

# EXCERPT FROM 2011 EDITION OF NEC ARTICLE 680 PERTAINING TO DECORATIVE FOUNTAINS

## V. Fountains

### 680.50 General.

The provisions of Part I and Part V of this article shall apply to all permanently installed fountains as defined in **680.2**. Fountains that have water common to a pool shall additionally comply with the requirements in Part II of this article. Part V does not cover self-contained, portable fountains. Portable fountains shall comply with Parts II and III of Article **422**.

### 680.51 Luminaires, Submersible Pumps, and Other Submersible Equipment.

**(A) Ground-Fault Circuit Interrupter.** Luminaires, submersible pumps, and other submersible equipment, unless listed for operation at low voltage contact limit or less and supplied by a transformer or power supply that complies with **680.23(A)(2)**, shall be protected by a ground-fault circuit interrupter.

**(B) Operating Voltage.** No luminaires shall be installed for operation on supply circuits over 150 volts between conductors. Submersible pumps and other submersible equipment shall operate at 300 volts or less between conductors.

**(C) Luminaire Lenses.** Luminaires shall be installed with the top of the luminaire lens below the normal water level of the fountain unless listed for above-water locations. A luminaire facing upward shall comply with either (1) or (2):

- (1) Have the lens adequately guarded to prevent contact by any person
- (2) Be listed for use without a guard

**(D) Overheating Protection.** Electrical equipment that depends on submersion for safe operation shall be protected against overheating by a low-water cutoff or other approved means when not submerged.

**(E) Wiring.** Equipment shall be equipped with provisions for threaded conduit entries or be provided with a suitable flexible cord. The maximum length of each exposed cord in the fountain shall be limited to 3.0 m (10 ft). Cords extending beyond the fountain perimeter shall be enclosed in approved wiring enclosures. Metal parts of equipment in contact with water shall be of brass or other approved corrosion-resistant metal.

**(F) Servicing.** All equipment shall be removable from the water for relamping or normal maintenance. Luminaires shall not be permanently embedded into the fountain structure such that the water level must be reduced or the fountain drained for relamping, maintenance, or inspection.

**(G) Stability.** Equipment shall be inherently stable or be securely fastened in place.

### 680.52 Junction Boxes and Other Enclosures.

**(A) General.** Junction boxes and other enclosures used for other than underwater installation shall comply with **680.24**.

**(B) Underwater Junction Boxes and Other Underwater Enclosures.** Junction boxes and other underwater enclosures shall meet the requirements of **680.52(B)(1)** and **(B)(2)**.

#### (1) Construction.

- (a) Underwater enclosures shall be equipped with provisions for threaded conduit entries or compression glands or seals for cord entry.
- (b) Underwater enclosures shall be submersible and made of copper, brass, or other approved corrosion-resistant material.

**(2) Installation.** Underwater enclosure installations shall comply with (a) and (b).

- (a) Underwater enclosures shall be filled with an approved potting compound to prevent the entry of moisture.
- (b) Underwater enclosures shall be firmly attached to the supports or directly to the fountain surface and bonded as required. Where the junction box is supported only by conduits in accordance with **314.23(E)** and **(F)**, the conduits shall be of copper, brass, stainless steel, or other approved corrosion-resistant metal. Where the box is fed by nonmetallic conduit, it shall have additional supports and fasteners of copper, brass, or other approved corrosion-resistant material.

### 680.53 Bonding.

All metal piping systems associated with the fountain shall be bonded to the equipment grounding conductor of the branch circuit supplying the fountain.

Informational Note: See **250.122** for sizing of these conductors.

### 680.54 Grounding.

The following equipment shall be grounded:

- (1) Other than listed low-voltage luminaires not requiring grounding, all electrical equipment located within the fountain or within 1.5 m (5 ft) of the inside wall of the fountain.
- (2) All electrical equipment associated with the recirculating system of the fountain.
- (3) Panelboards that are not part of the service equipment and that supply any electrical equipment associated with the fountain

### 680.55 Methods of Grounding.

**(A) Applied Provisions.** The provisions of **680.21(A)**, **680.23(B)(3)**, **680.23(F)(1)** and **(F)(2)**, **680.24(F)**, and **680.25** shall apply.

**(B) Supplied by a Flexible Cord.** Electrical equipment that is supplied by a flexible cord shall have all exposed non-current-carrying metal parts grounded by an insulated copper equipment grounding conductor that is an integral part of this cord. The equipment grounding conductor shall be connected to an equipment grounding terminal in the supply junction box, transformer enclosure, power supply enclosure, or other enclosure.

### 680.56 Cord-and-Plug-Connected Equipment.

**(A) Ground-Fault Circuit Interrupter.** All electrical equipment, including power-supply cords, shall be protected by ground-fault circuit interrupters.

**(B) Cord Type.** Flexible cord immersed in or exposed to water shall be of a type for extra-hard usage, as designated in **Table 400.4**, and shall be a listed type with a "W" suffix.

**(C) Sealing.** The end of the flexible cord jacket and the flexible cord conductor termination within equipment shall be covered with, or encapsulated in, a suitable potting compound to prevent the entry of water into the equipment through the cord or its conductors. In addition, the ground connection within equipment shall be similarly treated to protect such connections from the deteriorating effect of water that may enter into the equipment.

**(D) Terminations.** Connections with flexible cord shall be permanent, except that grounding-type attachment plugs and receptacles shall be permitted to facilitate removal or disconnection for maintenance, repair, or storage of fixed or stationary equipment not located in any water-containing part of a fountain.