LakeCounty
Planning, Building & Development

SAFETY BARRIER GUIDELINES FOR HOME POOLS IN HAINESVILLE

Swimming Pool Barrier Guidelines

Barriers
Barriers are not child proof, but they provide layers of protection for a child when there is a lapse in adult supervision. Barriers give parents additional time to find a child before the unexpected can occur.

Barriers include a fence or wall, door alarms for the house, and a power safety cover over the pool. Use the following recommendations as a guide.

Barrier Locations
Barriers should be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

Fences
Fences should be a minimum of 4 feet high. If the home serves as one side of the barrier install door alarms on all doors leading to the pool area. Make sure the doors have self-closing and self-latching devices or locks beyond the reach of children to prevent them from opening the door and gaining access to the pool.

Pool covers add another layer of protection and there are a wide variety of styles on the market. Keep pool covers well-maintained and make sure the control devices are kept out of the reach of children.

A successful pool barrier prevents a child from getting OVER, UNDER, or THROUGH and keeps the child from gaining access to the pool except when supervising adults are present.

How To Prevent a Child from Getting OVER a Pool Barrier

A young child can get over a pool barrier if the barrier is too low or if the barrier has handholds or footholds to use when climbing. The top of a pool barrier should be at least 48 inches above grade, measured on the side of the barrier which faces away from the swimming pool. ~~Some states, counties or municipalities require pool barriers of 60 inches.~~

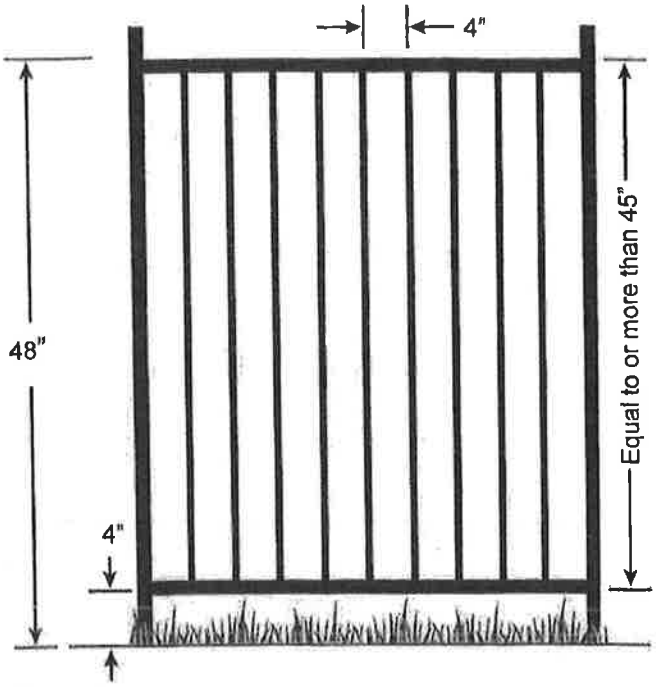


Figure 1

Eliminate handholds and footholds and minimize the size of openings in a barrier's construction.

For a Solid Barrier
No indentations or protrusions should be present, other than normal construction tolerances and masonry joints.

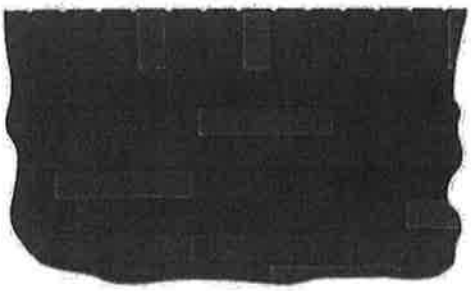


Figure 2

For a Barrier (Fence) Made Up of Horizontal and Vertical Members
If the distance between the top side of the horizontal members is less than 45 inches, the horizontal members should be on the swimming pool side of the fence.

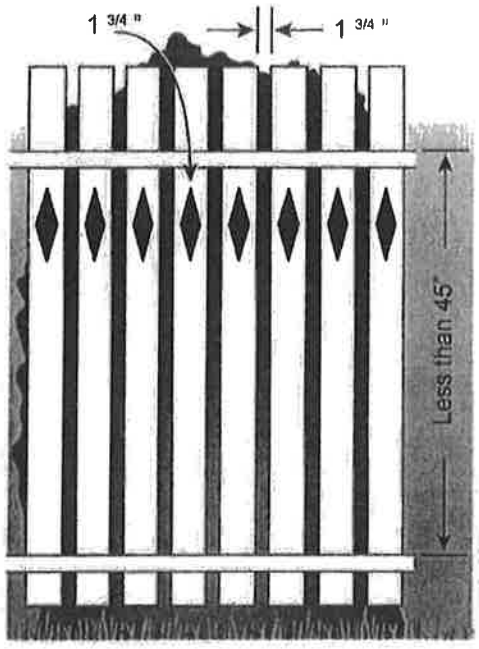


Figure 3

The spacing between vertical members and within decorative cutouts should not exceed 1¾ inches. This size is based on the foot width of a young child and is intended to reduce the potential for a child to gain a foothold and attempt to climb the fence.

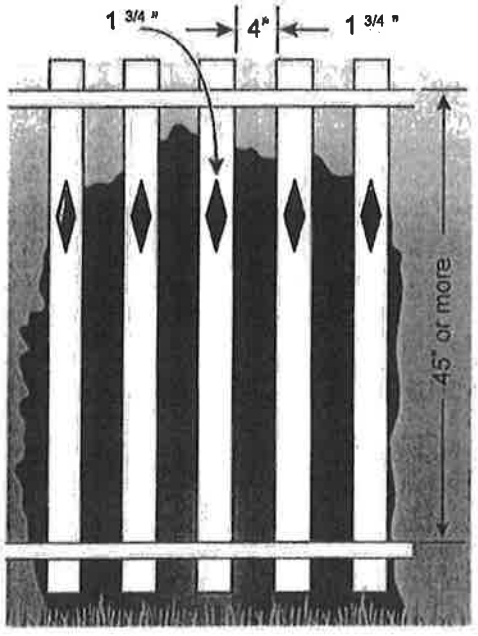


Figure 4

If the distance between the tops of the horizontal members is more than 45 inches, the horizontal members can be on the side of the fence facing away from the pool. The spacing between vertical members should not exceed 4 inches. This size is based on the head breadth and chest depth of a young child and is intended to prevent a child from passing through an opening. If there are any decorative cutouts in the fence, the space within the cutouts should not exceed 1¾ inches.

For a Chain Link Fence

The mesh size should not exceed 1¾inches.

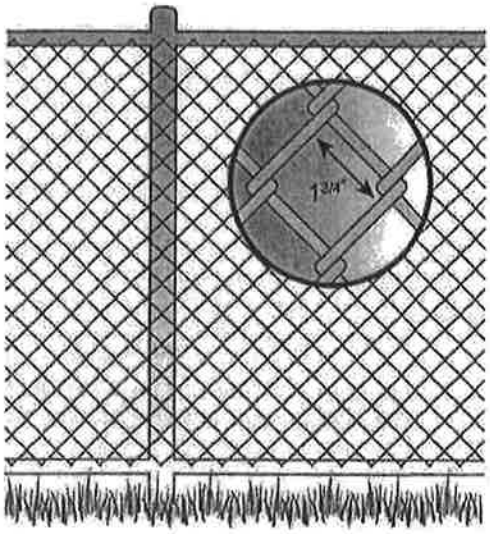


Figure 5

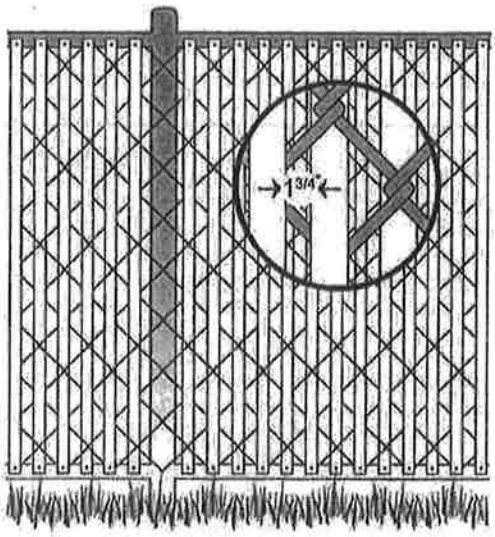


Figure 6

For a Fence Made Up of Diagonal Members or Latticework

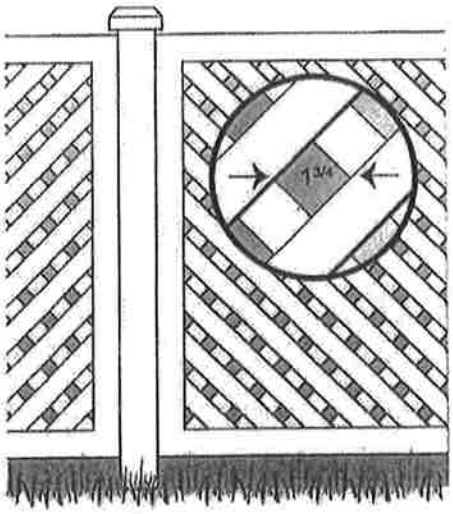


Figure 7

The maximum opening in the lattice should not exceed 1¾ inches.

For Above Ground Pools

Above ground pools should have barriers. The pool structure itself serves as a barrier or a barrier is mounted on top of the pool structure.

There are two possible ways to prevent young children from climbing up into an above ground pool. The steps or ladder can be designed to be secured, locked or removed to prevent access, or the steps or ladder can be surrounded by a barrier such as those described in these guidelines.

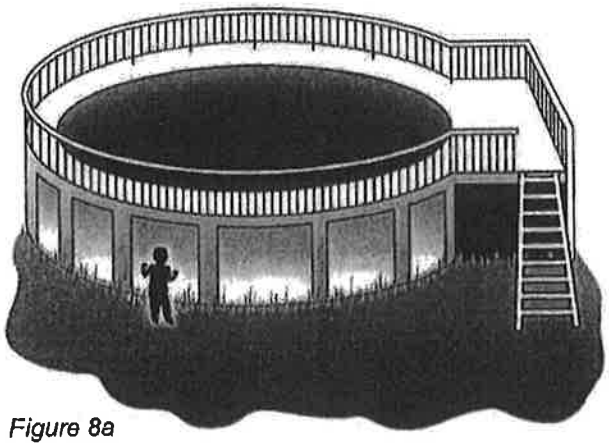


Figure 8a

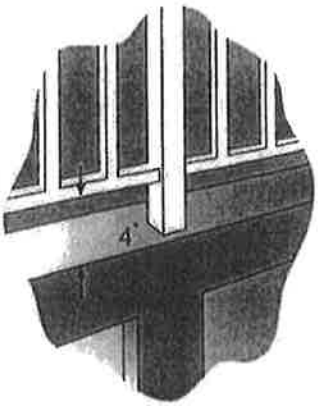
Figure 8b

Figure 8c

Above Ground Pool with Barrier on Top of Pool

If an above ground pool has a barrier on the top of the pool, the maximum vertical clearance between the top of the pool and the bottom of the barrier should not exceed 4 inches.

Figure 9



How to Prevent a Child from Getting UNDER a Pool Barrier

For any pool barrier, the maxi-mum clearance at the bottom of the barrier should not exceed 4 inches above the surface or ground when the measurement is done on the side of the barrier facing away from the pool.

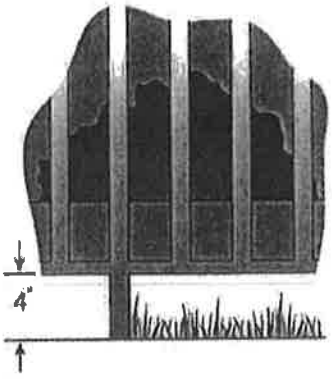


Figure 10

How to Prevent a Child from Getting THROUGH a Pool Barrier

Preventing a child from getting through a pool barrier can be done by restricting the sizes of openings in a barrier and by using self-closing and self-latching gates.

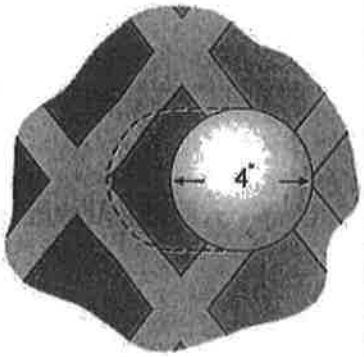
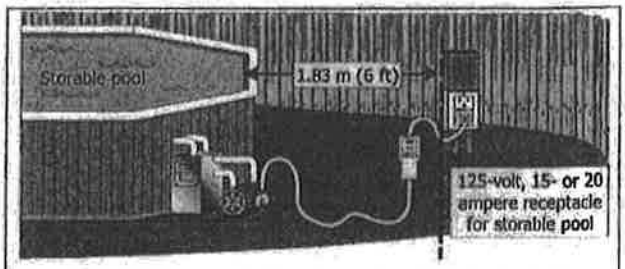


Figure 11

To prevent a young child from getting through a fence or other barrier, all openings should be small enough so that a 4-inch diameter sphere cannot pass through. This size is based on the head breadth and chest depth of a young child.

Onground Storable Pool
A pool which can be disassembled for storage or transport. This includes portable pools with flexible/nonrigid walls that achieve their structural integrity by means of uniform shape, support frame or a combination thereof, and can be disassembled for storage or relocation.

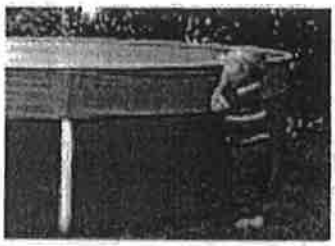


- Receptacles shall not be located less than 1.83 m (6 ft) from the inside walls of a storable pool
- All 125-volt, 15- or 20-ampere receptacles located within 6.0 m (20 ft) of the inside walls of a storable pool shall be GFCI-protected
- Cord- and plug-connected filter pumps shall be provided with a GFCI that is an integral part of the attachment plug or located in the power supply cord within 300 mm (12 in.) of attachment plug

Figure 12 Receptacle outlet requirements at storable pools.

Portable Pools

Portable pools are becoming more popular. They vary in size and height, from tiny blow-up pools to larger thousands-of-gallons designs. Portable pools present a real danger to young children.



Never leave children unsupervised around portable pools. It is recom-mended that portable pools be fenced, covered or emptied and stored away. Instruct neighbors, friends and caregivers about their presence and the potential dangers of a portable pool in your yard.

Removable Mesh Fences
Mesh fences are specifically made for swimming pools or other small bodies of water. Although mesh fences are meant to be removable, the safest mesh pool fences are locked into the deck so that they cannot be removed without the extensive use of tools.

Like other pool fences, mesh fences should be a minimum of 48" in height. The distance between vertical support poles and the attached mesh, along with other manufactured factors, should be designed to hinder a child's ability to climb the fence. The removable vertical support posts should extend a minimum of 3 inches below grade and they should be spaced no greater than 40 inches apart. The bottom of the mesh barrier should not be more than 1 inch above the deck or installed surface.

For more information on Removable Mesh Fencing see ASTM standard F 2286 – 05.

Figure 13

Gates
There are two kinds of gates which might be found on a residential property: pedestrian gates and vehicle or other types of gates. Both can play a part in the design of a swimming pool barrier. All gates should be designed with a locking device.

Pedestrian Gates
These are the gates people walk through. Swimming pool barriers should be equipped with a gate or gates which restrict access to the pool.

Gates should open out from the pool and should be self-closing and self-latching. If a gate is prop-erly designed and not completely latched, a young child pushing on the gate in order to enter the pool area will at least close the gate and may actually engage the latch.

When the release mechanism of the self-latching device on the gate is less than 54 inches from the bottom of the gate, the release mechanism for the gate should be at least 3 inches below the top of the gate on the side facing the pool. Placing the release mechanism at this height prevents a young child from reaching over the top of a gate and releasing the latch.

Also, the gate and barrier should have Figure 13 no opening greater than 1/2 inch within 18 inches of the latch release mechanism. This prevents a young child from reaching through the gate and releasing the latch.

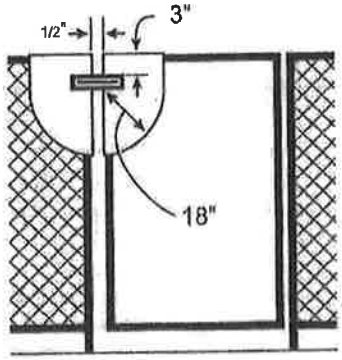


Figure 14

All Other Gates (Vehicle Entrances, Etc.)
Other gates should be equipped with self-latching devices. The self-latching devices should be installed as described for pedestrian gates.

When the House Forms Part of the Pool Barrier

In many homes, doors open directly from the house onto the pool area or onto a patio leading to the pool. In such cases, the side of the house leading to the pool is an important part of the pool barrier. Passage through any door from the house to the pool should be controlled by security measures.

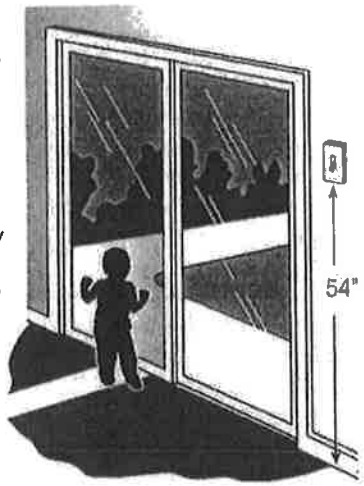


Figure 15

Door Alarms
All doors that allow access to a swimming pool should be equipped with an audible alarm which sounds when the door and/or screen are opened. Alarms should meet the requirements of UL 2017 General-Purpose Signaling Devices and Systems, Section 77 with the following features:

- Sound lasting for 30 seconds or more within 7 seconds after the door is opened.
- The alarm should be loud: at least 85 dBA (decibels) when measured 10 feet away from the alarm mechanism.
- The alarm sound should be distinct from other sounds in the house, such as the telephone, doorbell and smoke alarm.
- The alarm should have an automatic reset feature to temporarily deactivate the alarm for up to 15 seconds to allow adults to pass through house doors without setting off the alarm. The deactivation switch could be a touchpad (keypad) or a manual switch, and should be located at least 54 inches above the threshold and out of the reach of children.

Self-closing doors with self-latching devices could be used in conjunction with door alarms to safeguard doors which give access to a swimming pool.

Pet or Doggy Door

Never have a pet or doggy door if the door leads directly to a pool or other backyard water. An isolation barrier or fence is the best defense when pet doors are installed. Remember, pet door openings, often overlooked by adults, provide curious children with an outlet to backyard adventure. Locking these doors is not sufficient and could lead to accidents and tragedies. Children regularly drown in backyard pools, which they were able to access through pet doors. Some municipalities have building codes that prohibit doggy doors in homes with pools unless there is an isolation fence around the pool.

Power Saftey Covers
Power safety covers can be installed on pools to serve as security barriers, especially when the house serves as the fourth wall or side of a barrier. Power safety covers should conform to the specifications in the ASTM F 1346-91 standard, which specifies safety performance requirements for pool covers to protect young children from
drowning.

Indoor Pools
When a pool is located completely within a house, the walls that surround the pool should be equipped to serve as pool safety barriers. Measures recommended for using door alarms, pool alarms and covers where a house wall serves as part of a safety barrier also apply for all the walls surrounding an indoor pool.

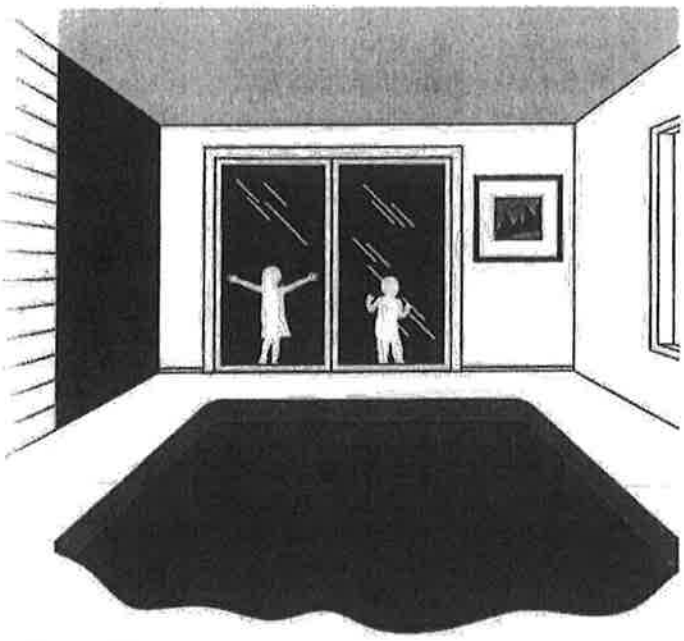


Figure 16

Barriers for Residential Swimming Pool, Spas, and Hot Tubs

The preceding explanations of CPSC's pool barrier guidelines were provided to make it easier for pool owners, purchasers, builders, technicians, and others to understand and apply the guidelines to their particular properties or situations. Reading the following guidelines in conjunction with the diagrams or figures previously provided may be help-ful. For further information, consult your local building department or code authority.

Outdoor Swimming Pools
All outdoor swimming pools, including inground, above ground, or onground pools, hot tubs, or spas, should have a barrier which complies with the following:

1. The top **of the barrier** should be at least 48 inches above the surface measured on the side of the barrier which faces away from the swimming pool (figure 1).
2. The maximum **vertical clearance between the surface and the bottom of the barrier** should be 4 inches measured on the side of the barrier which faces away from the swimming pool and 1 inch for removable mesh fences (figures 1 and 10).
3. Where the top of the **pool structure is above grade or surface**, 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 should be 4 inches (figure 9).
4. **Openings in the barrier** should not allow passage of a 4-inch diameter sphere (figure 11).
5. **Solid barriers**, which do not have openings, such as a masonry or stone wall, should not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints (figure 2).
6. Where the barrier is composed of **horizontal and vertical members** and the distance between the bottom and top horizontal members is less than 45 inches, the horizontal members should be located on the swimming pool side of the fence (figure 3).
7. **Spacing between vertical members** should not exceed 1¾ inches in width. Where there are decorative cutouts, spacing within the cutouts should not exceed 1¾ inches in width (figure 4).
8. **Maximum mesh size for chain link fences** should not exceed 1¾ inch square unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 1¾ inches (figures 5 and 6).
9. Where the barrier is composed of **diagonal members**, such as a lattice fence, the maximum opening formed by the diagonal members should be no more than 1¾ inches (figure 7).
10. **Access gates** to the pool should be equipped with a locking device. Pedestrian access gates should open outward, away from the pool, and should be self-closing and have a self-latching device (figure 12). Gates other than pedestrian access gates should have a self-latching device. Where the release mechanism of the **self-latching device** is located less than 54 inches from the bottom of the gate, (a) the release mechanism should be located on the pool side of the gate at least 3 inches below the top of the gate and (b) the gate and barrier should have no opening greater than ½ inch within 18 inches of the release mechanism (figure 13).

11. Where a **wall of a dwelling** serves as part of the barrier, one of the following should apply:
(a) **All doors with direct access to the pool** through that wall should be equipped with **an alarm** which produces an audible warning when the door and its screen, if present, are opened. Alarms should meet the requirements of *UL 2017 General-Purpose Signaling Devices and Systems, Section 77*. For more details on alarms, see page 13. (b) The pool should be equipped with a **power safety cover** which complies with ASTM F1346-91 listed below.
12. (c) Other means of protection, such as **self-closing doors with self-latching devices**, are acceptable so long as the degree of protection afforded is not less than the protection afforded by (a) or (b) described above.

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 (figure 8a), then (a) **the ladder** to the pool or steps should be capable of being secured, locked or removed to prevent access (figure 8b), or (b) **the ladder or steps should be surrounded by a barrier** (figure 8c). When the ladder or steps are secured, locked, or removed, any opening created should not allow the passage of a 4 inch diameter sphere.

Barriers for Residential Swimming Pool, Spas, and Hot Tubs

Application
The guidelines presented in this document are intended to provide a means of protection against potential drownings and neardrownings to children under 5 years of age by restricting access to residential swimming pools, spas, and hot tubs.

Definitions

Aboveground/onground pool. See definition of swimming pool.

Barrier. A fence, a wall, a building wall or a combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool.

Hot tub. See definition of swimming pool.

Inground pool. See definition of swimming pool.

Residential. That which is situated on the premises of a detached one- or two-family dwelling or a one-family townhouse not more than three stories in height.

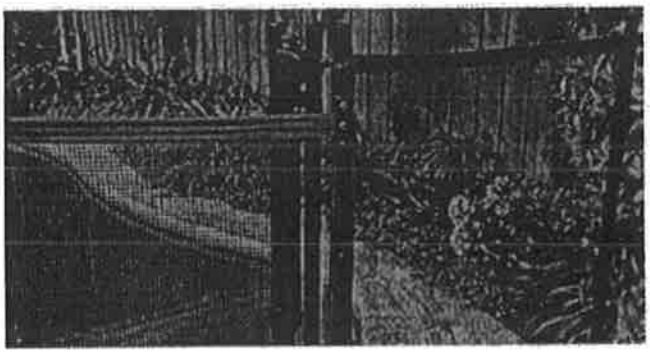
Spa, nonportable. See definition of swimming pool.

Spa, portable. A non-permanent structure intended for recreational bathing, in which all controls, water- heating, and water-circulating equipment are an integral part of the product and which is cordconnected (not permanently electrically wired).

Swimming pool. Any structure intended for swimming or recreational bathing that contains water over 24 inches deep. This includes inground, aboveground, and onground swimming pools, hot tubs, and spas.

Swimming pool, indoor. A swimming pool which is totally contained within a structure and surrounded on all four sides by walls of said structure.

Swimming pool, outdoor. Any swimming pool which is not an indoor pool.



Guidelines

Section I. Outdoor Swimming Pool
An outdoor swimming pool, including an inground, aboveground, or onground pool, hot tub, or spa, should be provided with a barrier which complies with the following:

1. The top of the barrier should be at least 48 inches 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 should be 4 inches 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 aboveground 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 should be 4 inches.

2. Openings in the barrier should not allow passage of a 4-inch diameter sphere.

3. Solid barriers, which do not have openings, such as a masonry or stone wall, should 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, the horizontal members should be located on the swimming pool side of the fence. Spacing between vertical members should not exceed 1-3/4 inches in width. Where there are decorative cutouts, spacing within the cutouts should not exceed 1-3/4 inches 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 or more, spacing between vertical members should not
exceed 4 inches. Where there are decorative cutouts, spacing within the cutouts should not exceed 1-3/4 inches in width.

6. Maximum mesh size for chain link fences should not exceed 1-3/4 inch square unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 1-3/4 inches.

7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members should be no more than 1-3/4 inches.

8. Access gates to the pool should comply with Section I, Paragraphs 1 through 7, and should be equipped to accommodate a locking device. Pedestrian access gates should open outward, away from the pool, and should be self-closing and have a selflatching device. Gates other than pedestrian access gates should have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches from the bottom of the gate, (a) the release mechanism should be located on the pool side of the gate at least 3 inches below the top of the gate and (b) the gate and barrier should have no opening greater than 1/2 inch within 18 inches of the release mechanism.

9. Where a wall of a dwelling serves as part of the barrier, one of the following should apply: (a) All doors with direct access to the pool through that wall should be equipped with an alarm which produces an audible warning when the door and its screen, if present, are opened. The alarm should sound continuously for a minimum of 30 seconds within 7 seconds after the door is opened. Alarms should meet the requirements of UL 2017 General- Purpose Signaling Devices and Systems, Section 77. The alarm should have a minimum sound pressure rating of 85 dBA at 10 feet and the sound of the alarm should be distinctive from other household sounds, such as smoke alarms, telephones, and door bells. The alarm should automatically reset under all conditions. The alarm should be equipped with manual means, such as touchpads or switches, to temporarily deactivate the alarm for a single opening of the door from either direction. Such deactivation should last for no more than 15 seconds. The deactivation touchpads or switches should be located at least 54 inches above the threshold of the door. (b) The pool should be equipped with a power safety cover which complies with ASTM F1346-91 listed below. (c) Other means of protection, such as self-closing doors with self-latching devices, are acceptable so long as the degree of protection afforded is not less than the protection afforded by (a) or (b) described above.

10. Where an aboveground 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, then (a) the ladder to the pool or steps should be capable of being secured, locked or removed to prevent access, or (b) the ladder or steps should be surrounded by a barrier which meets Section I, Paragraphs 1 through 9. When the ladder or steps are secured, locked, or removed, any opening created should not allow the passage of a 4-inch diameter sphere.

Section II. Indoor Swimming Pool.
All walls surrounding an indoor swimming pool should comply with Section I, Paragraph 9.

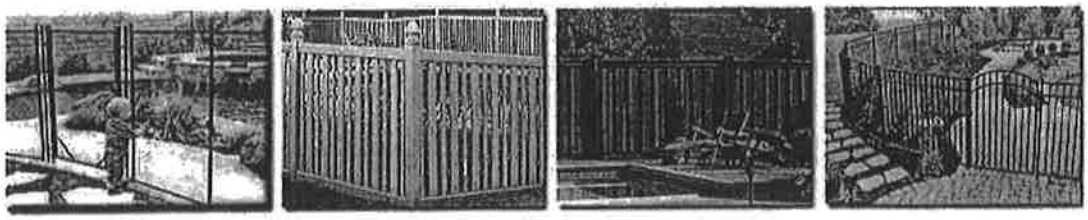
Section III. Barrier Locations.
Barriers should be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

Exemptions

A portable spa with a safety cover which complies with ASTM F1346-91 listed below should be exempt from the guidelines presented in this document.

But, swimming pools, hot tubs, and nonportable spas with safety covers should **not** be exempt from the provisions of this document.

ASTM F1346-91. Standard Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs.



Electrical Requirements for Inground Pools including Spas and Hot Tubs

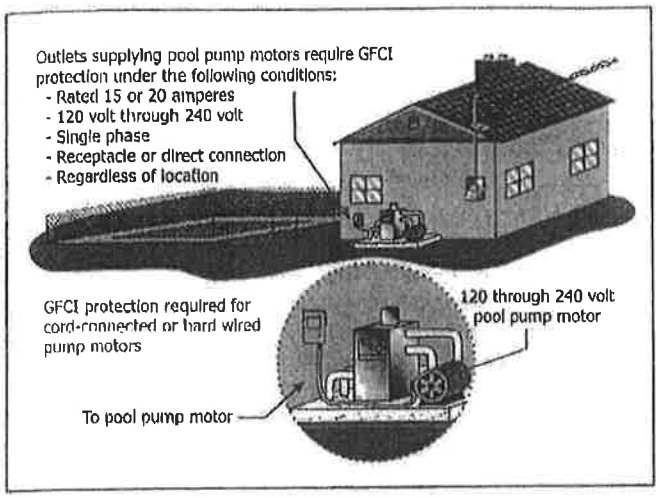


Figure 17 GFCI protection is required for cord-connected or hard-wired pump motors

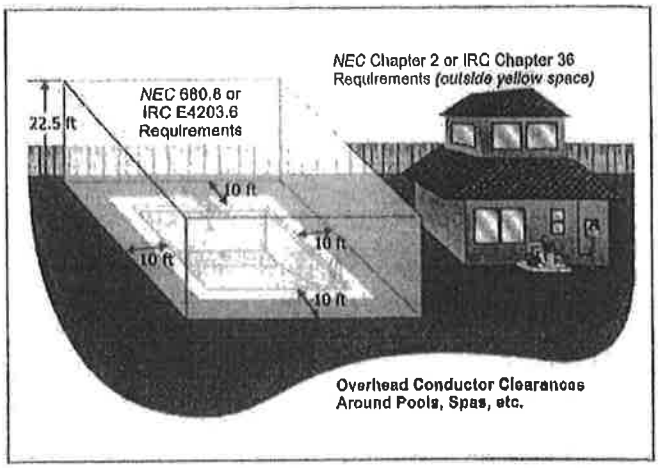


Figure 18 Overhead conductor clearances around pools

Overhead Conductor Clearances

Clearance Parameters	Insulataed Cables, 0-750 Volts to Ground
A. Clearance in any direction to the water level, edge of water surface, base of diving platform or permanently anchored raft.	6.9 m (22.5 ft)
B. Clearance in any direction to the observation stand, tower, or diving platform	4.4 m (14.5 ft)
C. Horzontal limit of Clearance measured from inside wall of the pool	3 m (10 ft) *See note below

*This horizontal limit shall extend to the outer edge of the structures listed in A and B of this table but not to less than 3 m (10 ft)

Minimum Cover Requirements for Underground Wiring within 1.5m (5 ft) of Pools, Spas, Etc.

Wiring Method	Minimum Cover
Rigid metal conduit	150 mm (6 in)
Intermediate metal conduit	150 mm (6 in)
Nonmetallic raceways listed for direct burial under minimum of 102 mm (4 in.) thick concrete exterior slab and extending not less than 162 mm (6 in.) beyond the underground installation	150 mm (6 in)
Nonmetallic raceways listed for direct burial without concrete encasement	450 mm (18 in)
Other approved raceways*	450 mm (18 in)

*Raceways approved for burial only where concrete encased shall require a concrete envelope not less than 50 mm (2 in.) thick.

Electrical Requirements for Inground Pools including Spas and Hot Tubs (continued)

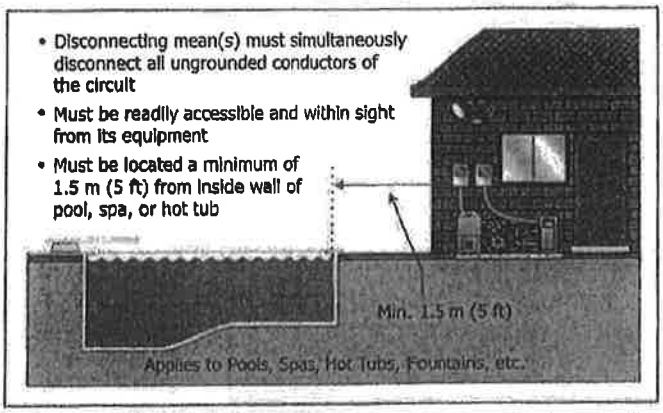


Figure 19 Equipment disconnecting means is to be readily accessible from and within sight from the equipment

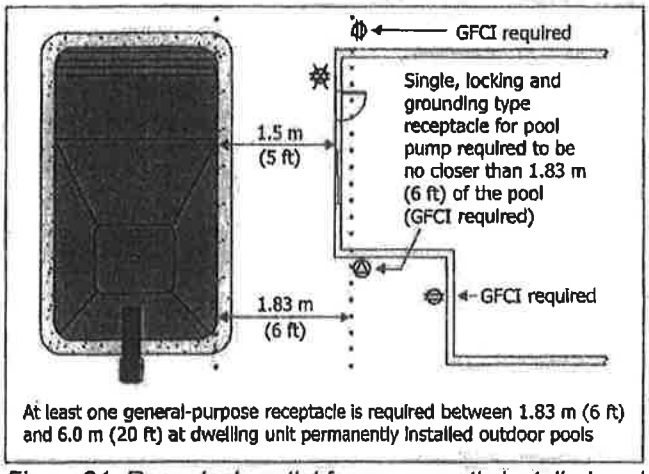


Figure 21 Receptacle outlet for permanently installed pool water-pump motor is permitted as close as 1.83 m (6 ft) from water's edge with specific conditions (GFCI protection required).

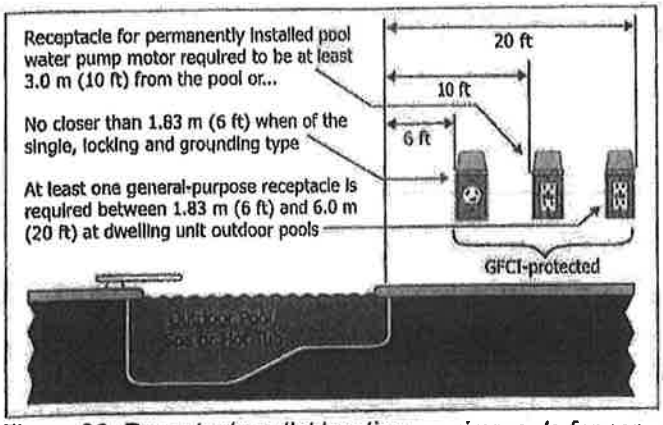


Figure 20 Receptacle outlet location requirements for permanently installed pools

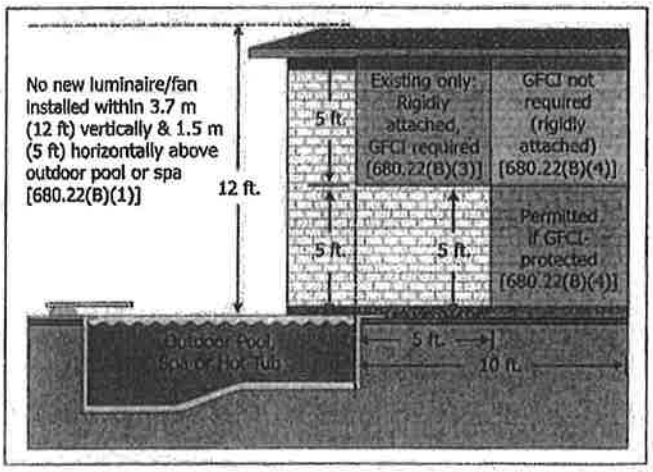


Figure 22 Luminaire and fan locations for outdoor pool, spa, or hot tub

Electrical Requirements for Inground Pools including Spas and Hot Tubs (continued)

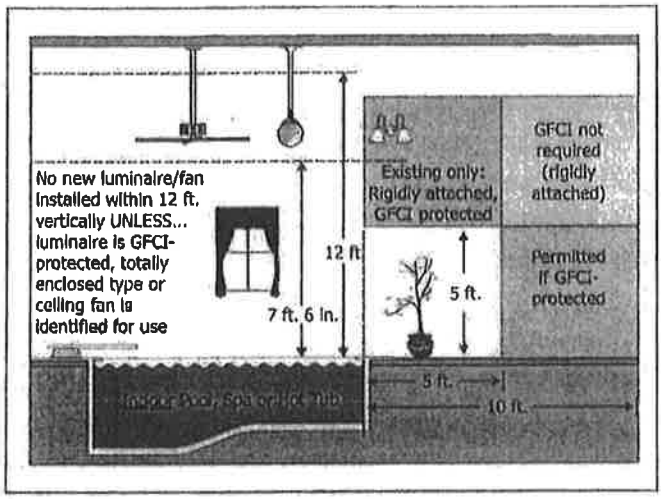


Figure 23 Luminaire and fan locations for outdoor pool, spa, or hot tub

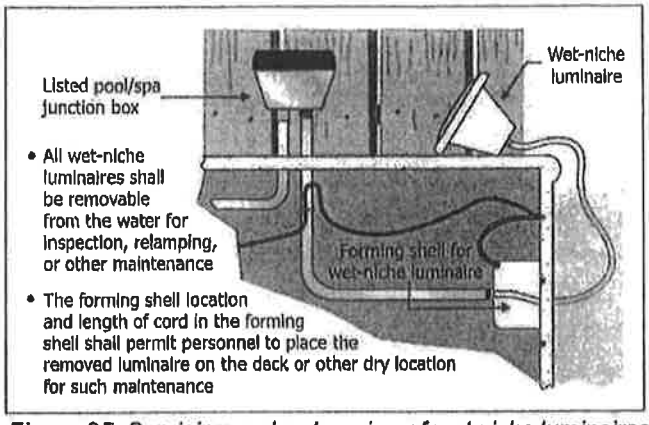


Figure 25 Servicing and re-lamping of wet niche luminaires

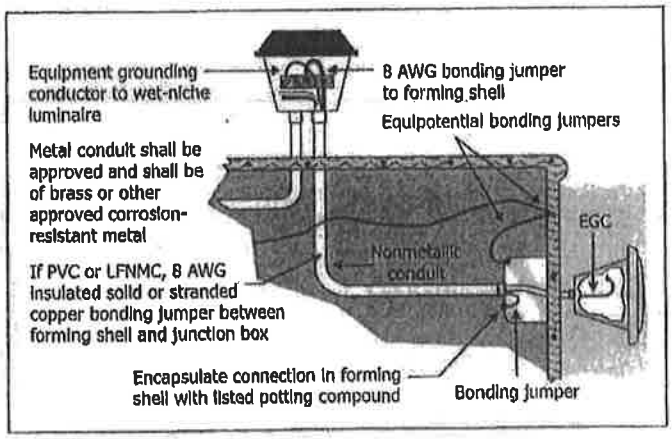


Figure 24 Bonding requirements for wet-niche luminaires

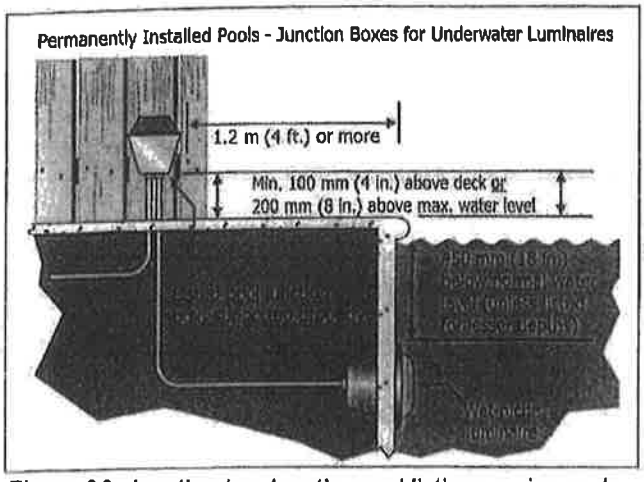


Figure 26 Junction box location and listing requirements

Electrical Requirements for Inground Pools including Spas and Hot Tubs (continued)

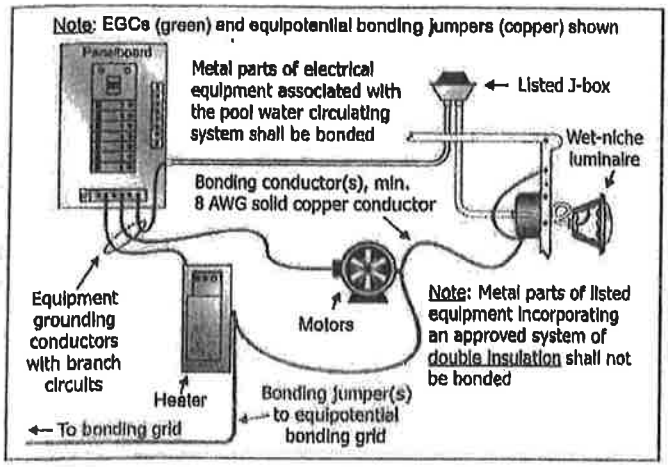


Figure 27 Bonding and grounding of pool equipment

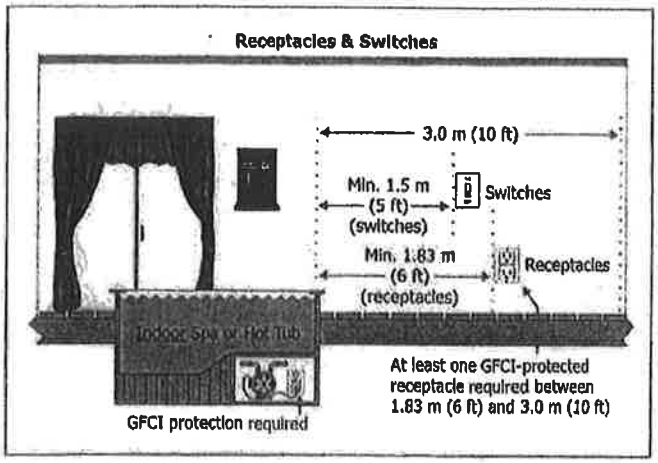


Figure 29 Receptacle and switch requirements for indoor spaces and hot tubs

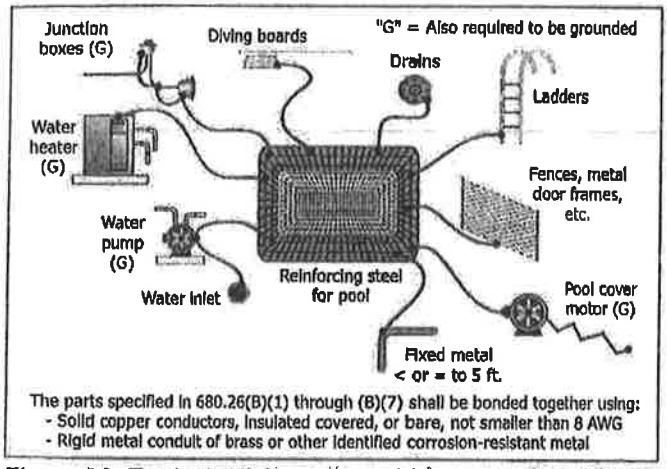


Figure 28 Equipotential bonding grid forms and equipotential bonding plane in and around the pool area

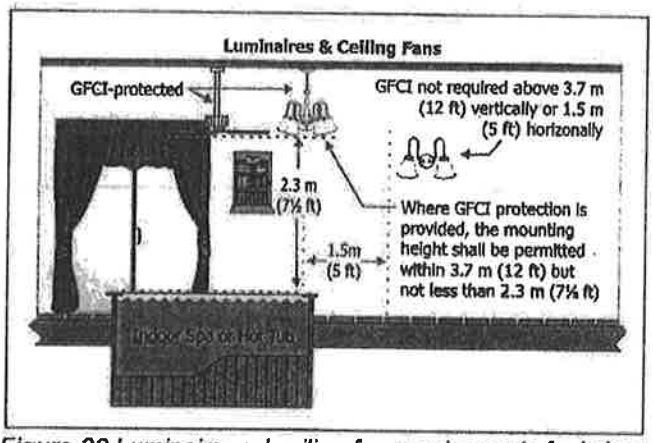


Figure 30 Luminaire and ceiling fan requirements for indoor spas and hot tubs

Electrical Requirements for Inground Pools including Spas and Hot Tubs (continued)

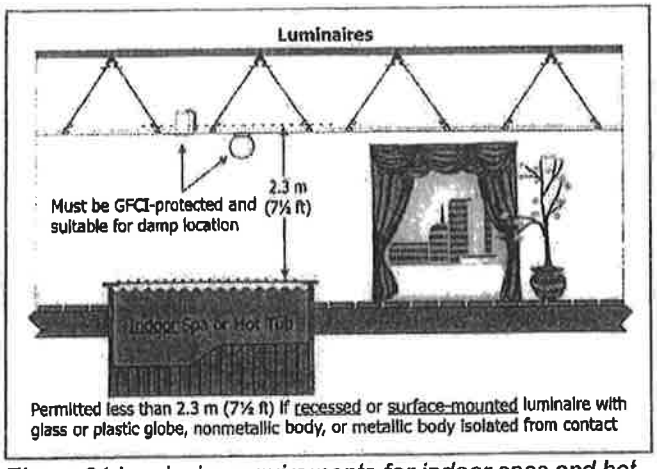


Figure 31 Luminaire requirements for indoor spas and hot tubs

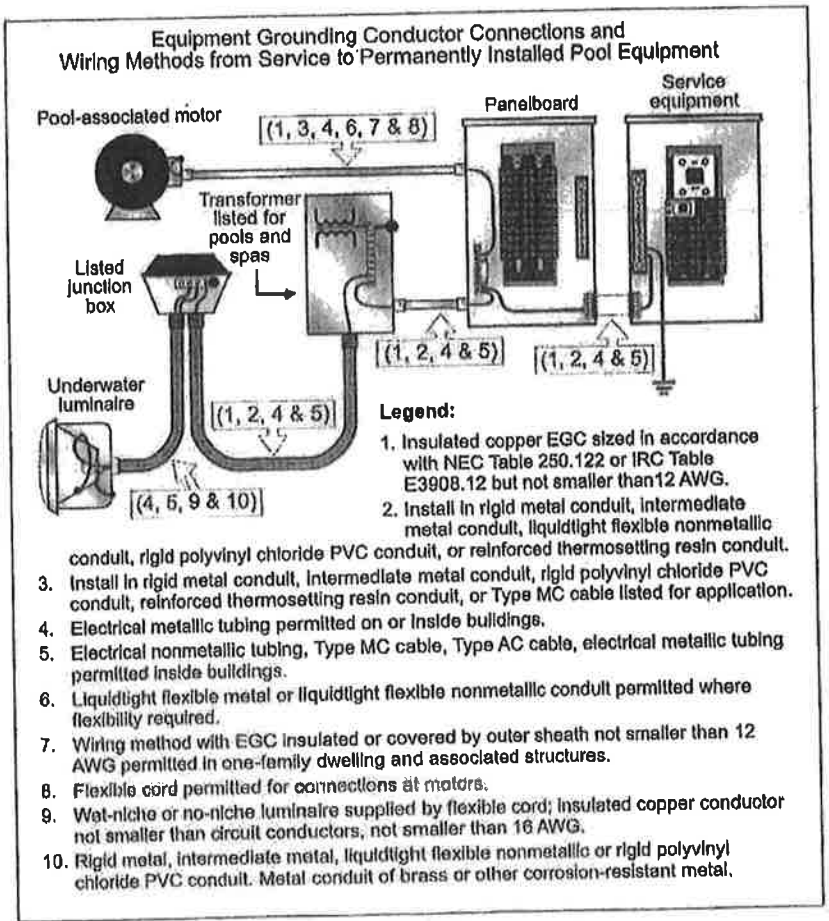


Figure 32 Equipment grounding conductor connections from service equipment to pool equipment