

PANELBOARDS

GENERAL INFORMATION

- 1.1 This section applies to panelboards.

DESIGN REQUIREMENTS

- 2.1 Preferred vendors:
 - a. General Electric
 - b. Siemens
- 2.2 All circuit breaker panelboards will be specified as door-in-door type.
- 2.3 All branch circuits from the panel will conform to Columbia University's conduit requirements.
- 2.4 There will be a comprehensive and accurate schedule of circuits distributed from the panel in the design documents. The Engineer of Record will verify the panel directories to be accurate before final acceptance.
- 2.5 Prior to connecting to existing panels, verify panel capacity, wire capacity feeding it, total load on the panel, and total load on the feeder.
- 2.6 Engineer of Record will verify capacity, loading and condition of source prior to connecting new panels. Verify viability of electrical sources prior to issuing final design documents.
- 2.7 All circuit breakers shall be built-on type.
- 2.8 Interrupting ratings shall be indicated on panel schedules.

CONSTRUCTION REQUIREMENTS

- 3.1 Wire nuts are not permitted within panels. All terminations will be with contiguous wire. If a mistake is made, new wire must be pulled.
- 3.2 There shall be no main lug connections to subpanels, temporary equipment or welding machines unless specifically approved by the University's Operations department.
- 3.3 A typed panel directory that has been field verified and reviewed & accepted by the Engineer of Record will be supplied before final acceptance by the University. Hand written panel directories will not be accepted. For modifications to existing panels, type

- the circuit designation on a label and affix it to the existing directory, or replace the entire directory.
- 3.4 The panel shall have a large engraved label permanently affixed on its exterior that clearly identifies the panel feed, voltage and phase designation, and normal vs. emergency and capacity.
- 3.5 Provide door-in-door construction.
- 3.6 Enclosure: Code gauge galvanized steel, with a minimum of 16 gauge.
- 3.7 Panelboards with 42 or more circuit breaker slots shall be secured with four (4) Yale S511 locks with No. 47 key – two (2) on the outer door and two (2) on the inner door. Panelboards with less than 42 breaker slots shall be secured with two (2) Yale S511 locks with No. 47 key - one (1) on the outer door and one (1) on the inner door.
- 3.8 Provide a minimum of 20 percent spare circuit breakers in each panel, and a minimum of 70 percent of the maximum load of the spare circuits in the calculation of the panel feeder.
- 3.9 Upon completion and after testing, balancing and adjusting, fill out panelboard circuit directory card with a label maker. Description for specific pieces of equipment shall also include room numbers.
- 3.10 Required field tests shall include:
- Continuity tests.
 - Exercising circuit breakers to ensure free operation.
 - Ensuring that all covers and breaker shields are properly aligned and tightened.
 - Setting adjustable time-current trip devices.
 - Ensuring that grounding and bonding terminal bars, bus bars, and straps, are properly connected.
 - Insulation resistance tests on each bus section, phase-to-phase and phase-to-ground.
 - Ground resistance using between the grounding system and the panel frame using the point-to-point method.
 - Ground fault device testing.
 - Secondary phase-to-phase, phase-to-ground and neutral to ground voltage tests.
- 3.11 Arrange conductors into groups and bundle and wrap with ties after installation is complete and after load balancing.

END OF SECTION