

1.0 **GENERAL**

1.1 **Related UBC Guidelines**

- .1 Divisions 20 to 28

1.2 **Coordination Requirements**

- .1 UBC Facilities Electrical (Vancouver)
- .2 UBC Facilities Management (Okanagan)

1.3 **Description**

- .1 UBC Requirements for Wire and Cables (0-1000 V).

2.0 **MATERIALS AND DESIGN REQUIREMENTS**

2.1 **General Requirements:**

- .1 Wires shall be copper throughout with R90 XLPE 90°C insulation. Minimum wire size shall be #12 AWG except for control wire. Wires #12 AWG and larger shall be stranded. #14AWG conductors shall be an acceptable minimum size if no part of the conductor is installed outside of the Student Housing and Community Services residential suite it services.
- .2 Color shall be impregnated in the insulation for wire #3 and smaller. Larger wire shall be clearly identified with colored vinyl tape at both ends and at all splices for large wire.
- .3 Control wiring shall be clearly identified if AC or DC.
- .4 Color coding for motor control wiring shall reflect accepted industry standards, but be sized no smaller than #18.
- .5 Wiring installed in underground ducts installed outside of building footprint (i.e. Building Services, Distribution or Lighting) shall be copper, RWU rated, XLPE.
- .6 Splicing is only permitted for Normal and Standby conductors. Splicing is not permitted for Emergency and Life Safety conductors.
- .7 Shared neutrals is not permitted between 2 or more circuits. The only exception where shared neutrals is permitted is for lighting circuits. Proper labelling must be applied to ensure clear identification of shared neutrals for operations staff.
- .8 For splicing of conductors long barrel compression connectors with water-tight heatshrink must be utilized. Raychem or UBC Facilities Electrical approved equivalent.
- .9 The largest conductor size that may be utilized is 500 MCM.

2.2 **Raceway Requirements:**

- .1 Raceways are required for all installations and cannot be substituted with armoured cable.
- .2 The following raceways are acceptable for use:
 - .1 EMT Conduit – $\frac{3}{4}$ " minimum size
 - .2 Rigid PVC Conduit

- .3 Rigid Metal Conduit.
 - .4 Surface Metal Raceway. It is preferred to utilize surface raceway in renovation projects where EMT may prove problematic due to limits of existing finishes.
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- .3 The following raceways are not acceptable for use:
 - .1 ENT Conduit.
 - .2 Non Metallic Raceway.
 - .4 Flexible conduit shall not be used as a general purpose raceway. The conduit shall not be less than 300mm and greater than 750mm.
 - .5 An additional conduit matching the largest utilized size, shall be provided for all building power feeds, power sub-feeds, and all electrical systems requiring inter-building connections.
 - .6 Conduit or cables entering boxes or equipment located in outdoor environments shall be bottom entry.
 - .7 Utility High Voltage conductors run within buildings shall be installed in rigid steel conduit unless encased in no less than 50mm of concrete and clearly marked with embedded brass plate indicating danger, voltage and burial depth.

2.3 Armoured cable may only be used for the following:

- .1 Drops to individual luminaires and shall have a maximum length of 1.5m (5'). Daisy-chaining of luminaires is not permitted.
- .2 Final connection to motors, transformers or vibrating equipment to a maximum length of 3m. Cable shall be run neatly, not secured to heat emitting mechanical systems and secured using mechanical fasteners not cable ties.
- .3 Armoured cable is not permitted for final connections to receptacles.

END OF SECTION