSULATED CONNECTORS

- A. Separable Insulated Connectors: Modular system complying with IEEE 386. Disconnecting, single-pole, cable terminators and matching, stationary, plug-in, dead-front terminals designed for cable voltage and for sealing against moisture. Stationary, dead-front terminals are located in padmounted, liquid-filled transformers.
- B. Load-Break Cable Terminators: Elbow-type units with 200-A load make/break and continuous-current rating; coordinated with insulation diameter, conductor size, and material of cable being terminated. Include test point on terminator body that is capacitance coupled.
- C. Test-Point Fault Indicators: Arranged for installation in test points of load-break separable connectors. Self-resetting indicators capable of being installed with a shotgun hot stick and tested with a test tool. Current-trip ratings as indicated.
- D. Tool Set: Shotgun hot stick with energized terminal indicator, fault-indicator test tool, and carrying case.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Install temporary protection shelters (wood frame and plastic sheet or equivalent) over open manholes when splicing solid-dielectric cables during inclement weather or in environments where airborne contaminants are present that are detrimental to a successful splice.
- B. Use similar shelters, under similar conditions, for making up potheads or installing stress cone terminators.

3.2 INSTALLATION

- A. Install splices at pull points and elsewhere as indicated; use standard kits. Comply with kit manufacturer's written instructions.
- B. Install terminations at ends of conductors and seal multiconductor cable ends with standard kits. Comply with kit manufacturer's written instructions and with classes of terminations indicated.
- C. Use craft skilled in procedures and techniques required for making splices and terminations.
- D. Complete each individual splice or termination from start to finish by same individual(s).
- E. Tag splices and terminations with an aluminum band (around cable at splice or termination) identifying date of completion, initials of craftsman, and Contractor employing craftsman.
- F. Solid-Dielectric
 - 1. Schedule work such that terminations and splices can be completed prior to end of work shift.
 - 2. If a splice or termination is not complete at end of work shift, then cover splice with plastic and tape to exclude moisture and dirt (idle period shall not exceed 48 h).
 - 3. Upon continuation of splice during next work shift, wipe clean and dry cable components before continuing with splice completion.
 - 4. In areas other than heated buildings, protect wrapped incomplete splice or stress cone terminator with silica gel or dry air purge.
- G. Install separable insulated-connector components where indicated according to manufacturer's written instructions.
 - 1. Quantities: Provide the following quantities of components:
 - a. Protective Cap: Install at each terminal junction, one of each terminal to which no feeder is indicated to be connected.
 - b. Portable Feed-through Accessory: 3.
 - c. Standoff Insulator: 3.
- H. Testing
 - 1. Comply with testing described in Section 16121.

END OF SECTION 16124