

## 1.0 GENERAL

### 1.1 Coordination Requirements

- .1 UBC Energy & Water Services
- .2 UBC Facilities Electrical

## 2.0 MATERIALS AND DESIGN REQUIREMENTS

### 2.1 Performance Standards

- .1 High Voltage Cable shall comply with the requirements of the most recent edition of:
  - .1 I.P.C.E.A. S-66-524/NEMA WC7.
  - .2 CSA C68.3.

### 2.2 U.B.C. Power System Characteristics

Voltage	12480V
Phases	3
Wires	3
Frequency	60 Hz
System Neutral	Low resistance grounded 100A, 10 sec, 7.2 KV, 72 ohms
Available short circuit capacity	Maximum 300 MVA, 13.9 kA

### 2.3 Detailed Cable Specifications

Insulation	220 mil ethylene-propylene (EPR) insulation (133%), suitable for continuous operation at 105C conductor temperature, emergency conditions at 140C and 250C for short circuit conditions.
Shield	Metallic: 5 mil bare copper tape with 100% coverage and a minimum of 12.5% overlap.
Conductor	ASTM Class B soft bare copper, compact stranded.
Size	Building Services: 1 Conductor - 4/0 AWG per phase
	Feeders: 1 Cond. 500 KCM per phase
Construction	Solid plastic
Jacket, Outer	PVC
Rated Voltage	15 KV

### 2.4 Applicable Manufacturers

- .1 Aetna Insulated Wire Company.
- .2 Phillips Cable.
- .3 Prysmian Cable.
- .4 Alcatel.
- .5 Okonite
- .6 Southwire
- .7 All substitutes shall be pre-approved by UBC Energy & Water Services.

### 2.5 UBC Underground Duct System Consideration

- .1 All cables will be pulled into underground duct systems constructed to UBC Standards.

- .2 The duct system is not waterproof and the cables may be immersed in water for long periods of time.
- .3 Ducts are to be constructed as per UBC Standard Drawings E2-1, E2-2 and E2-3.

## **2.6 Ground Wires**

- .1 Grounding conductors shall be installed to UBC standards and as required by the Code. Specify wire size 4/0 and 500 kCM.

## **2.7 High Voltage Cable Termination**

- .1 High voltage cable terminations shall be Elastimold #K656 BLR 600 amp series only, unless otherwise specified.
- .2 Termination cable kit shall match conductor insulation diameter for 500 kCM or 4/0 conductors.
- .3 Refer to UBC Standards Drawing # E4-2.

## **2.8 Interruption of Services**

- .1 Shut down for any 12 KV circuits must be requested 4 weeks in advance of the actual shutdown date.
- .2 At any time no more than one 12 KV circuit can be shut down.

## **2.9 Manhole Access**

- .1 Permission to access any utility manhole must be coordinated and approved by UBC Utility Department. A Manhole Entry Permit must be approved before entry.
- .2 Entry into any manhole must be made in the company of UBC Utility personnel.

## **2.10 Safety Standards**

- .1 All work within a utility manhole shall comply with WorkSafeBC confined space access requirements.

## **2.11 Labeling**

- .1 Feeder labels to be installed around feeders at cable heads, stress cones, manholes, pull pits, etc. Refer to UBC Standard Drawing E4-1.
- .2 Feeders revised from existing circuit arrangements shall be relabeled at all "downstream" locations such as manholes, pull pits and building switchgear.

## **2.12 Testing**

- .1 Tests to be performed using qualified personnel. Provide necessary instruments and equipment.

- .2 Perform Hi-pot testing of cable at a voltage level not exceeding cable rating on the original reel at the UBC site. Failure to comply will void the factory warranty and the installation will be at the Contractor's risk.
- .3 Check phase rotation and identify each phase conductor of each feeder.
- .4 Check insulation resistance after each splice and/or termination to ensure that the cable system is ready for acceptance testing.
- .5 Acceptance Testing
  - .1 Ensure terminations and accessory equipment is disconnected including ground shields, ground wires, metallic armour and conductors not under test.
  - .2 UBC Energy & Water Services shall perform installed cable acceptance tests on all new cable installations using VLF testing equipment. All tests performed to NETA specifications.
  - .3 Review test with the Engineer before proceeding.
  - .4 Provide Engineer with list of test results showing location at which each test was made, circuit tested and result of each test.
  - .5 Remove and replace entire length if cable fails to meet the test criteria. Contractor will be responsible for the cable and installation costs to replace damaged cable.

**\*\*\*END OF SECTION\*\*\***