

PRIVATE SWIMMING POOLS

The following is a summary of some of the code requirements regarding the installation and use of swimming pools, both in ground and aboveground.

Location and permitting: Pools with water deeper than 24" require a building permit, and must meet setbacks required by the zoning ordinance. The walls of an in ground pool must be at least 20' from septic system leach fields and 8' from septic tanks. Aboveground pools and ancillary pool structures such as aprons, decks, etc. must be at least 15' from septic system leach fields, and 8' from septic tanks. Pools also may require electrical and plumbing permits, as applicable

2. **Electrical:** Pools cannot be located beneath or within 10' of overhead power lines that are less than 22.5' above the pool surface. Pools cannot be located over or within 5' of buried power lines, other than wiring to serve required pool related electrical equipment. There are some exceptions to this. Ask for details.

Outdoor wiring for the pool equipment must be in conduit. The outlet for the pool pump must be a grounded, GFCI protected outlet located at least 6' from the pool. . The cord on the pool pump cannot be longer than 3'. An additional GFCI protected outlet must be provided between 6 and 20' from the pool wall for general use, located no more than 6'-6" above the ground or deck surface adjacent to the pool. Any electrical outlet within 20' of the pool, whether associated with the pool or not, must be GFCI protected. All pool equipment must be installed and used per the manufacturer's instructions.

There are many specific electrical requirements for pools, especially for in ground ones, that are beyond the scope of this handout. If you have any questions, ask.

Operational: All pools must have at least one means of egress while in use. The pool must be equipped so it can be emptied completely of water without creating a nuisance to adjoining property or public property (the streets).

Security: See the attached handout for the fencing requirements.

This handout is a general summary. Pools must meet a host of construction requirements contained in the building code as well as all plumbing and electrical code requirements. Pools can be dangerous and it's important they be installed and operated properly. We will be glad to answer any questions you may have.

POOL BARRIER REQUIREMENTS

Below are the requirements for barrier around pools that have 24" or more of water in them.

SECTION AG102 DEFINITIONS

- AG102.1 General.** For the purposes of these requirements, the terms used shall be defined as follows and as set forth in Chapter 2.
- ABOVE-GROUND/ON-GROUND POOL.** See "Swimming pool."
- BARRIER.** A fence, wall, building wall or combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool.
- HOT TUB.** See "Swimming pool."
- IN-GROUND POOL.** See "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 "Swimming pool."
- SPA, PORTABLE.** A nonpermanent structure intended for recreational bathing, in which all controls, water-heating and water-circulating *equipment* are an integral part of the product.
- SWIMMING POOL.** Any structure intended for swimming or recreational bathing that contains water over 24 inches (610 mm) deep. This includes in-ground, above-ground and on-ground swimming pools, hot tubs and spas.

SECTION AG105 BARRIER REQUIREMENTS

- AG105.1 Application.** The provisions of this chapter shall control the design of barriers for residential swimming pools, spas and hot tubs. These design controls are intended to provide protection against potential drownings and near-drownings by restricting access to swimming pools, spas and hot tubs.
- AG105.2 Outdoor swimming pool.** An outdoor swimming pool, 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 $1\frac{3}{4}$ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed $1\frac{3}{4}$ 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 $1\frac{3}{4}$ inches (44 mm) in width.

6. Maximum mesh size for chain link fences shall be a $2\frac{1}{4}$ -inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than $1\frac{3}{4}$ 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 $1\frac{3}{4}$ 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 $\frac{1}{2}$ inch (12.7 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 audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed and *labeled* in accordance with UL 2017. 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 as 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.

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.

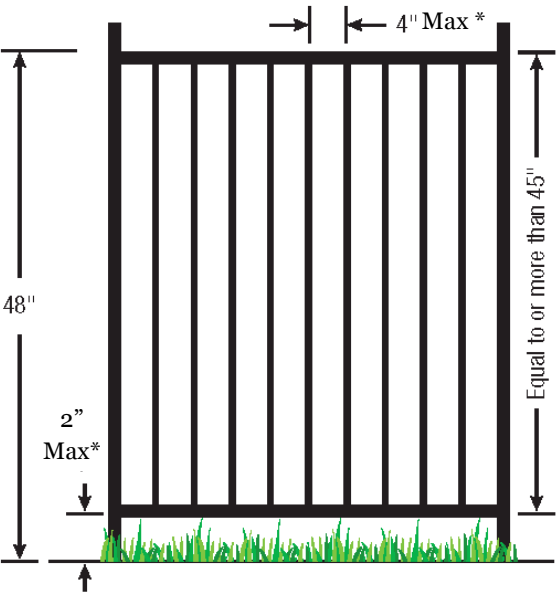


Figure 1

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

* The railing/fence has to be such that a 4" sphere cannot pass through it.

For a Solid Barrier

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

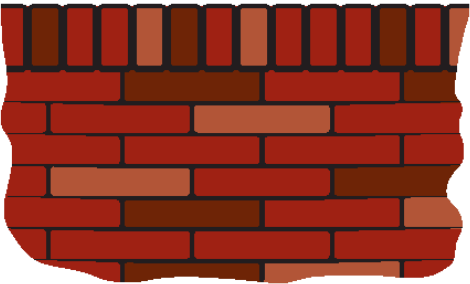


Figure 2

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.

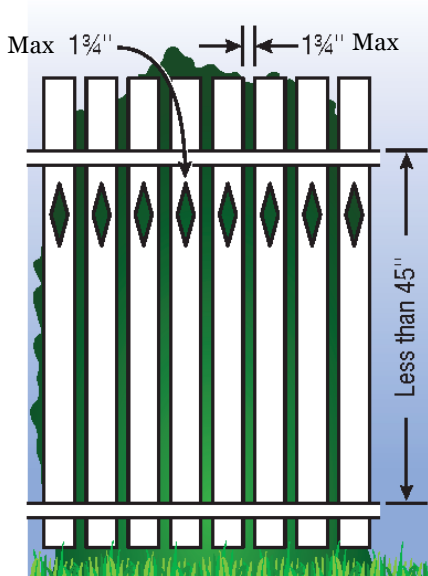


Figure 3

The spacing between vertical members and within decorative cutouts should not exceed 1 3/4 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.

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 1 3/4 inches.

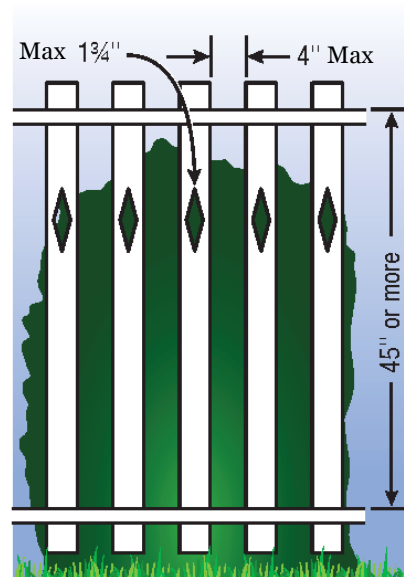


Figure 4

For a Chain Link Fence

The mesh size should not exceed $2\frac{1}{4}$ inches square unless slats, fastened at the top or bottom of the fence, are used to reduce mesh openings to no more than $1\frac{3}{4}$ inches.

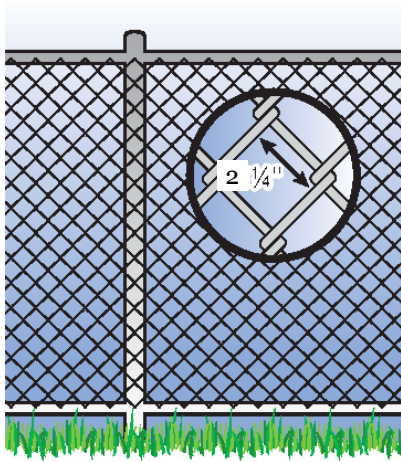


Figure 5

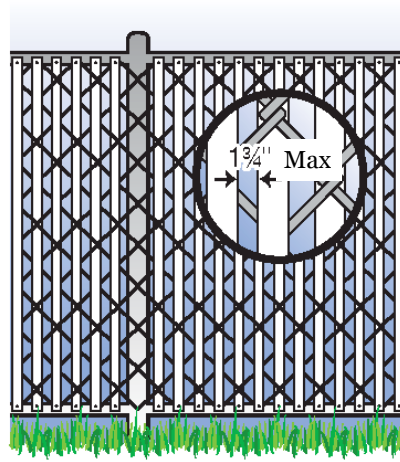


Figure 6

For a Fence Made Up of Diagonal Members or Latticework

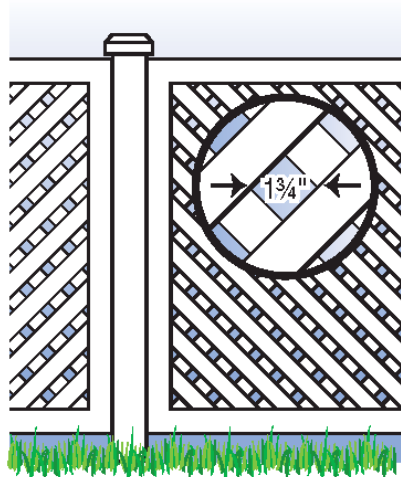


Figure 7

The maximum opening in the lattice should not exceed $1\frac{3}{4}$ 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.

*The structure or barrier must be at least 48" high.

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

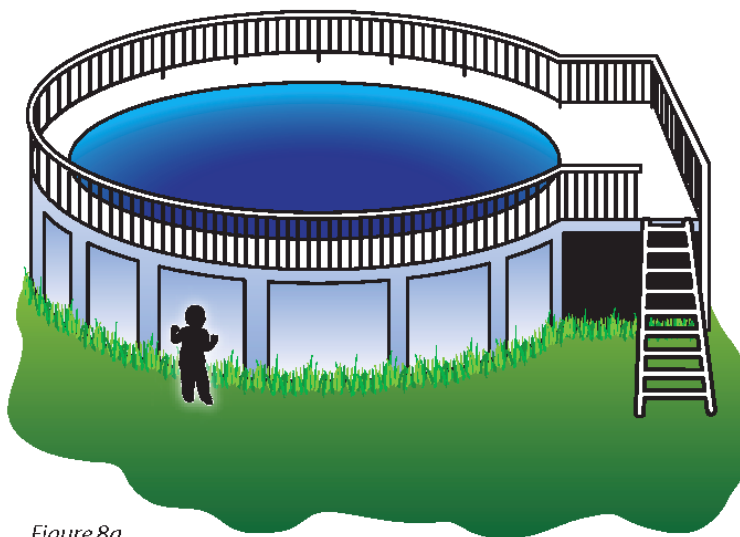


Figure 8a

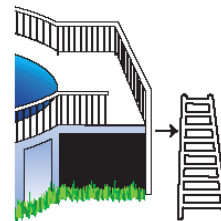


Figure 8b



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.

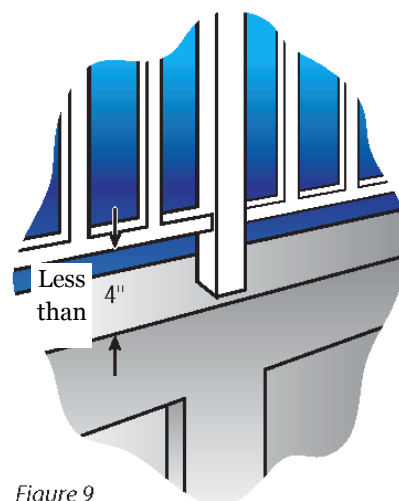


Figure 9

The weak link in the strongest and highest fence is a gate that fails to close and latch completely. For a gate to close completely every time, it must be in proper working order.

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.

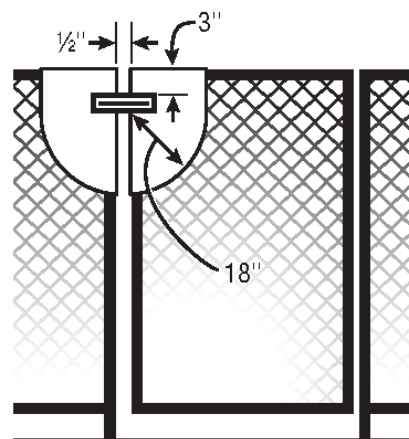
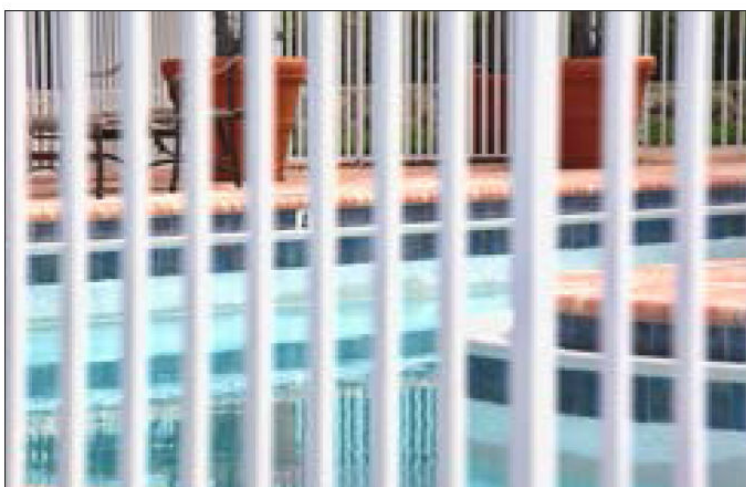


Figure 13

Also, the gate and barrier should have 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.

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.

The importance of controlling a young child's movement from the house to pool is demonstrated by the statistics obtained in CPSC's submersion reports. Residential locations dominate in incidents involving children younger than 5 accounting for 85% of fatalities and 54 percent of injuries (from CPSC's 2012 *Pool and Spa Submersion Report*, see page 3).



Figure 14

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.