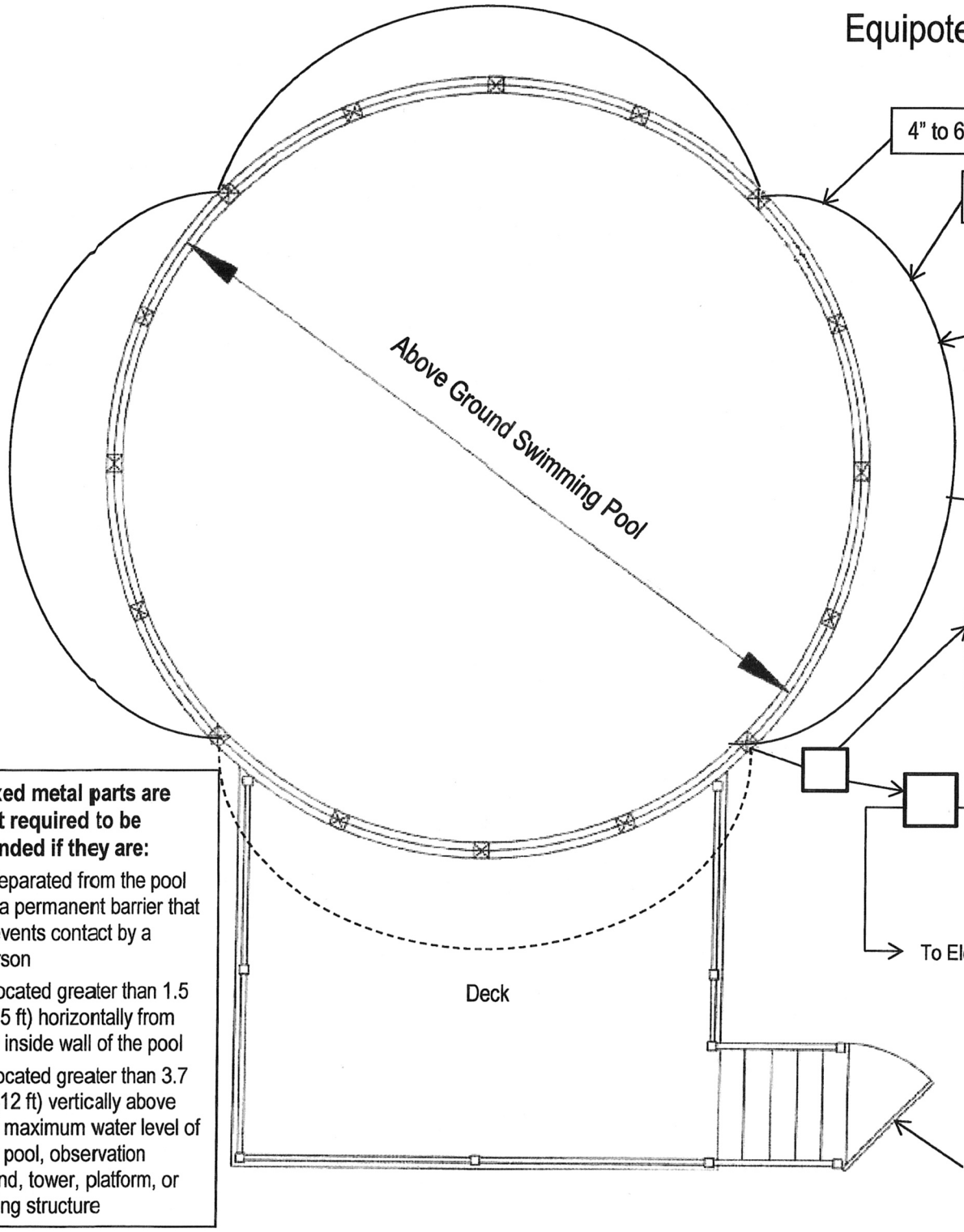
Equipotential Bonding Around Pools NEC 680-26



4" to 6" deep

18" to 24" from pool

Minimum #8 AWG Solid copper bonding conductor "Halo Loop" Bonding Wire – Required for ALL swimming pools

Pools with metal components should have bonding at four (4) locations minimum, evenly placed around the perimeter or otherwise in accordance with NEC 680.26 (B)(1) through (B)(7)

Equipment within 5' from pool must be bonded to the grid

Pool Water Bonding Device

The pool water itself must also be bonded. A minimum 5800 mm^2 ($9in^2$) of conductive surface is required to be in contact with the water

Pump Receptacle: 6' to 10' from Pool

Must be single twist lock GFCI
OR greater than 10' from pool GFCI duplex receptacle

To Electric Panelboard

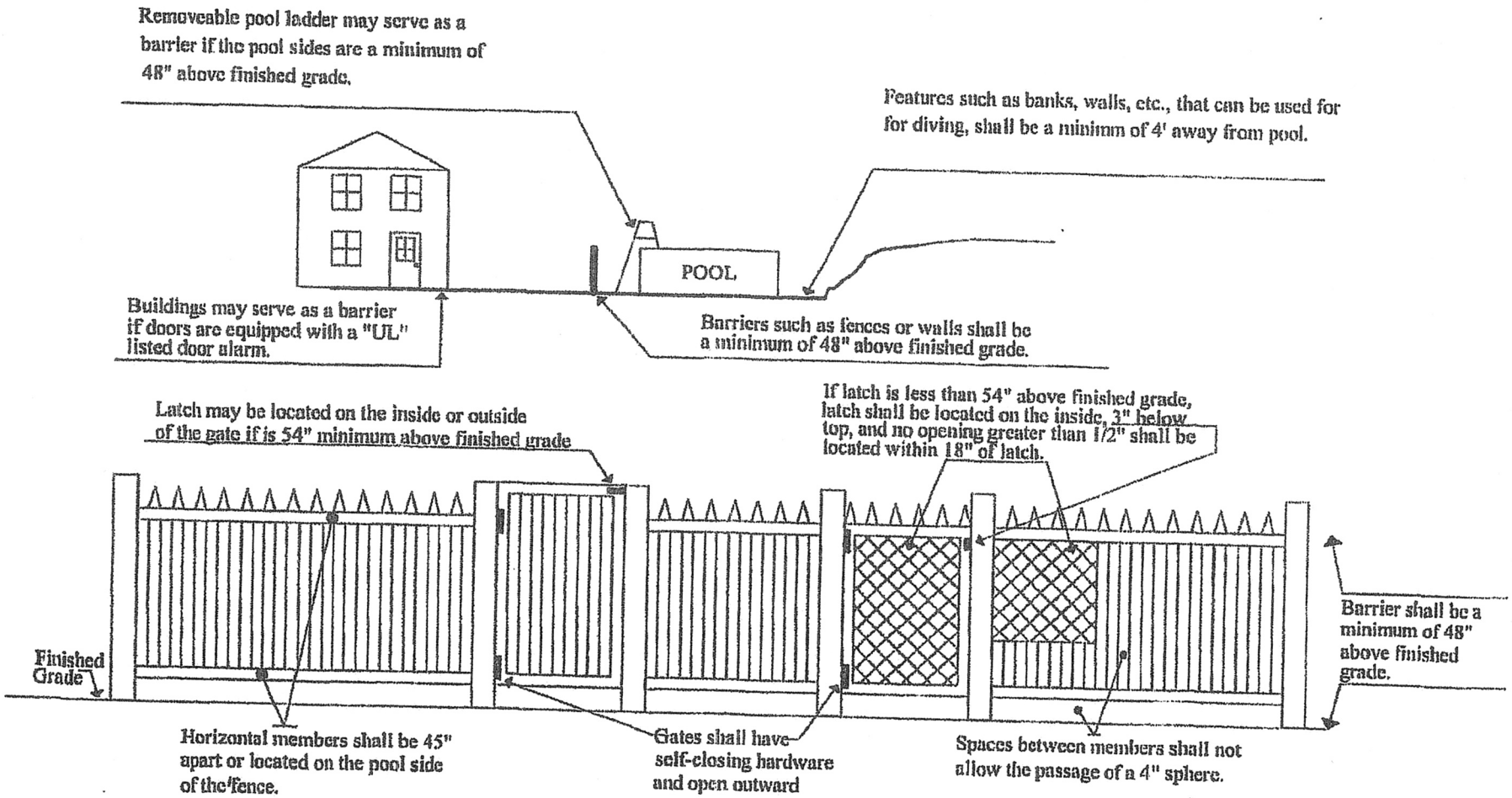
Equipment and electric boxes around the pool should all be grounded and tied back to the electric panel grounded neutral bus bar.

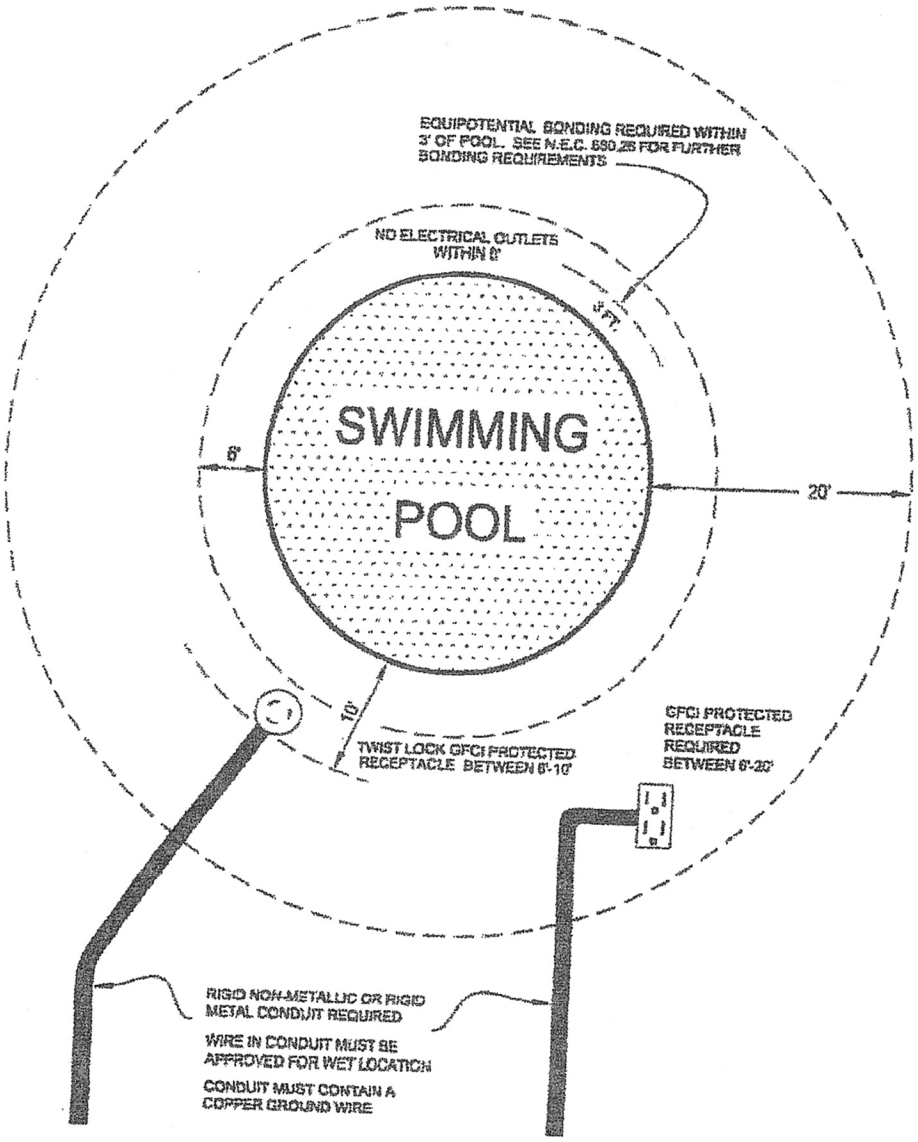
Gate at bottom of steps

Fixed metal parts are not required to be bonded if they are:

- Separated from the pool by a permanent barrier that prevents contact by a person
- Located greater than 1.5 m (5 ft) horizontally from the inside wall of the pool
- Located greater than 3.7 m (12 ft) vertically above the maximum water level of the pool, observation stand, tower, platform, or diving structure

POOL BARRIER REQUIREMENTS

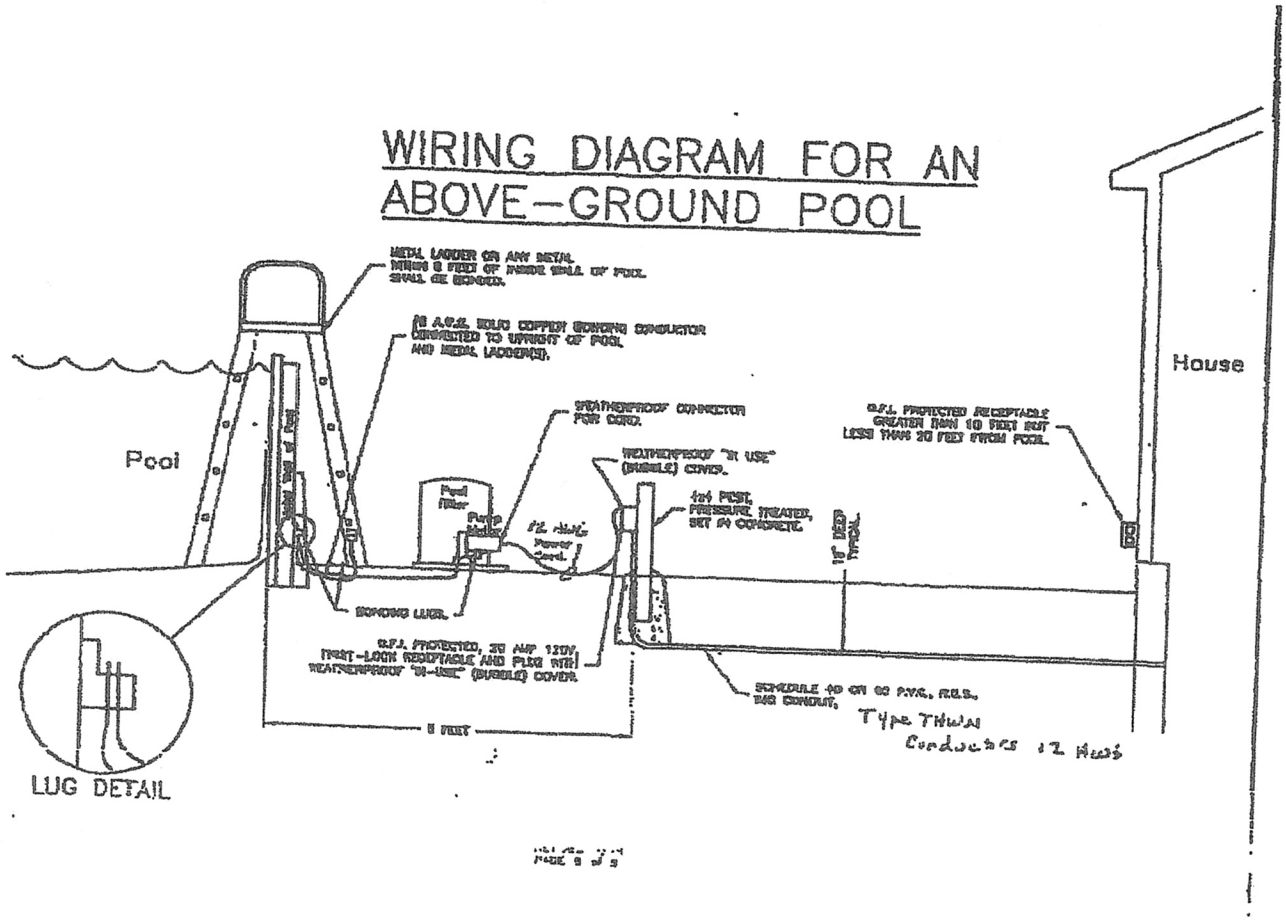




NOTES:

1. USE 12 GAUGE WIRE TO THE PUMP MOTOR.
2. IF THE PUMP DRAWS 10 OR MORE AMPS, A SEPERATE CIRCUIT IS REQUIRED.
3. NO UNDERGROUND WIRING UNDER OR WITHIN 5' OF POOL.

WIRING DIAGRAM FOR AN ABOVE-GROUND POOL



If the deck serves as a barrier to a swimming pool, the following code section applies:

SECTION AG105

BARRIER REQUIREMENTS

AG105.2 Outdoor swimming pool. An outdoor swimmingpool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a barrier which shall comply with the following:

1. The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.
4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.
5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.
6. Maximum mesh size for chain link fences shall be a 21/4-inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 13/4 inches (44 mm).
7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 13/4 inches (44 mm).
8. Access gates shall comply with the requirements of Section AG105.2, Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings
shall comply with the following:
   8.1. The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate; and
   8.2. The gate and barrier shall have no opening larger than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.
9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met:
   9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346; or
   9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audiblewarning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds. The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door; or
   9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable so long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.
10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps:
   10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or
   10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section

AG105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

AG105.3 Indoor swimming pool. Walls surrounding an indoor swimming pool shall comply with Section AG105.2, Item 9.

AG105.4 Prohibited locations. Barriers shall be located to prohibit permanent structures, equipment or similar objects from being used to climb them.

AG105.5 Barrier exceptions. Spas or hot tubs with a safety cover which complies with ASTM F 1346, as listed in Section AG107, shall be exempt from the provisions of this appendix.

Re: NFPA 70 Equipotential Bonding of Above Ground Swimming Pools

reply from NFPA Staff – G. Moniz – 8-11-17

Question: If we just have metal top and bottom plates to the columns and everything else is nonconductive are they required to be bonded?

Answer: Yes, according to the 2008 NEC®, the parts specified in 680.26(B)(1) through (B)(7) must be bonded together to reduce voltage gradients in the pool area. Section 680.26(B)(3) requires all metallic parts of the pool structure to be bonded.

Question: If we just have metal top and bottom plates to the columns and everything else is nonconductive are they required to be bonded? Are all of them required to be bonded?

Answer: Yes, according to the 2008 NEC® 680.26(B)(3) all metallic parts of the pool structure must be bonded.

Question: If we have an all plastic or fiberglass pool obviously it would not be required to be bonded but we would still be required to have the bare copper loop buried around the perimeter of the pool, correct?

Answer: Yes, according to the 2008 NEC®, 680.26(B)(2) the perimeter surface must be bonded.

Question: If we have an all metal sided pool with metal supports obviously it would be required to have bonding at least four places along with the other requirements including the number eight bare copper ground?

Answer: If bonding to perimeter, see 680.26(B)(2)(a) or (2)(b). Perimeter bonding is required to 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.

Question: If we have a mix of components what rule of thumb or standard or other directive tells us when and how to apply the requirements for the attachment?

Answer: The parts specified in 680.26(B)(1) through (B)(7) are present they must be bonded together.