SECTION 26 24 10: SWITCHBOARDS

1. GENERAL

A. This section includes design and performance requirements for electrical service entrance and distribution switchboards and switchgear for use on secondary distribution systems rated 600 VAC and below.

B. Switchboards must be Underwriters' Laboratories (UL) labeled

C. Provide a minimum of one spare branch circuit breaker of each frame size used

D. Design switchboard with at least 10% capacity for future breaker spaces

E. Mount on concrete housekeeping pads

F. For new construction, provide space for the addition of future switchgear or switchboard sections

G. Academic, support and administrative facilities: front accessible switchboards with individual, fixed main circuit breakers and group-mounted, fixed distribution circuit breakers

H. Research facilities and essential-use facilities: draw-out style main (and tie) circuit breakers, and group-mounted, fixed distribution circuit breakers

I. Provide and install a plastic engraved nameplate for each switchboard indicating:
   1. Switchboard designation
   2. Operating voltage
   3. Source and circuit number of switchboard supply (for disconnection and isolation)

J. Manufacturers should match the brand of installed building electrical distribution equipment.
   1. Manufacturers:
      - Square D
      - Siemens

K. Enclosures & Trim:
   1. Rated NEMA type-1 for dry interior areas, and type-12 (gasketed) for dusty and dirty indoor areas
   2. Provide switchboard gutters with hinged-type doors

L. Metering Compartments:
   1. Where required, provide a dedicated metering compartment that is pre-wired to include required control power transformer(s), current transformer connections and potential (voltage) transformer connections to the meters.
   2. Physically barriered and isolated from live bussing and circuit routing paths; provide with hinged front access door

M. Bussing:
1. Fully-rated throughout switchboard
2. Research facilities: bare, silver-plated or tin-plated copper
3. All other facilities: aluminum or tin-plated copper
4. Where isolated ground bus is required, provide an additional ground bus, electrically isolated from both neutral and ground bus

N. Overcurrent Protective Devices:
1. Overcurrent devices may include fixed molded case circuit breakers, draw-out type molded case circuit breakers, or draw-out type air-insulated “power” circuit breakers
2. All circuit breakers must be clearly marked and visible identifying load served and ampere trip rating. Designs where trim has to be removed to determine trip rating are not acceptable.
3. Calibrate adjustable trip circuit breakers per engineer’s instructions or breaker coordination study.
4. Fixed circuit breakers for frame sizes less than 250 amps to be magnetic type trip units.
5. Fixed circuit breakers in frame sizes 250A and larger to have adjustable, electronic trip units with long time, short time, instantaneous and time delay settings.
6. Service entrance circuit breakers and all circuit breakers rated over 400 amps are to have adjustable, electronic trip units with long time, short time, instantaneous, ground and time delay settings.
7. Where new circuit breakers will be installed within existing switchboards, list them for use with the existing switchboard type, and of sufficient short circuit rating for the application.

O. Double-Ended Switchboards:
1. Tie breakers to be key-interlocked with the main secondary disconnecting means, requiring the spare key to parallel sections
2. Tie breakers to be manually operated; avoid use of automatic changeover schemes
3. Double-ended switchboards have multiple connections of system neutral and grounds—provide suitable ground-fault detection and protection scheme to prevent nuisance tripping when operating under all possible scenarios.

P. Interrupting Capacity:
1. Switchboard bussing, main and branch circuit breakers to be rated for the minimum fault current level available on the system
2. Switchboards to be fully rated, versus series-rated
3. Where fault current information is not readily available, use the following:

SWITCHBOARD	**RATING**
120-208/240 VAC	42,000 AIC minimum
277/480 VAC (2,000 amps and less)	42,000 AIC minimum
277/480 VAC (over 2,000 amps)	65,000 AIC minimum