

SECTION 26 00 20 – MEDIUM VOLTAGE CABLE/TERMINATION TESTING

PART 1 - GENERAL

1.1 SCOPE

- A. All medium voltage cables and terminations installed under this project shall be tested and adjusted for proper operation. All faulty equipment and material shall be repaired or replaced. Specified tests requiring submittal of test results are outlined herein.
- B. All instruments, materials, personnel, and documentation of test results shall be included in the work of this Contractor.
- C. Provide all testing of the electric system required by the Authorities having jurisdiction. Tests shall include but shall not be limited to the items specified herein.

1.2 POWER CABLE FIELD TESTING

- A. Field testing cables, splices and terminations shall consist of a non-destructive, direct current, dielectric test of insulation of primary cable system using ICEA standard procedures.
- B. This Contractor shall notify Architect/Engineer and owner two (2) weeks prior to the date of tests. Tests must be witnessed by representatives of Owner and/or the Architect/Engineer.
- C. Testing shall be by an independent testing firm acceptable to the Owner. Testing is not to be performed by this Contractor. All tests shall be made by a qualified field technician especially trained for dielectric testing and interpretation of results and regularly engaged in dielectric testing.
- D. This Contractor shall be responsible for disconnecting and reconnecting equipment as required to make these tests.
- E. If at any time during the test procedure, the test is stopped due to excessive readings, the installation shall be checked to locate the problems. Corrective measures shall be taken prior to continuing the test.

1.3 CABLE, SPLICING AND TERMINATION TESTING

- A. All new cables, including all splices and terminations, shall be tested after installation prior to being energized. All cables not under test shall be properly grounded and tied to the shield of the cable under test. If it is necessary to repeat a test, the capacitance and absorption current shall be discharged by grounding the conductor for sufficient time to allow complete drainage. If the cable has been energized prior to testing, the capacitance shall be completely discharged by grounding the conductor in an approved manner.
- B. Tests performed and recorded shall be of the following types:
  - 1. Step Voltage Tests for New Cable Circuits.
  - 2. Step Voltage and Time Resistance (Polarization Index) Tests for Existing Circuits.

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- C. An installation having only new cable, splices and termination shall be tested as follows:
  - 1. 15kV (133%) System – Test to 65kV DC
  - 2. Under no circumstances is the test voltage to exceed 80% of the manufacturer's original DC over-voltage acceptance test.
- D. The results shall be plotted in the form of a curve on kilovolt-megohm paper.
- E. In the step voltage tests, voltage shall be applied evenly to the insulation in ten (10) consecutive steps of a specified magnitude or steps equal to the kilovolt rating (whichever is the lower), starting at a pre-selected and specified initial value. Voltage shall be held at each step for one (1) minute and current readings shall be taken and recorded at the end of each one (1) minute period for each voltage step. For certain very long cables, the test current will not have stabilized at the end of one (1) minute. In these cases, each step shall be held for two (2) minutes or for sufficient time to allow for stabilization of the capacitance and absorption currents. In conducting the test, the voltage shall not be increased or decreased during the time period. At the completion of the step voltage test and when the maximum specified voltage is achieved, the voltage shall be held at this maximum for ten (10) minutes and current readings taken and recorded.
- F. A determination is to be made by the testing firm field technician as soon as the test is completed, as to whether or not the system should be energized.

1.4 SUBMITTALS

- A. Distribution: As required in Division 1, certified copies of the field test reports shall be furnished for approval, and shall include the following:
  - 1. All reading shall be recorded and plotted on kilovolt megohm paper.
  - 2. A written summary by the tester as to the conditions of the installation, and recommendations by the testing agency relative to the acceptability of the installation.
  - 3. Testing Documentation shall be included in O & M manuals.
- B. In the event that the Engineer concludes that the test results are marginal, another test shall be run prior to the expiration of the one (1) year bonding period. The test shall be arranged for and paid for by this Contractor.

1.5 TESTING AGENCIES

- A. Acceptance tests shall be conducted by one of the following testing agencies or as approved by the Owner and/or Architect-Engineer.
  - 1. Cable Testing Service, Inc.  
Attn: Charles Emery  
1212 Calvert Road  
North East, MD 21901
  - 2. T.C. Lloyd Construction Company  
O'Hara Industrial Park  
P.O. Box 787  
Pittson, PA 18640
  - 3. Eldon Electric  
1835 Morgan Hill Road  
Easton, PA 18042

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4. Burlington Electrical Testing  
300 Cedar Ave.  
Croydon, PA 19021
5. Electrical Testing Service  
930 Cass Street  
New Castle, PA 16101
6. High Voltage Maintenance  
355 Vista Park Drive  
Pittsburgh, PA 15205
7. Met Electrical Testing Company  
710 Thomson Park Drive  
Cranberry Township, PA 16066

END OF SECTION 26 00 20