**Section 250.2680 Electrical Requirements**

a) General

All electrical materials shall comply with the standards of Underwriters' Laboratories, Inc., or equivalent.

b) Switchboards and Power Panels

Circuit breakers or fusible switches that provide disconnecting means and overcurrent protection for conductors connected to switchboards and panelboards shall be enclosed or guarded to provide a dead-front type of assembly. The main switchboard shall be accessible only to authorized persons. The switchboards shall be convenient for use, readily accessible for maintenance, clear of traffic lanes, and in a dry, ventilated space free of corrosive fumes or gases. Overload protective devices shall be suitable for operating properly in the ambient temperature conditions.

c) Panelboards

Panelboards serving lighting and appliance circuits shall be conveniently located.

d) Lighting

1) All spaces occupied by people, machinery, and equipment within buildings and at approaches to and exits from buildings shall have lighting.

2) Patients' rooms shall be equipped with general lighting and night lighting.

3) Operating and delivery rooms shall have general lighting in addition to local lighting provided by special lighting units at the surgical and obstetrical tables.

e) Receptacles (Convenience Outlets)

1) Anesthetizing locations. Each operating and delivery room shall have receptacles of the types described in NFPA 99, Standard for Health Care Facilities.

2) Patients' rooms. Each patient room shall have duplex grounding type receptacles. Nurseries shall have similar receptacles.

3) Corridors. Duplex receptacles for general use shall be installed approximately 50 feet apart in all corridors and within 25 feet of the ends of corridors.

f) Equipment Installation in Special Areas

1) Installation in anesthetizing locations. All electrical equipment and devices, receptacles, wiring and conductive flooring shall comply with NFPA 99, Standard for Health Care Facilities, except that a static-type line isolation monitor will be permitted.

2) Special grounding system. In areas such as intensive care units and special care nurseries, where a patient may be treated with an internal probe or catheter, the patient rooms' ground systems shall comply with the following:

A) A patient ground point shall be provided within 10 feet of each bed. The patient ground is intended to assure that under normal conditions all electrically conductive surfaces of equipment and furnishings within reach of the patient will be at the same electrical potential plus or minus 10 millivolts differential. This requirement is not intended to apply to devices and utensils such as bedpans and other small portable nonelectrical devices.

B) One patient ground point may serve more than one patient, but one patient shall not be served by more than one patient ground point.

C) The grounding conductor connecting any receptacle serving a patient and the patient ground point shall not exceed the equivalent resistance of 15 feet of No. 12 American wire gauge (AWG) copper conductor.

D) Exposed metal building surfaces or utility piping within reach of the patient or others who may touch the patient shall be grounded to the patient groundpoint or to a separately established room groundpoint.

E) A reference groundpoint shall be established in the electrical supply panel.

F) The patient groundpoint and the room groundpoint, where separated, shall be interconnected by a continuous, insulated, copper conductor not smaller than No. 12 AWG, and similarly connected to the reference ground. The groundpoints may be individually connected to the reference groundpoint provided that the ground conductor resistance does not exceed that of 15 feet of No. 12 AWG copper conductor.

G) Receptacle ground terminals shall be connected to the patient groundpoint or to the reference groundpoint provided that grounding conductor resistance to the reference groundpoint does not exceed that of 15 feet of No. 12 AWG, copper conductor.

H) Grounding of all metallic raceways shall be assured by means of grounding bushings on all conduit terminations at the panelboard and by means of an insulated, continuous, stranded, copper grounding conductor, not smaller than No. 12 AWG, extended from the grounding bus in the panelboard to the conduit grounding bushings.

I) Grounding of metallic switch and receptacle plates shall be provided by means of the mounting-screw connections to the device mounting yokes.

g) Nurses' Calling System

1) General. In general patient areas, each room shall be served by at least one calling station and each bed shall be provided with a call button. Two call devices serving adjacent beds may be served by one calling station. Calls shall register with floor staff and shall actuate a visible signal in the corridor at the patients' door and in all other appropriate areas. In multicorridor nursing units, additional visible signals shall be installed at corridor intersections.

2) Patients' emergency. A nurses' call emergency station shall be provided for patients' use at each patient's toilet, bath, sitz bath, and shower room.

3) Intensive care. In areas such as intensive care where patients are under constant surveillance, the nurses' calling system may be limited to a bedside station that will actuate a signal that can be readily seen or heard by the nurse.

4) Nurses' emergency. A communications system that may be used by nurses to summon assistance shall be provided in each operating, delivery, recovery, emergency treatment, and intensive care room, in nurseries, and in supervised nursing units for psychiatric patients.

h) Emergency Electric Service

1) General. To provide electricity during an interruption of the normal electric supply, an emergency source of electricity shall be provided and connected to certain circuits for lighting and power.

2) Sources. The source of this emergency electric service shall be as follows:

A) An emergency generating set when the normal service is supplied by one or more central station transmission lines.

B) An emergency generating set or a central station transmission line when the normal electric supply is generated on the premises.

3) Emergency generating set. The required emergency generating set, including the prime mover and generator, shall be located on the premises and shall be reserved exclusively for supplying the emergency electrical system. EXCEPTION: A system of prime movers that are ordinarily used to operate other equipment and alternately used to operate the emergency generators will be permitted provided that the number and arrangement of the prime movers are such that when one of them is out of service (due to breakdown or for routine maintenance) the prime movers can operate the required emergency generators, and provided that the connection time requirements described in subsection (h)(4)(D)(i) of this Section are met.

4) Emergency electrical connections. Emergency electrical service shall be provided to the distribution systems as follows:

A) Circuits for the safety of patients and personnel

i) Illumination of means of egress as required in NFPA 101, Life Safety Code.

ii) Illumination for exit signs and exit directional signs as required in NFPA 101, Life Safety Code.

iii) Alarm systems, including fire alarms activated at manual stations, water flow alarm devices of sprinkler systems if electrically operated, fire and smoke detecting systems, and alarms required for nonflammable medical gas systems.

iv) Paging or speaker systems if intended for communication during emergency. Radio transceivers where installed for emergency use shall be capable of operating for at least one hour upon total failure of both normal and emergency power.

v) General illumination and at least one duplex receptacle in the vicinity of the generator set.

B) Circuits essential to care, treatment, and protection of patients.

i) Task illumination and necessary life support receptacles in infant nurseries; medicine dispensing areas; cardiac catheterization laboratories; angiographic laboratories; labor, operating delivery, and recovery rooms; dialysis units; intensive care areas; emergency treatment rooms; and nurses' stations.

ii) Corridor duplex receptacles in patient areas.

iii) Nurses' calling system.

iv) Blood bank refrigeration.

v) Equipment necessary for maintaining telephone service.

vi) Fire pump if installed.

C) Circuits that serve necessary equipment. The connection to the following emergency electric services shall be delayed automatic except for heating, ventilation, and elevators which may be either delayed automatic or manual:

i) Equipment for heating, operating, delivery, labor, recovery, intensive care, nursery, and general patient rooms except that service for heating of general patient rooms will not be required under either of the following conditions: if the design temperature is higher than 20ºF (-7ºC) based on the Median of Extremes as shown in the ASHRAE Handbook of Fundamentals, or if the hospital is served by two or more electrical services supplied from separate generators or a utility distribution network having multiple power input sources and arranged to provide mechanical and electrical separation so that a fault between the hospital and the generating sources will not likely cause an interruption of the hospital service feeders.

ii) Elevator service that will reach every patient floor. Throwover facilities shall be provided to allow temporary operation of any elevator for the release of persons who may be trapped between floors.

iii) Ventilation of unfenestrated operating and delivery rooms.

iv) Central suction systems serving medical and surgical functions.

v) Equipment that must be kept in operation to prevent damage to the building or its contents.

D) Details.

i) The emergency electrical system shall be so controlled that after interruption of the normal electric power supply the generator is brought to full voltage and frequency. It must be connected within 10 seconds through one or more primary automatic transfer switches to emergency lighting systems; alarm systems; blood banks; nurses' calling systems; equipment necessary for maintaining telephone service; and task illumination and receptacles in operating, delivery, emergency, recovery, and cardiac catheterization rooms, intensive care nursing areas, nurseries, and other critical patient areas. All other lighting and equipment required to be connected to the emergency system shall either be connected through the primary automatic transfer switches or through other automatic or manual transfer switches.

ii) Receptacles connected to the emergency system shall be distinctively marked. Storage battery-powered lights, provided to augment the emergency lighting or for continuity of lighting during the interim of transfer switching immediately following an interruption of the normal service supply, shall not be used as a substitute for a generator. Where stored fuel is required for emergency generator operation, the storage capacity shall be sufficient for not less than 24-hour continuous operation.

(Source: Amended at 35 Ill. Reg. 6386, effective March 31, 2011)