



## **26 2416 – Panelboards**

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### A. General:

1. Panelboards shall be U.L. listed and labeled.
2. Panelboards shall typically be MLO except for those on the secondary of a transformer or other separately derived system that need a main disconnecting means. Those shall have its own breaker.
3. In general, panelboards shall be located in electrical equipment rooms or other equipment rooms designed for such. Do not locate panels in storage closets or other rooms within building specific department. Our electricians need to quick access to electrical rooms. Locating panels within locked, building specific departments makes accessing panels difficult after hours or when the department or area is unoccupied.
4. These rooms shall be accessible by qualified personnel only and have corresponding signage stating such.
5. Panelboards shall not be located in corridors or other areas of public access.
6. Panelboards shall not be used as the Main distribution Panel

### B. Approved Manufacturers:

1. Siemens
2. Square D
3. Eaton

### C. The Panelboard Schedule shall be shown on the project drawings. It shall include the following:

1. Panel Name
2. Panel Mounting (Surface or Recessed)
3. Room Number of Panel Location
4. Identification of Main Breaker size in panels so equipped.
5. Circuit Description
  - a. Identify spares and spaces
6. A,B,C phase load chart
7. Circuit breaker size
  - a. Amperage
  - b. Number of poles
8. Panel design values
  - a. Continuous Ampere Rating
  - b. Bus Short Circuit Rating
  - c. Voltage, number of Phases, and number of Wires
9. Connected, Demand and Design load values

### D. Panelboard Door and Directory



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1. Refer to Guideline 26 0553, Identification for Electrical Systems, Paragraph E for instructions on Door Labeling and Directory
- E. Branch Circuit Panelboards - Lighting or Power 400 amps and under
  1. 208Y/120 volt and 120/240 volt panelboards
    - a. Be not less than 20" wide.
    - b. Circuit breakers to be bolt on type
    - c. All breakers (Main and Distribution) shall be fully rated. Series connected rated systems are not acceptable
    - d. Buss bars to be silver or tin plated copper
    - e. 20 amp trip curves should be similar to the QOB Series by Square D
    - f. Breakers need to indicate tripped condition by a means other than the off position
    - g. Have a hinged-to-box (tub), front "door-in-door" construction. Panelboards shall require the use of two things to access energized parts; a key to open the panel door that exposes the breakers as well as the screws securing the panelboard front and a hand held tool (screwdriver) to open the cover that exposes energized parts.
    - h. Panelboards with 30 or more branch circuits shall have a minimum of two door latches for each door
    - i. Panelboards shall be equipped with 20% spare breakers of each size. A/E shall note that it is not the intention of this guideline to provide an extra panelboard just to meet the requirement for 20% spare breakers
  2. 480Y/277 volt panelboards.
    - a. Be not less than 20" wide
    - b. Circuit breakers to be bolt on type
    - c. All breakers (Main and Distribution) shall be fully rated. Series connected rated systems are not acceptable
    - d. Buss bars to be silver or tin-plated copper
    - e. 20 amp trip curves should be similar to the EDB Series by Square D
    - f. Breakers need to indicate tripped condition by a means other than the off position
    - g. Have a hinged-to-box (tub) front "door-door" construction. Panelboards shall require the use of two things to access energized parts; a key to open the panel door that exposes the breakers as well as the screws securing the panelboard front and a hand held tool (screwdriver) to open the cover that exposes energized parts.
    - h. Panelboards with more than 30 branch ccts. Shall have a minimum of two self latching locks for each door.
    - i. Panelboards shall be equipped with 20% spare breakers of each size. A/E shall note that it is not the intention of this guideline to provide an extra panelboard just to meet the requirement for 20% spare breakers
- F. Power Panelboards (PP) - Power over 400 amps:
  1. For circuit breaker panelboards be equal in construction to Square D I-line style, Eaton PRL3a and PRL4 series or Siemens P4 and P5 series.



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2. For fusible panelboards be equal to Sq. D. QMB or Siemens, VB6 series.
  3. Shall have copper bus with silver or tin plating for phase, neutral and ground conductors
  4. Conform to industry standard temperature rise ratings as tested by an independent laboratory
  5. All breakers (Main and Distribution) shall be fully rated. Series connected rated systems are not acceptable on new installations. Series ratings may be required on existing installations on renovation projects.
  6. Under 1200 amp panels to have a hinged-to-box (tub) front door construction
  7. Each panelboard's wiring gutter shall be a minimum of the manufacturer's standard gutter width plus the following:
    - a. 225 A. and below – Standard gutter width.
    - b. Greater than 225 A. through and including 400 A., One manufacturer's standard cabinet size greater than manufacturer's code compliant minimum size.
    - c. Greater than 400 A. through and including 800 A, One manufacturer's standard cabinet size greater than manufacturer's code compliant minimum size.
    - d. 1000 A. – 1200 A, One manufacturer's standard cabinet size greater than manufacturer's code compliant minimum size.
    - e. Alternatives:
      01. Increasing the wiring gutter cross sectional area by adding depth to the tub.
      02. Increasing the overall wiring gutter cross section area by adding a factory manufactured wiring gutter extension of the same height and depth as the panelboard tub.
- G. Warranty
1. Warranty shall be a minimum of 36 months from date of substantial completion regardless of purchase, delivery or startup date.
- H. Integrated panelboard assemblies are not acceptable for projects at Ball State University.
- I. The engineer of record should verify the available fault current at each panel to ensure that the interrupting rating of the breakers (as specified) is adequate. Refer to the arc flash study guideline for additional information and requirements. Performance of the power systems analysis for short circuit, coordination and arc flash is the responsibility of the consultant to perform. Do not assign these duties to the contractor.