

## 260524 MEDIUM VOLTAGE CABLES AND SWITCHES

### Part 1 – GENERAL

#### 1.1 Description

A. This section details the guidelines and expectations for the design and installation of medium voltage cables and switches on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

#### 1.2 Submittals

A. The design engineer’s calculations, including but not limited to maximum pulling tension and sidewall pressures, shall be made available to JHFRE 11 days prior to any medium voltage cable installation.

#### 1.3 Quality Assurance

A. Each reel of cable shall be factory tested in accordance with manufacturer and UL standards. A certified copy of the test shall be furnished to JHFRE. All work must meet NEC standards.

### Part 2 – PRODUCTS

#### 2.1 Accepted manufacturers:

- A. Prysmian
- B. Okonite
- C. Kerite

2.2 The accepted manufacturer of medium voltage non-fusible switches is G&W.

2.3 Termination kits and splices over 600 volts will be supplied by 3M.

2.4 All medium voltage switches shall be air- or gas- insulated, not oil.

2.5 No lead break elbows are allowed.

2.6 All medium voltage conductors shall be the following:

Cable Type:	MV105
Conductor:	Copper
Conductor Stranding:	Compact round, concentric lay, Class B
Standing Filling:	Impermeable Compound in conductor interstices
Insulation:	Ethylene-propylene-rubber

Voltage Rating:	15,000 volt
Insulation Thickness:	133% insulation level
Shielding:	Copper tape, helically applied over insulation shield
Shielding & Jacket:	Corrugated copper drain wires embedded in extruded, chlorinated, polyethylene jacket
Circuit Identification:	Color-coded tape (black, red, blue) under metallic shielding
Cable Jacket:	Sunlight-resistant PVC. Color black, U.O.N.

## Part 3 – EXECUTION

3.1 High and medium voltage cable will be field tested by a NETA-certified technician at manufacturer’s voltage specifications and witnessed by JHFRE. All cables will have a high-pot in accordance with IEEE standards. One week in advance of the test, the contractor will submit the test procedure to JHFRE for approval. Test results shall be plotted and submitted to JHFRE prior to receiving authorization to energize the cable.

3.2 Provide end caps on cable stored for several weeks or longer.

3.3 When splicing into existing cabling, allow Very Low Frequency (VLF) with Tan Delta testing of the completed system and require high-pot testing of the new cable prior to splicing with existing cabling.

3.4 All medium voltage cabling to be tagged at least twice in each manhole, upon entering switchgear and in any pull boxes using plastic labels.

A. All cable circuit labels shall be 1-1/2” high, polyethylene, with black characters on white background, in a polyethylene holder, attached to the cable by two nylon self-locking ties.