ARTICLE
680 Swimming Pools, Fountains, and Similar Installations

Part I. General

680.1 Scope. The provisions of this article apply to the construction and installation of electrical wiring for, and equipment in or adjacent to, all swimming, wading, therapeutic, and decorative pools; fountains; hot tubs; spas; and hydromassage bathtubs, whether permanently installed or storable, and to metallic auxiliary equipment, such as pumps, filters, and similar equipment. The term *body of water* used throughout Part I applies to all bodies of water covered in this scope unless otherwise amended.

The installations covered by this article can be indoors or outdoors, permanent or storable. This article also applies to pools used in religious services such as baptisms. Pools used for such purposes are defined as *immersion pools*. Requirements for natural and artificially made bodies of water not covered by Article 680 are contained in Article 682.

Studies indicate that a person in a swimming pool can receive a severe electric shock by reaching out and touching the energized enclosure of an appliance, such as a radio, because the immersed person's body, which has a lower resistance to electric current, establishes a conductive path through the water to earth. Also, a person not in contact with an appliance or any grounded object can receive an electric shock and be rendered immobile by a potential gradient in the water itself. The level of electrical current necessary to cause immobilization might not cause electrocution, but it could lead to drowning, which is known as electric shock drowning (ESD). Shock hazards in and around a swimming pool can result from faulty electrical equipment directly associated with the pool or from faulty electrical equipment not associated with but in close proximity to the pool.

Accordingly, the requirements of Article 680 covering effective bonding and grounding, installation of receptacles and luminaires, use of GFCIs, modified wiring methods, and so forth, apply not only to the installation of the pool but also to installations and equipment adjacent to or associated with the pool.

To ensure the safety of persons using the bodies of water covered by Article 680, the risk of electric shock is minimized by the use of one or more of the following means:

1. GFCI protection and low-voltage equipment
2. Double-insulated equipment
3. Insulation and isolation
4. Equipotential bonding
5. Physical separation and restricted locations
6. Robust physical protection requirements for circuit conductors

680.4 Inspections After Installation. The authority having jurisdiction shall be permitted to require periodic inspection and testing.

New swimming pools that have been installed in accordance with the requirements of Article 680 provide protection against electrical shock in a potentially dangerous environment. New installations performed by competent contractors and inspected by qualified inspection personnel provide the necessary level of safety. However, once the project has been completed, there is rarely any follow-up inspection (some states require ongoing safety inspections of commercial and institutional swimming pools) to ensure that the safety features of the electrical system, such as bonding connections and GFCI protection, remain fully functional. This new requirement provides the AHJ(s) with the necessary *NEC*® text to support an ongoing follow-up compliance program if they choose to provide that service.

Δ **680.5 Ground-Fault Circuit-Interrupter (GFCI) and Special Purpose Ground-Fault Circuit-Interrupter (SPGFCI) Protection.**

N **(A) General.** The GFCI and SPGFCI requirements in this article, unless otherwise noted, are in addition to the requirements in 210.8.

N **(B) 150 Volts or Less to Ground.** Where required in this article, ground-fault protection of receptacles and outlets on branch circuits rated 150 volts or less to ground and 60 amperes or less, single- or 3-phase, shall be provided with a Class A GFCI.

Exception: Receptacles and outlets that are part of listed equipment with ratings not exceeding the low-voltage contact limit that are supplied by listed transformers or power supplies that comply with 680.23(A)(2) shall not be required to be provided with ground-fault protection.

Informational Note: The high leg of a 120/240-volt 4-wire delta-connected system, and the two ungrounded phases of a corner-grounded delta system have a voltage to ground greater than 150 volts, exceeding the limit for a Class A GFCI.

N **(C) Above 150 Volts to Ground.** Where required in this article, ground-fault protection of receptacles and outlets on branch circuits operating at voltages above 150 volts to ground, not exceeding 480 volts phase-to-phase, single- or 3-phase, shall be provided with SPGFCI protection not to exceed 20-mA ground-fault trip current.

Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters*, for information on Classes C, D, and E ground-fault circuit interrupters.

Δ **680.6 Listing Requirements.** All electrical equipment covered by this article shall be listed.

Δ **680.7 Grounding and Bonding.**

N **(A) Feeders and Branch Circuits.** Feeders and branch circuits installed in a corrosive environment or wet location shall contain