

EQUIPMENT ROOMS, ELECTRICAL

Compliance: The design, construction and layout of all electrical equipment rooms shall be in complete compliance with the current revision of the *National Electric Code (NEC)*. This code is to be viewed as the “final authority” for establishing the minimum requirements for these spaces, including the clearances that are required for the electrical equipment located within them. The requirements of these documents often exceed the minimum requirements of the *Code*. When they do, the Facilities Standards shall apply.

Security/Identification: All electrical equipment rooms shall be lockable/securable such that access is limited to appropriate employees of the F&S Division. The door lock serving each standard electrical room, each load center and each distribution center shall be keyed to the standard key for that room type. Therefore, it will be necessary for the F&S Locksmith Shop to provide keying. Any departmental equipment/systems that require access by non-F&S personnel shall not be located within building electrical equipment rooms for security reasons. Each electrical equipment room shall be labeled “Electrical Equipment”. Electrical equipment rooms that house equipment and/or wiring that exceeds 600 volts shall also be provided with appropriate warnings.

Equipment Room Access: Each electrical equipment room shall be accessible from an egress corridor and, where appropriate, from the exterior of the building as well. Access to equipment rooms shall not be provided through other spaces such as restrooms, offices, etc. It shall not be necessary to travel through a vulnerable finished area or a functioning occupied area in order to reach an equipment room. Otherwise, finishes will become soiled and personnel will be distracted. Electrical equipment room doors shall open outward.

Equipment Room Size / Layout: Electrical equipment rooms shall be adequate in size and layout such that all electrical equipment components such as transformers and medium voltage switches can be conveniently accessed for inspection and/or maintenance and can be conveniently removed for repair or replacement. All

clearances required by the NEC and recommended by equipment manufacturers shall also be provided.

Provision for Equipment Removal: Electrical equipment rooms shall be laid out internally and provided with one or more exterior access openings so as to accommodate the removal of all equipment assemblies or major subassemblies from the building for repair or replacement.

Lower Level Equipment Rooms: Indoor equipment that is heavy and/or noise or vibration generating shall be housed within an equipment room that is located on a lower level of the building.

Transformer Rooms: Each building shall incorporate one or more transformer rooms. These shall generally be located at a lower level of the building, adjacent to the electrical service entrance. If flooding is a legitimate concern, there is an obvious advantage to avoiding the lowest level of the building. This room shall house the building's transformer(s), switch gear and associated equipment. Adequate provision shall be made to protect adjacent areas from the transmission of audible and/or electromagnetic “noise”.

Ventilation/Cooling: Areas that house heat producing equipment such as transformers shall be provided with sufficient cooling/ventilation to prevent overheating. It is preferred that room cooling be provided by means of one or more dedicated fan coil or blower coil units served by central campus chilled water. Distribution ductwork shall be provided within the room as required. Electrical rooms, especially transformer rooms, shall be cooled via outdoor air ventilation only when central chilled water is unavailable. When outdoor air is used to ventilate/cool any electrical room it shall be filtered prior to entering the room. When used to serve a transformer room outdoor air shall be provided at a rate of 4 CFM per KVA of rated transformer capacity. Note: Transformer ratings are based upon 40 degrees C ambient temperature. Conductor ampacities are based upon 30C (86 degrees F). Temperatures above 30 degrees C can compromise the insulation.

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Adjacent Areas: Any space that is sensitive to noise and/or vibration generating equipment electromagnetic “noise” shall not be located adjacent to (including above and below) an electrical equipment room that houses this type of equipment. Any space that is sensitive to audible and/or electromagnetic “noise” shall not be located adjacent to (including above and below) a transformer room.

Equipment Pads: A concrete housekeeping pad shall be provided for each piece of floor mounted electrical equipment.

No Foreign Equipment/Systems: Electrical rooms shall only be used to house electrical equipment/systems with the exception of non-electrical equipment/systems that serve the electrical room (e.g. ductwork that provides ventilation for a transformer room). Equipment and/or systems that serve other purposes shall not be located within or be allowed to pass through these spaces. This includes ductwork, hydronic heating/cooling piping, plumbing systems, roof drainage systems, etc.

Sprinkler Systems: In lieu of a sprinkler system, electrical equipment shall be installed in a 2-hour fire-rated enclosure including protection for penetrations. This enclosure shall: be dedicated to electrical equipment only, use only dry-type electrical equipment, and provide only non-combustible storage in the space.

Safety: An approved eye wash and safety shower shall be installed at each location where hazardous chemicals are stored or handled (e.g. battery storage areas).