1.0 GENERAL

1.1 Related UBC Guidelines

.1 Division 26

1.2 Coordination Requirements

.1 UBC Energy & Water Services (Vancouver)
.2 UBC Building Operations Electrical Technical Support (Vancouver)
.3 UBC Facility Management (Okanagan)

1.3 Description

.1 UBC requirements for Secondary Power Distribution.

2.0 MATERIALS AND DESIGN REQUIREMENTS

.1 Two secondary voltage levels are acceptable at the University:
  .1 120/208 Volt, 3-Phase 4-Wire Wye System
  .2 347/600 Volt, 3-Phase 4-Wire Wye System.

.2 All secondary distribution equipment shall be installed inside conditioned rooms.

.3 The selection of distribution voltage shall be based on building layout. Conditions such as large distribution loads, high building and large footprint shall be used to determine the preferred secondary distribution.

.4 If a 600V secondary distribution is selected, all motors 3/4 hp and over shall be supplied at this level. ECM motors 2HP and below shall be except.

.5 Service Entrance disconnects shall only be circuit breaker type with the ability to be lockable in the open position.

.6 Any building or addition supplied by 208 or 600 Volts shall have entrance switchgear designed and labelled as “Suitable for Service Entrance”.

.7 Minimum requirements for breakers at service entrance distributions (unless determined otherwise by coordination study):
  
  .1 LSIG trip units:
    .1 Any breaker 600A and larger.
    .2 Any breaker 400A and larger that feeds a mechanical distribution.
    .3 Any breaker 400A or larger feeding a distribution that contains 2 or more sub distributions/panelboards.
    .4 Any breaker feeding a separate building.
    .5 Any breaker feeding a bus duct system.
    .6 Life safety distributions shall not have LSIG trip units.

  .2 LSI trip units are required for other breakers not mentioned in .1.

.8 The first distribution downstream of a 225kVA or larger transformer shall:
  .1 Have a LSI main breaker including in the distribution or
.2 Shall have a separate main breaker located upstream of the distribution.

.9 Lockout hasps are required on all distribution boards and for all circuit breakers feeding panelboards.

.10 New panelboards shall utilize bolt-on molded case circuit breakers. Panelboards shall contain copper buswork. All panelboards shall have phases balanced to within 15% and shall contain a typewritten directory on cardstock. The directory shall include the circuit number, room(s) number and load description. All new panelboards shall have a minimum of 6 spare breakers and the equivalent of 6 spaces at time of handover. All new panelboards shall be located on the same floors as the loads they serve.

.11 Skinny, double or piggyback circuit breakers shall not be utilized.

.12 All panelboards and loadcentres shall have main lugs only. Panelboards servicing CRUs are exempt and will require a main breaker. Panelboards and loadcentres shall not be back-fed through a circuit breaker.

.13 Where possible every load shall be supplied by a panelboard on the same floor.

.14 Daisy-chaining of electrical panels shall not be permitted. All panelboards shall be fed from separate overcurrent devices.

.15 Panelboards shall not be used as splice boxes.

.16 CTs shall not be installed inside panelboards and shall be located in a separate enclosure.

.17 Disconnect switches shall not be used as junction boxes.

.18 Fused disconnect switches shall be utilized for single loads of 30kW and greater.

.19 Refer to Section 11 60 00 Cranes and Hoists for disconnect requirements for Cranes and Hoists.

.20 Life Safety, Stand-by, Emergency Power distribution shall not contain any switches between the generator distribution overcurrent device and each transfer switch. All CBs upstream of Life Safety transfer switches shall have auxiliary contacts monitored by the transfer switch or generator or fire alarm system that will notify building maintenance personnel of a “not normal” situation. The monitoring wiring diagram shall form a separate section of the generator submittals.

.21 The electrical distribution shall be designed to limit incident energy to maximum 8 cal/cm² at all switches, circuit breakers and MCCs while retaining acceptable coordination selectivity. Incorporate LSI Circuit Breakers, not fuses, where necessary to achieve the desired results.

.22 Secondary power distribution equipment shall have NEMA ratings dependent on the following type of locations:
.1 General purpose areas: NEMA 1
.2 Locations where water ingress will occur: NEMA 3R
.3 Locations where pressurized water ingress will occur: NEMA 4
.4 Wood processing locations and locations subjected to circulating dusts/lints/fibers: NEMA 12

.23 Used or Refurbished distribution equipment is not allowed to be utilized.
Mixing of manufacturers within distribution equipment is not allowed.

### 3.0 SECONDARY DISTRIBUTION EQUIPMENT IDENTIFICATION AND LABELING

.1 Secondary distribution equipment, such as Panel Boards, Load Centers and MCCs shall have conspicuously attached a permanent 2” X 4” Hazard Warning Label to meet OHSA and NFPA standards that clearly identifies:

.1 Incident Energy
.2 Arc Flash protection boundary
.3 Hazard Category

.1 Secondary distribution equipment that is identified as Hazard Category two or higher, the above label shall be 3.5” X 5”

.2 Panel Boards, Load Centers and Transformers shall be labeled and identified in accordance with Standard Drawing E 10-2 in all new buildings, UBC Renew projects and in any major additions to existing buildings.

***END OF SECTION***