

Wiring for Health Care Facilities

NEC Article 517

I. **General Scope:**

This article applies to electrical construction and installation criteria for facilities that provide services for human beings.

II. **Important Definitions 517.2**

- 1. Health Care Facilities.** Buildings or portions of buildings in which medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. Health care facilities include but are not limited to hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.
- 2. Alternate Power Source.** One or more generator sets or battery systems where permitted to provide power during the interruption of the normal service...

- 3. Critical Branch.** A subsystem of the emergency system consisting of feeders and branch circuits supplying energy to task illumination, special power circuits and, related receptacles serving areas and functions related to patient care which are connected to alternate power sources...
- 4. Life Safety Branch.** A subsystem of the emergency system consisting of feeders and branch circuits meeting the requirements of article 700 intended to provide adequate power needs to ensure safety to patients and personal, and which are automatically connected to alternate power sources during interruption of the normal power source
- 5. Emergency System.** A system of circuits and equipment intended to supply alternate power to a limited number of prescribed functions vital to the protection of life and safety.
- 6. Electrical Life-Support Equipment.** Electrically powered equipment whose continuous operation is necessary to maintain a patient's life.

III. Areas of Special Considerations

A) General Care Areas 517.18

- **Patient Bed Locations:** Shall be supplied by a minimum of 2 branch circuits. 1 from Normal system and 1 from Emergency system. Emergency system receptacles shall be identified.
- **Patient Bed Location Receptacles*:** Each Patient Bed Locations shall be provided with a minimum of 4 receptacles. All receptacles shall be listed “Hospital Grade” and labeled.
- **Pediatric Locations:** Receptacles shall be tamper resistant and have a listed tamper resistant cover.

*Receptacles shall have insulated copper equipment grounding conductor

B) Critical Care Areas 517.19

- **Patient Bed Locations:** Shall be supplied by a minimum of 2 branch circuits. 1 from Normal system and 1 from Emergency system. Emergency system receptacles shall be identified.
- **Patient Bed Location Receptacles*:** Each Patient Bed Locations shall be provided with a minimum of 6 receptacles. All receptacles shall be listed “Hospital Grade” and labeled. At least one shall be from the normal system or to a different transfer switch than the others in the same location.

*Receptacles shall have insulated copper equipment grounding conductor

C) Wet Locations

- All wet locations shall be provided with a GFCI

IV. Load Calculations

A) Lighting & Receptacles

- Sqft * 2VA for Lighting Load 220.12
- 180 VA for a 2 socket Receptacle and 360 VA for a 4 socket Receptacle 220.14 (I)
- Carga continua será aquella que opere por 3hr o más. Art. 210.19(A)(1) Carga continua se dará ampacidad de 25% adicional. 100-(I)

B) Calentador de agua, 220.14(B)

- @ 240V, circuito de 50A (de línea, 9.5kW)
- @ 240V, circuito de 30A (tanque, 5kW)

C) Secadoras 220.14(B)

- 220.54 Secadoras a 5kW
- @ 240V son 21A, se usa circuito de 30A

D) Acondicionadores de Aire

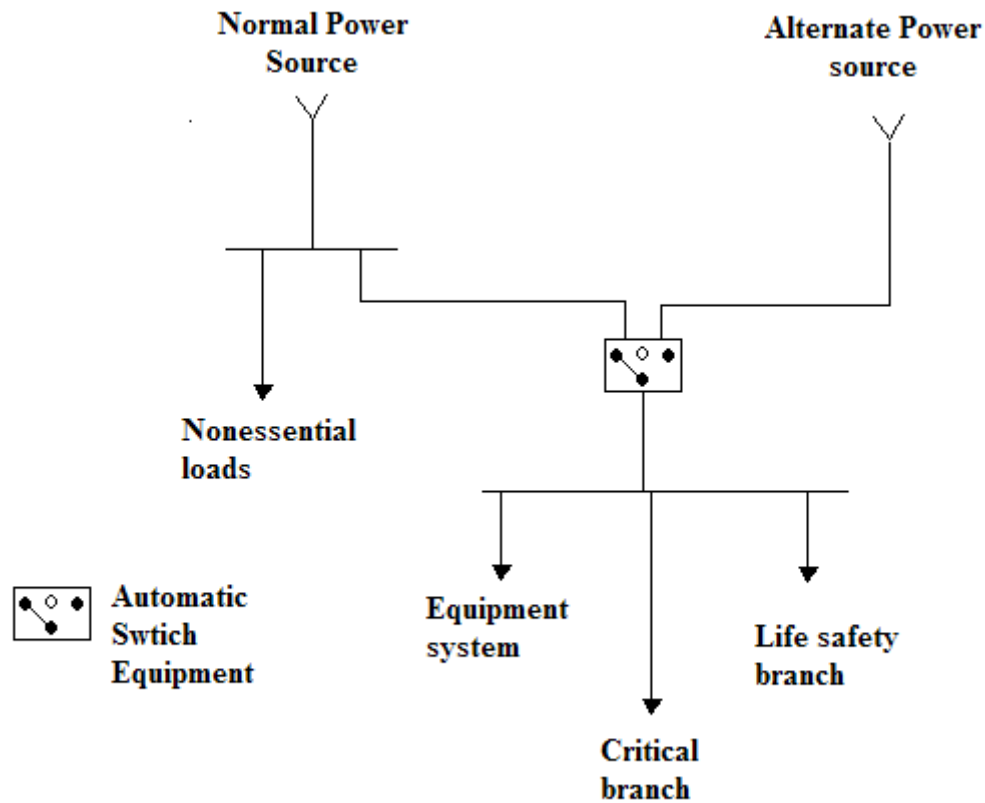
- Según artículo 440
- Tener en cuenta el EER O SEER

E) Motores

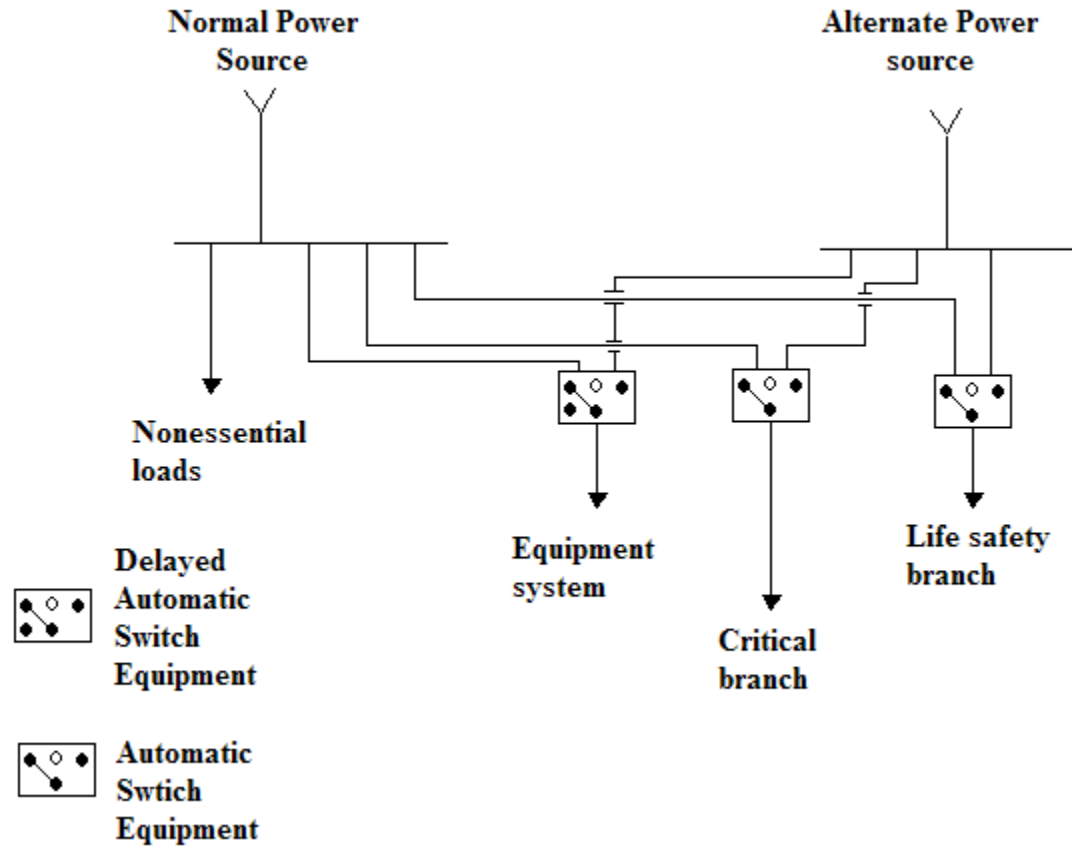
- Según artículo 430

V. Important Figures

A) Fig 517.30 N2 Minimum requirements for Transfer Switch Arrangements (150 KVA or less)



B) Fig 517.30 N1 Minimum requirements for Transfer Switch Arrangements



It is very important to make these specifications in the one line diagram.

VI. Special Consideration

A) Nursing home minimum criteria for electrical systems

- Figures 517.41 N2 and 517.41 N1

B) Receptacles

- **Identification:** All receptacles and cover plates from the emergency system shall be of a different color and be identified to be easily identifiable.
- **Receptacles in patient bed locations:** Shall be easily to access, therefore should be placed 5 feet above ground. They shall also have insulated grounding conductor as well as GFCI.

C) **Egress Illumination and Exit signs 517.31 (A)(B)**

- **Egress Illumination:** Shall be placed along corridors, passageways, stairways and landing on exit doors and all necessary ways to approach an exit.
- **Exit signs:** Shall be placed in direction of an exit door, and in a easy to see location.

D) **Panel Boards**

- **Bonding:** All panel Boards From the same branch shall be bonded together with a # 10 AWG or larger insulated copper continuous conductor.
- **Disconnecting Devices:** each panel board or switch box shall have its own disconnecting mean. If outdoors panel should be “lock in tag out” or “normally open lock”.

