Residential Electrical Swimming Pool Information

This is not an all inclusive list of all of the requirements of the 2011 National Electrical Code (NEC) Article 680. However, the following information is a basic overview of some of the key points of Article 680. Installations shall comply with all of the requirements of the 2011 NEC.

ARTICLE 680 DEFINITION- *Permanently Installed Swimming Pools-those that are constructed in the ground or partially in the ground, and all others capable of holding water in a depth greater than 42", and all pools installed inside a building, regardless of water depth, whether or not served by electrical circuits of any nature, is considered a permanent pool, and shall comply with Article 680 in the 2011 NEC.*

General Requirements:

1. Placement of installation of pools shall maintain clearances from overhead conductors, communication cables, and underground wiring. (***Section 680. 8, Table 680.8 and 680.10 of the 2011 NEC.***)

2. **NEC 300.5** - Branch circuits for pool-associated motors shall comply with this section for underground installations {UF cable not permitted see 680.21,(A)(1)}. Conductors installed underground in conduit shall be listed for wet locations.

3. **NEC 680.21,(A)(1)** The branch circuits for pool-associated motors shall be installed in rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, reinforced thermosetting resin conduit, or Type MC cable listed for the location. Other wiring methods and materials shall be permitted in specific locations or applications as covered in this section. **Any wiring method employed shall contain an "insulated copper equipment grounding conductor" sized in accordance with 250.122 but not smaller than 12 AWG.**

4. **NEC 680.22,(A)(1)** -Receptacles that provide power for water-pump motors or for other loads directly related to the circulation and sanitation system shall be located at least 10' from the inside walls of the pool, or not less than 6' from the inside walls of the pool if they meet the following conditions- (1) & (2) they shall be of the locking and the grounding type, (3) consist of a single receptacle, and (4) shall be protected by a ground-fault circuit interrupter.

5. **NEC 680.22,(A)(3)**-Where a permanently installed pool is installed at a dwelling unit(s), no fewer than one 125-volt,15-or 20-ampere receptacle on a general purpose branch circuit shall be located not less than 6' from, and not more than 20' from the inside wall of the pool. This receptacle shall not be located more than 6'-6" above the floor platform, or grade level serving the pool.

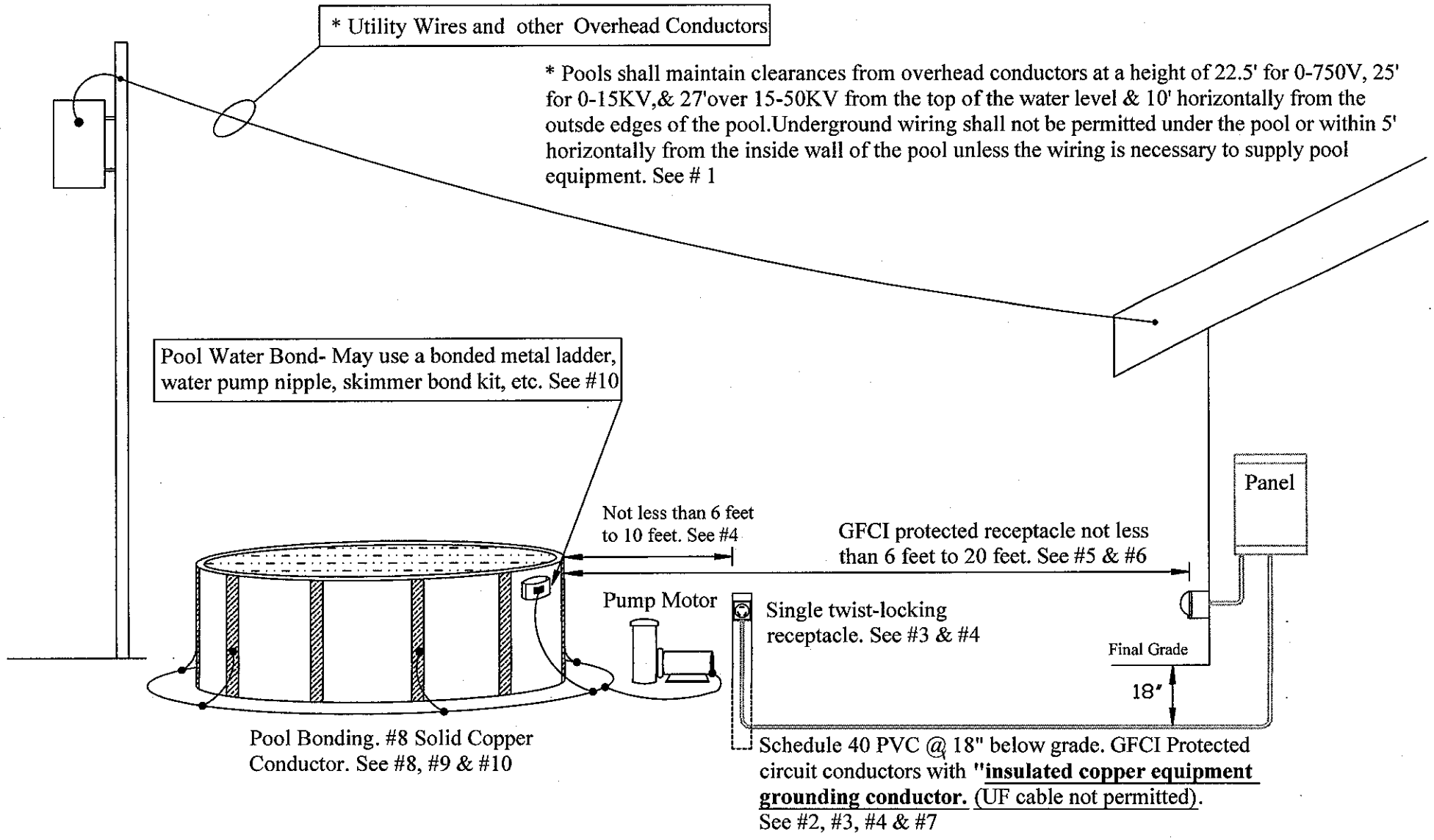
6. **NEC 680.22,(A)(4)** - All 15 and 20 ampere receptacles located within 20' of the inside walls of a pool shall be protected by a ground fault circuit interrupter. *The receptacle shall be tamper resistant per section 406.12, and shall be listed as weather –resistant type per 406.9(A). Weather Proof Cover Required.*

7. **NEC 680.21,(C)-GFCI Protection**-Outlets supplying pool pump motors connected to single-phase, 120 volt through 240 volt branch circuits, rated 15 or 20 amperes, whether by receptacle or by direct connection, *shall be provided with ground-fault circuit-interrupter protection for personnel.*

Pool Bonding:

8. **NEC 680.26,(B) Bonded Parts.** The parts specified in 680.26(B)(1) through (B)(7) shall be bonded together using solid copper conductors, insulated covered, or bare, not smaller than 8 AWG or with rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with 250.8. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes.

9. **NEC 680.26,(B)(2)-Perimeter Surfaces.** The perimeter surface shall extend **3 feet horizontally** beyond the inside walls of the pool and **shall include unpaved surfaces** as well as poured concrete surfaces and other types of paving. Perimeter surfaces less than 3 feet separated by a permanent wall or building 5 feet in height or more shall require equipotential bonding on the pool side of the permanent wall or building. Bonding to perimeter surfaces shall be provided as specified in **680.26,(B)(2)(a)** or **(2)(b)** and shall be attached to the pool reinforcing steel or copper conductor grid at a minimum **of four points uniformly** spaced around the perimeter of the pool. **For non-conductive pool shells, bonding at four points shall not be required.** ***According to this section the bonding conductor (#8 AWG) shall be installed 18"- 24" from the inside walls of the pool, following the contour of the perimeter surface around the pool, and shall be attached to the pool or grid at a minimum of 4 points uniformly spaced. The conductor shall be secured within or underneath the perimeter surface 4"- 6" below the sub-grade. Only listed splices shall be permitted.***

10. **NEC 680.26,(C) -Pool Water** - An intentional bond of a minimum conductive surface area of 9 inches squared shall be installed in contact with the pool water. This bond shall be permitted to consist of parts that are required to be bonded in 680.26(B).

Swimming Pool (Typical Above Ground)