Currituck County Swimming Pool Guide

DID YOU KNOW?

- The suction from a pool drain can be so powerful that it can hold an adult under water. Most drain related incidents involve children. Entrapment avoidance is a mandatory requirement of the code.
- Nearly 9 of 10 drowning related deaths happen while a child is under some form of supervision, according to a Safe Kids Worldwide study.
- 77% of drowning victims had been missing from sight for less than 5 minutes

Why Do I Need a Permit?

There are many important reasons to obtain building permits and to have inspections performed for your construction project the following are just a few.

Protects property values

Your home is typically your largest investment. If your construction project does not comply with the NC Building Codes, your investment could lose value. If others in your neighborhood make unsafe or substandard changes to their homes, it could lower the resale values for the entire community.

Saves Money

Homeowners insurance policies may not pay for damages caused by work done without permits and inspections.

Makes Selling Property Easier

Listing associations require owners to disclose any home improvements or repairs and if permits were obtained. Many financial institutions will not finance a purchase without proof of a final inspection. If you decide to sell a home or building that has had modifications without a permit, you may be required to tear down the addition, leave it unoccupied or do costly repairs.

Improves safety

Your permit allows the inspection department to inspect for potential hazards and un-safe construction. By ensuring your project meets the minimum building code standards of safety, the inspection department can reduce the risk of fire, structural collapse and other issues that might result in costly repairs, injuries and even death. Inspections complement the contractor's experience and act as a system of checks and balances resulting in a safer project.

It's the Law

Permits are required by local ordinance and NC State law. Work without a permit may be subject to fines, removal or other costly remedies.

The purpose of this guide is to assist you in the permitting process. This handout is intended to cover information for a basic pool installation under the building codes. It is not intended to cover all circumstances. Depending on the scope and complexity of your project, additional information may be required.

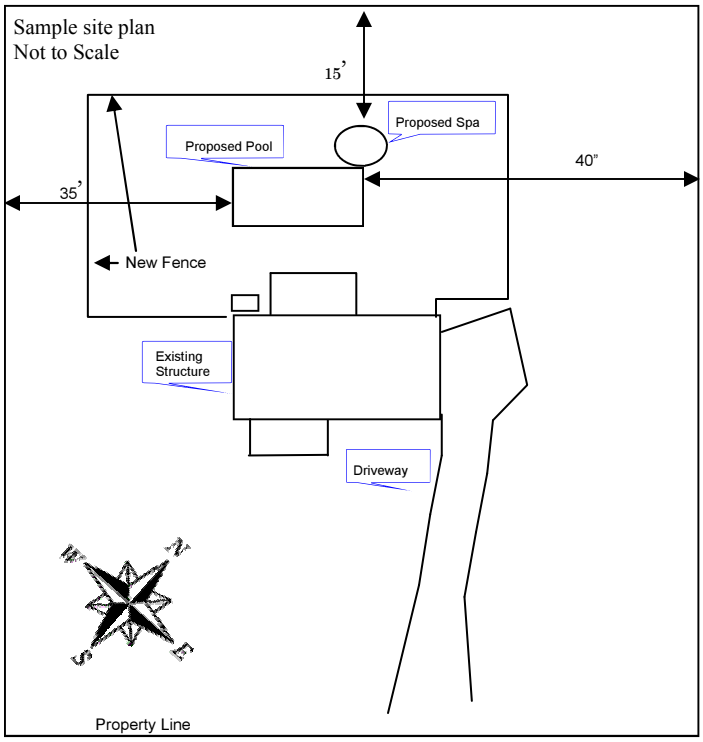
Information about the following items can be found on the following pages:

What is a Site Plan?

A site plan is a detailed drawing of your property, also known as a survey of your land. These are usually drawn by a NC licensed land surveyor. The site plan will show the dimensions of your project and its relationship to existing setbacks, easements, utilities, other structures on the property, and distance to your property lines. If your project will require moving any utilities (gas, water, sewer septic, electric, etc.), show where those utilities will be relocated.

Notes:

1. Structures must meet Zoning requirements.
2. If you are on a septic tank, you will be required to have approval from the county health department prior to submitting your pool application.
3. Dimensioned, detailed plans showing pool location, decking, fencing, equipment location, retaining walls, spas, pool house location, fire pits, etc.
4. A V Zone certification prepared by an NC Design Professional will be required for areas that are in this type of special flood hazzard area.
5. Entry to your pool must be secured, and a fence or other barrier must be shown on the site plan.



Permit Application Requirements

What is REQUIRED for a Permit

- Site constructed pools with rebar, provide copies of the NC Design Professional's sealed plans drawn at a legible scale. Such plans shall include details, drawings, and notes that sufficiently describe the work to be done and clearly shows building code compliance: Include the following :
- Address, lot number, owner's name, contact information, designer's name, contact information, list of plan pages in the set.
- Profile section of pool
- Entrapment protection provisions
- Include any notes or statements on the application that clarify what work is to be by the pool contractor and what work is to be completed by the property owner
- Notes and or statements on the application that clarify who will be responsible for alarm installation, and fencing .

Notes:

- Separate structures (Pool houses, outdoor fireplaces, etc.) all require a separate permit.
- For above ground pools you must provide the pool manufacturer's folding lockable ladder at time of final inspection or provide drawings for pool deck, stair construction details that meet barrier requirements.

Tips For Hiring Contractors

- Hire only licensed contractors
- Get at least 3 bids—Get 3 references and ask to see a project
- Get it in writing - but before you sign the contract, make sure you completely understand
- Don't make final payment until you have a Certificate of Completion (COC) and you are satisfied
- Have the contractor apply for the required permits

Inspection Items
What the inspector will look at:

1. INGROUND POOLS

- Made after the pool area has been excavated and cleaned of all loose soils, debris, and organic matter all required forms are in place and properly supported for poured in placed pools.
- All reinforcement steel is in place, properly tied, and supported with on approved chairs to guarantee the required 3" minimum cover.
- All electrical conduits, lighting fixtures (or shells), etc are in place and properly supported.
- All supports or sockets for ladders, diving boards, etc are in place and properly supported.

ABOVE GROUND POOLS

Made after erection of the pool structure, the installer must provide safe access to all areas of the pool, have the manufacturer's installation instructions on site at all times.

2. Electrical Bonding Made when all metal parts of a pool structure, deck bonding grid, and equipment is properly bonded together and ready to be covered. Note: Depending on pool design and site conditions, this inspection may require several trips to be completed and shall be at the inspector's discretion.

3. Back Flow Made prior to or with the final pool inspection. Plumbing Code requires backflow prevention for all pools connected to a potable water supply. If the pool fill has an indirect connection, protection is usually not required. Note: Building inspectors do not make backflow inspections, but will check pool fills for compliance. Only Certified Backflow testers can perform and certify backflow tests.

4. Gas Piping Made at any time during construction but before Final inspection. A gas pressure test of at least 10 psi is required. Piping must be under pressure with a working gauge for inspection. Note: Gas piping may not be covered or concealed without passing this inspection.

5. Electrical System Made at any time during construction but before Final. All of the electrical system, including low voltage systems, must be in place and ready for electrical rough-in inspection. The system must meet the requirements of NEC 680 for locations, GFCI protection, bonding, etc. Note: Underground electrical may not be covered or concealed without passing this inspection.

6. Permanent Fence (barrier) Must be complete, with UL 2017 entry warning alarms on doors leading to the pool when home is used as part of the barrier system. Alarms must be working, and may be installed at anytime during construction. Barrier a minimum of 48" high, no horizontal members within 45" of each other. Gates must swing away from the pool.

7. Pool Final Made after the pool and all associated construction is complete and ready for use.

- The pool must be full of water and all equipment, lights, ladders, steps, and other pool accessories in place, connected, and working as designed for a completed ready for use pool.
- All permanent fences, gates, and UL 2017 entry warning alarms must be in place and working.
- All life safety equipment must be in place.

ELECTRICAL REQUIREMENTS

2017 National Electrical Code

General Location Information:

A) The location of the pool must be so that any overhead service entrance cables are 22.5' from the water level in any direction. If installing a diving board of platform a distance of 14.5' must be maintained. 680.8 A & B

B) If it's an underground pool, consideration for any underground utilities should be taken. No non-pool related underground wire within 5' of pool wall unless in an approved conduit. 680.10

Bonding - The sole purpose of an equipotential grid is to create an area where there is no significant difference in voltage between objects that can be touched simultaneously. Example of objects at a pool that can be touched simultaneously include the concrete decking, ladders, hand rails, light fixtures, drains, and the pool water. An equipotential grid is created by intentionally connecting all these objects together electrically, otherwise known as bonding them together.

A) All metal parts of structure and equipment must be bonded

B) Bonding with a #8 copperAWG or larger conductor—lugs for bonding must be rated. 110.3(B)

C) Alternate equipotential bonding #8 copper AWG must be within 18"-24" of the pool wall and follow the contour of the non-conductiuve pool. and be secured at least 4"-6" below subgrade or in concreate sidewalk.

Lighting

A) Underwater Wet-Niche
- Installed where top of fixture lens is not less than 18" below water line.
- Bonded and secured to shell required a tool for fixture removal
- Low voltage lines from UL listed transformer separate from line voltage
- GFCI protected per 680.23 (A) (3)
- Connections in Wet-Niche must be potted 680.23 (B) (4)
- Metal parts in contact with pool water need to be corrosion-resistant.
- Junction Boxes for pools must be UL listed for use

B) Dry-Niche
- Provided with a means for drainage of water
- One equipment-grounding conductor for each conduit entry

A) No-Niche
- UL listed for use
- Installed in forming shells connected by means of a bracket

Receptacles

A) Receptacles for circulation and sanitation systems of pools need to be located at least 10' but not less than 6' from pool wall unless they are a single receptacle, of the grounding type & GFCI protected. 680.22 (A) (2)

B) Permanently installed pools require a receptacle at least 6' but no more than 20' from pool wall. 680.22 (A) (1)

C) All other receptacles within 20' of pool walls need to be GFCI protected. 680.22 (A) (4)

Pool Wiring

A) Feeder wires and branch circuit wires need to be installed in conduit 680.25 (A) 1

B) Conduit must be of the following type: RMC, IMC, LFNMC, PVC or other types in 680.25 (A) 1

Grounding

A) Grounding conductors must be insulated. 680.25 B

B) No splices in conductors—must land in terminals

Lighting Outlets

A) Existing lights less than 5' from pool and at least 5' above the water level need to be GFCI protected

B) New installation above pool or within 5' of pool wall need installed at least 12' above the water line

C) Indoor lights with a totally enclosed fixture or identified for use can be 7'6" above the water if GFCI protected.

D) Switches need to be at least 5' from the pool wall. UL listed and approved switches for use within 5' are permitted

NC Residential Building Code Appendix V

SWIMMING POOLS, SPAS AND HOT TUBS

(Pictures included in the body of the text are for informational purposes only)

NOTE: Where text and picture may differ, text is considered to be code and must be adhered to.

SECTION VG101 GENERAL

AV101.1 General. The provisions of this appendix shall control the design and construction of swimming pools, spas and hot tubs installed in or on the lot of a one- or two-family dwelling.

SECTION AV102 DEFINITIONS

AV102.1 General. For the purposes of these requirements, the terms used shall be defined as follows and as set forth in Chapter 2 of the 2018 NC Residential Code.

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, aboveground, and on-ground 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 the walls of the enclosing structure.

SWIMMING POOL, OUTDOOR. Any swimming pool which is not an indoor pool.

SECTION AG103 SWIMMING POOLS

AV103.1 In-ground pools. In-ground pools shall be designed and constructed in conformance with ANSI/NSPI-5 as listed in Section AV108.

AG103.2 Above-ground and on-ground pools. Above-ground and on-ground pools shall be designed and constructed in conformance with ANSI/NSPI-4 as listed in Section AV108.

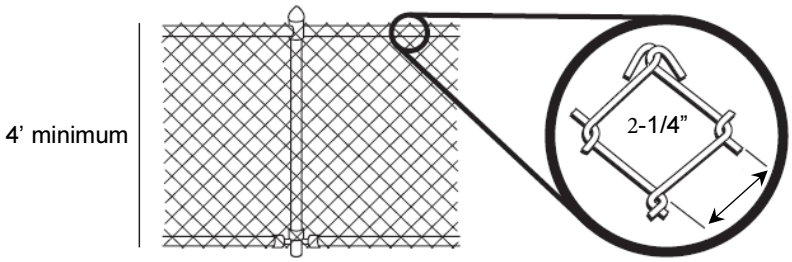
SECTION AG104 SPAS AND HOT TUBS

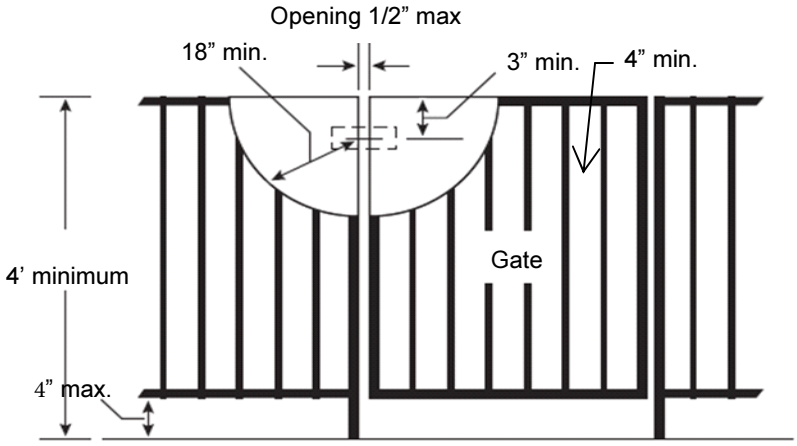
AV104.1 Permanently installed spas and hot tubs. Permanently installed spas and hot tubs shall be designed and constructed in conformance with ANSI/NSPI-3 as listed in Section AV108.

AV104.2 Portable spas and hot tubs. Portable spas and hot tubs shall be designed and constructed in conformance with ANSI/NSPI-6 as listed in Section AV108.

Construction Details

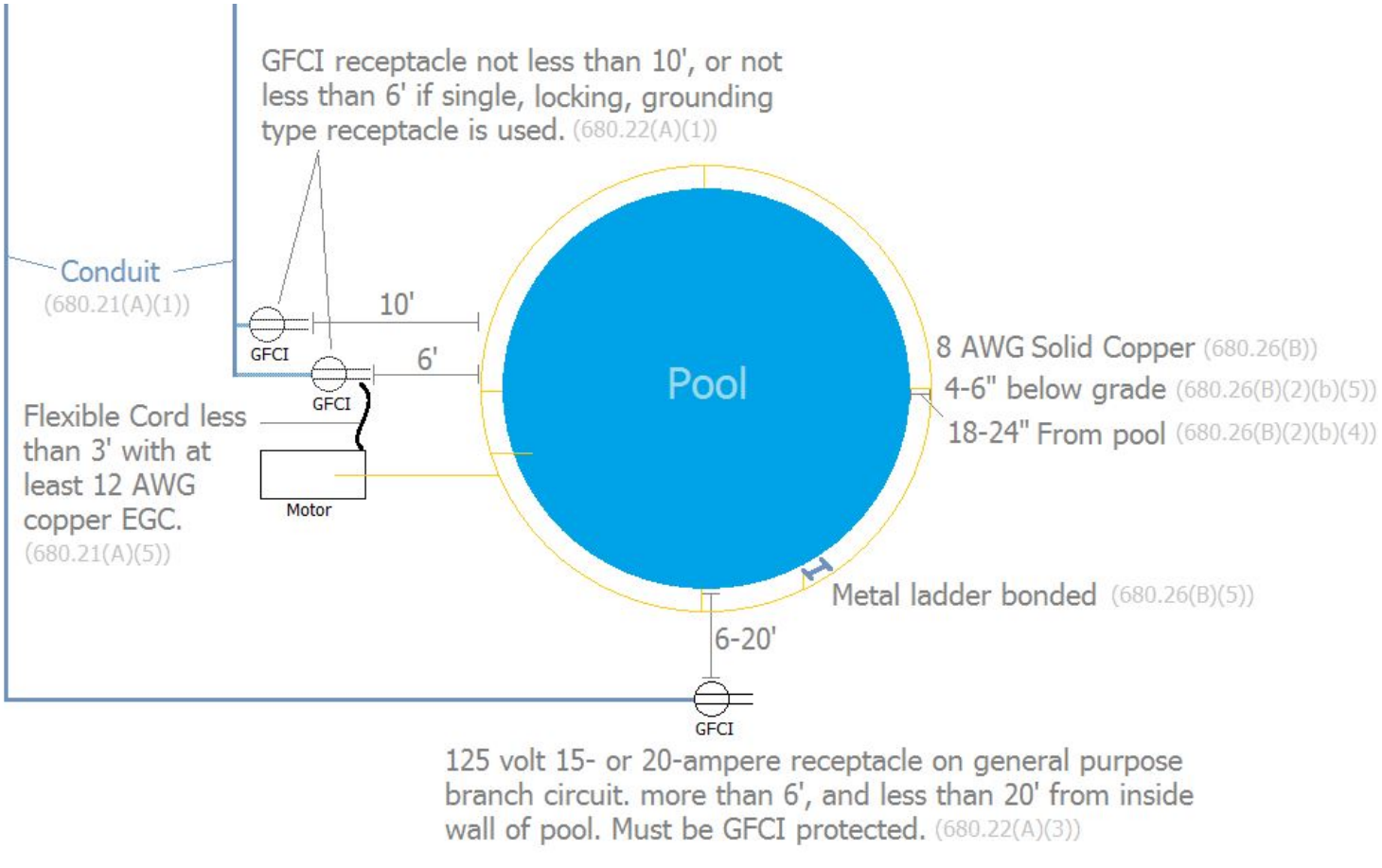
Fence and Gate Barriers





- A fence or other permanent barrier, such as a wall, is required to be completely around the pool. If the house is part of the barrier, the doors leading from the house to the pool must be protected with an alarm.
- The fence or other barrier must be a minimum of 4’ tall.
- Details for a chain link fence barrier is shown. A 2-1/4 ” maximum opening allowed.
- Details for a vertical fence barrier is shown. A 4” maximum opening allowed.
- Gate must swing outwards away from pool and be self-closing.
- Gate latching mechanism must be a minimum of 3" below gate 1/2" maximum openings within 18" of the latch or at least 54" high

Above Ground Pool Bonding

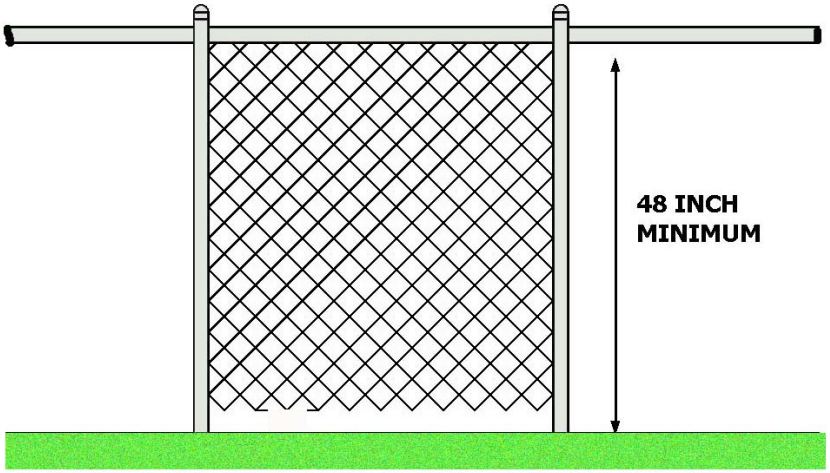


SECTION AV105 BARRIER REQUIREMENTS

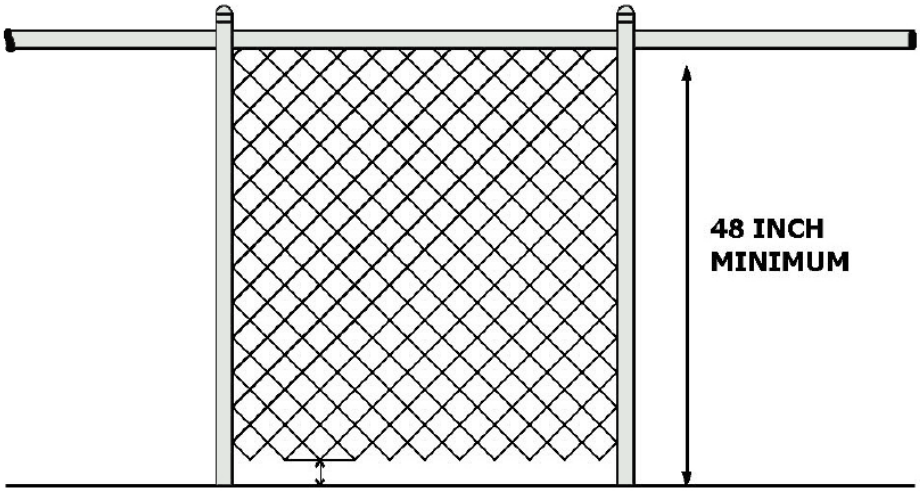
AV105.1 Application. The provisions of this chapter shall control the design of barriers for residential swimming pools, spas and hot tubs. These design controls are intended to provide protection against potential drownings and near-drownings by restricting access to swimming pools, spas and hot tubs.

AV105.2 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.

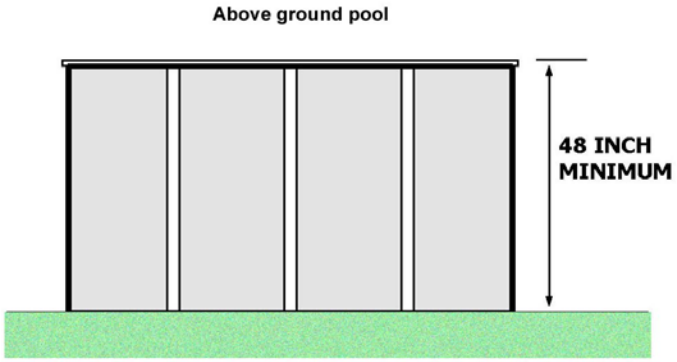


The maximum vertical clearance between grade and the bottom of the barrier shall be 4 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool.

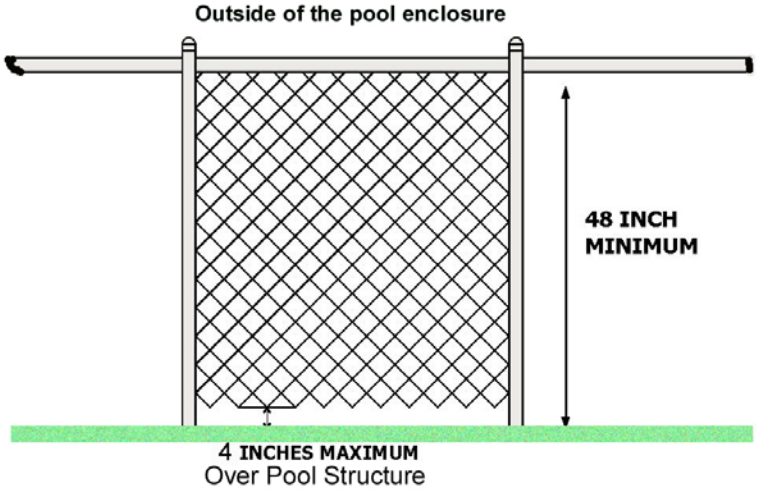


Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure.

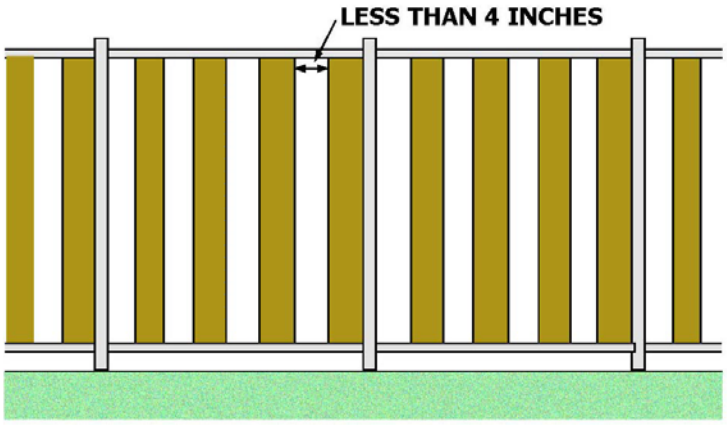
THE ABOVE GROUND SWIMMING POOL STRUCTURE COULD BE THE BARRIER IF:



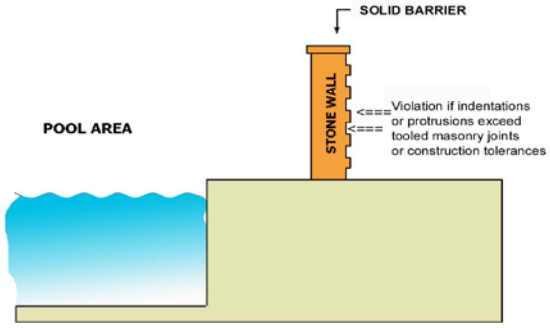
Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).

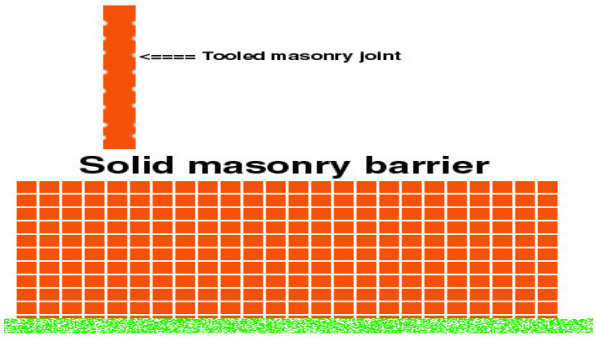


2. Openings in the barrier shall not allow passage of a 4-inch diameter (102 mm) sphere.

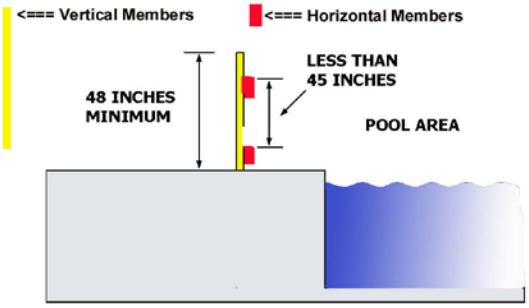


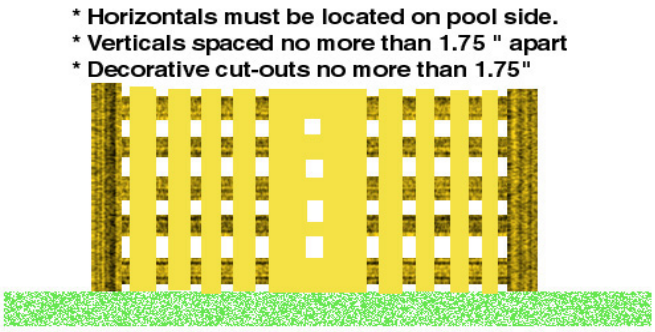
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

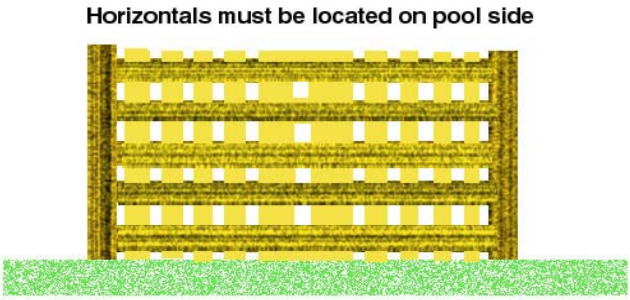


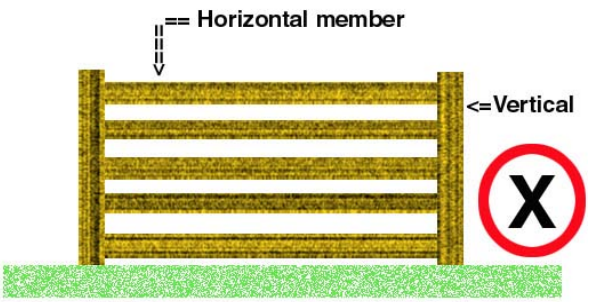


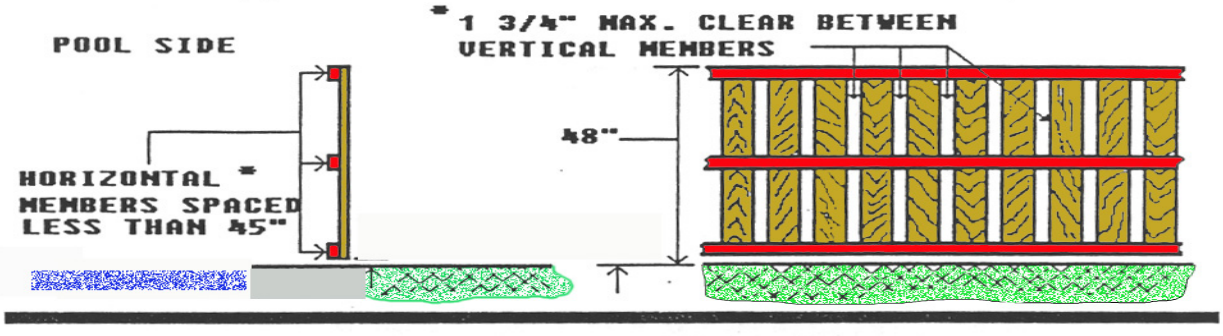
4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence.

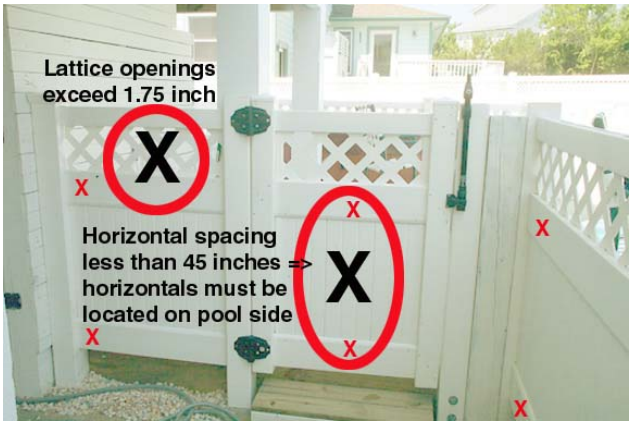


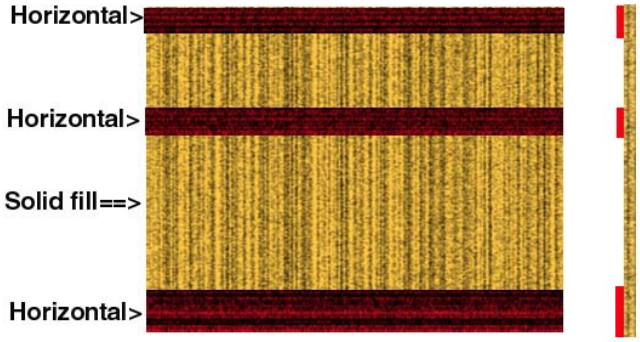




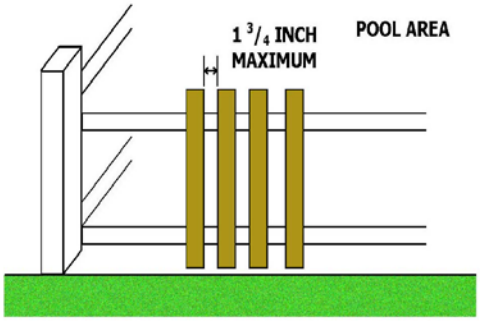




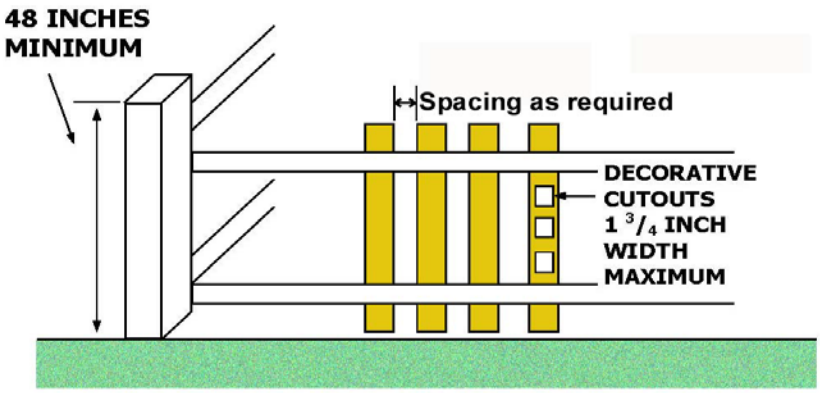




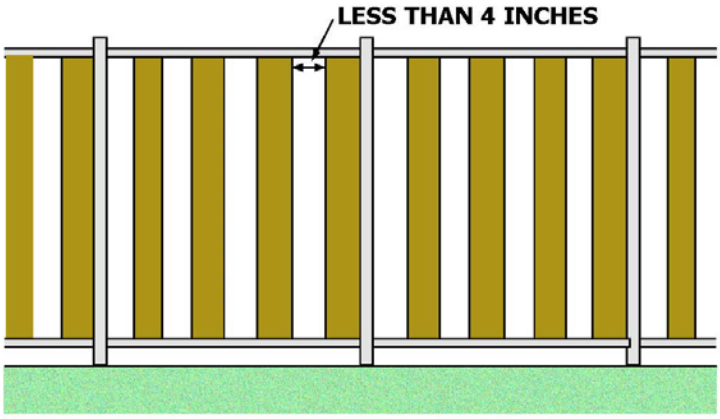
Spacing between vertical members shall not exceed 1.75 inches (44 mm) in width where horizontal members are less than 45".



Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1.75 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 the vertical members shall not exceed 4 inches (102 mm).



Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1.75 inches (44 mm) in width.

6. Maximum mesh size for chain link fences shall be a 2.25 inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 1.75 inches. (44 mm).

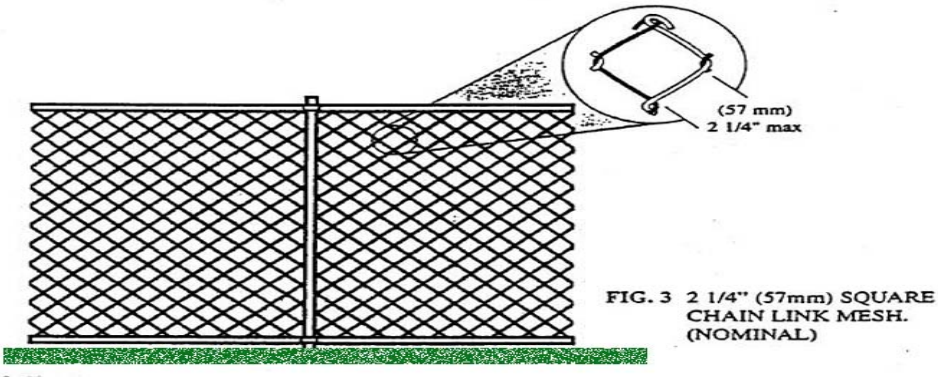
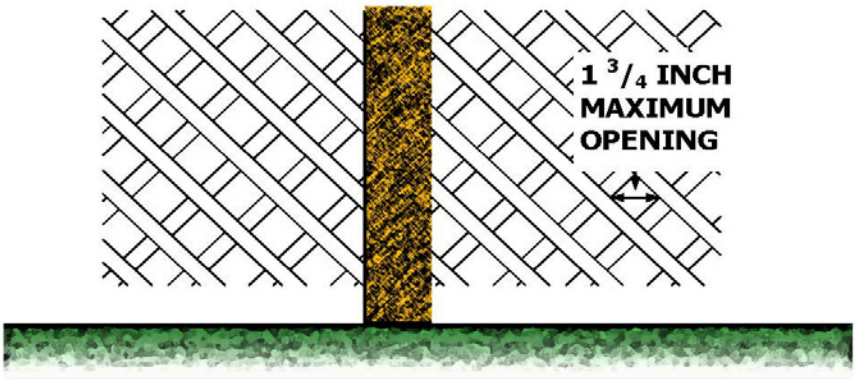


FIG. 3 2 1/4" (57mm) SQUARE CHAIN LINK MESH. (NOMINAL)

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 1.75 inches (44 mm).

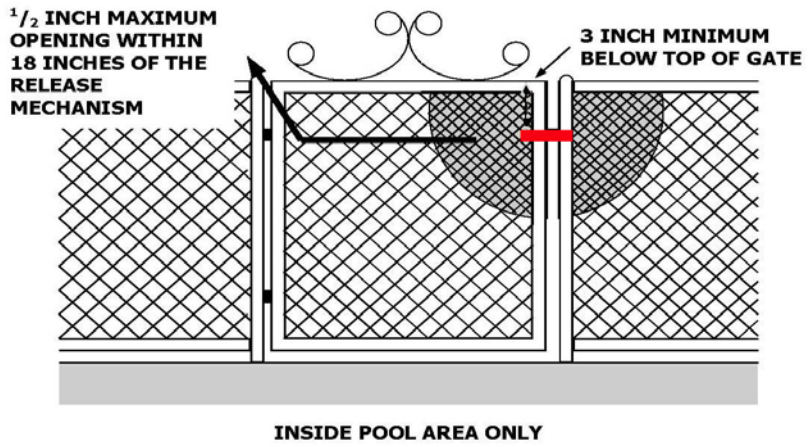


LATTICE FENCE

8. Access gates shall comply with the requirements of Section AV105.2, 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:

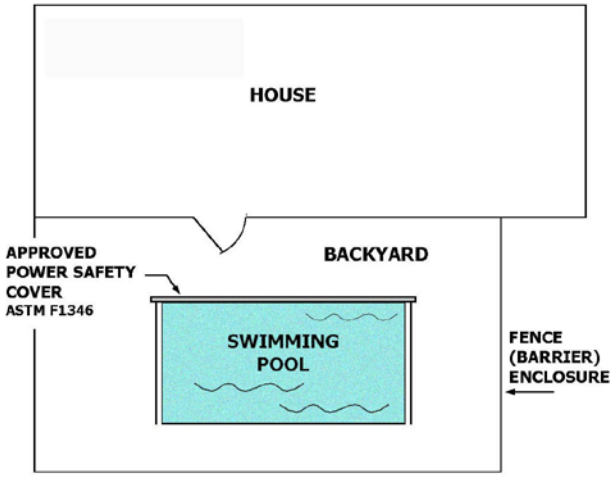
8.1 The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate, and

8.2 The gate and barrier shall have no opening larger than 0.5 inch (13 mm) within 18 inches (457 mm) of the release mechanism.



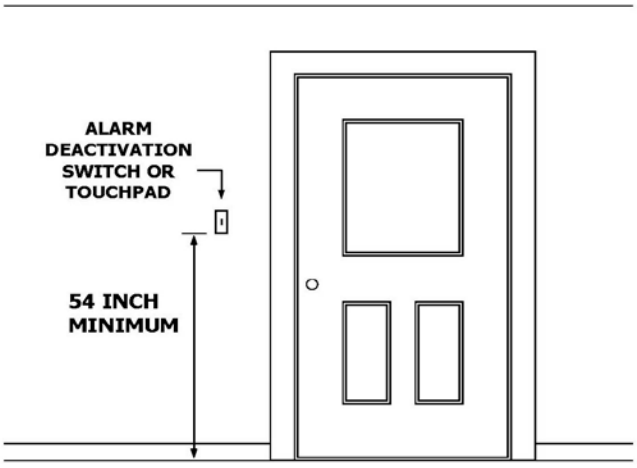
9. Where a wall of a dwelling serves as part of the barrier one of the following conditions shall be met:

9.1 The pool shall be equipped with a powered safety cover in compliance with ASTM F1346;



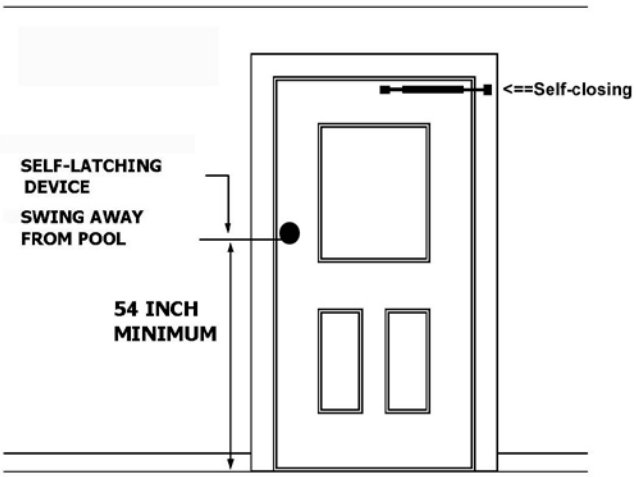
OR

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 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;



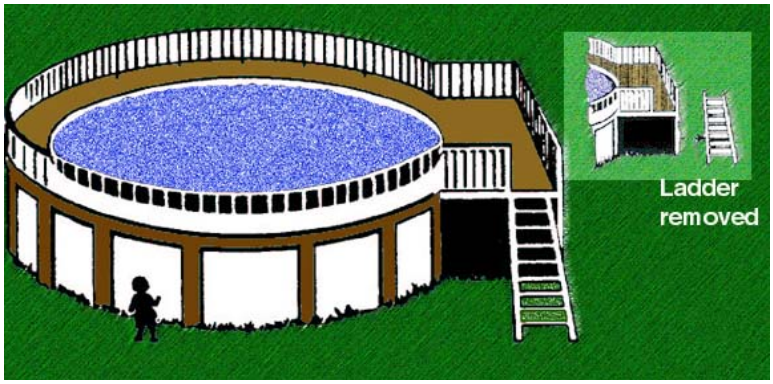
OR

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.

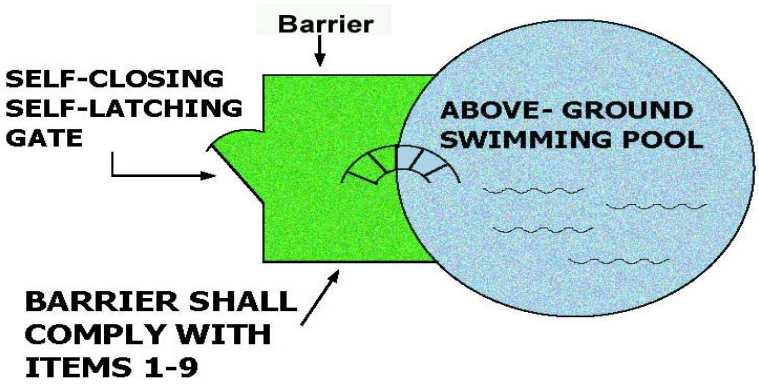


10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure; and the means of access is a ladder or steps:

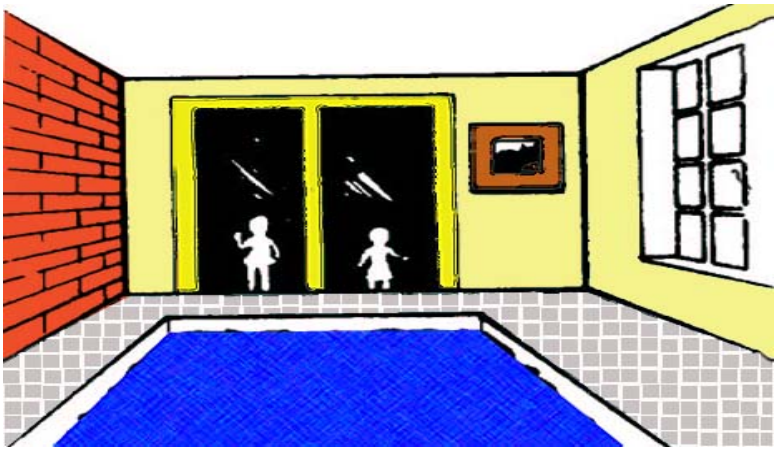
10.1 The ladder or steps shall be capable of being secured, locked or removed to prevent access; OR



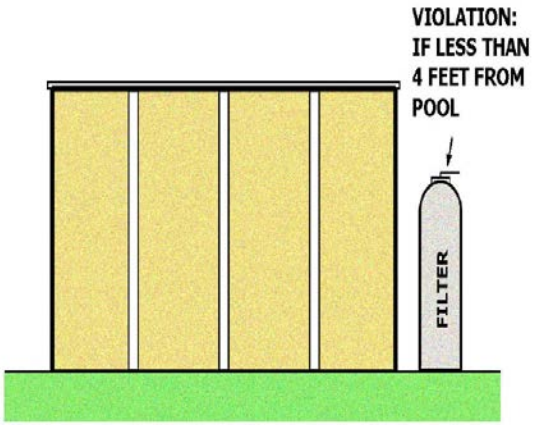
10.2 The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AV105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch diameter (102 mm) sphere.

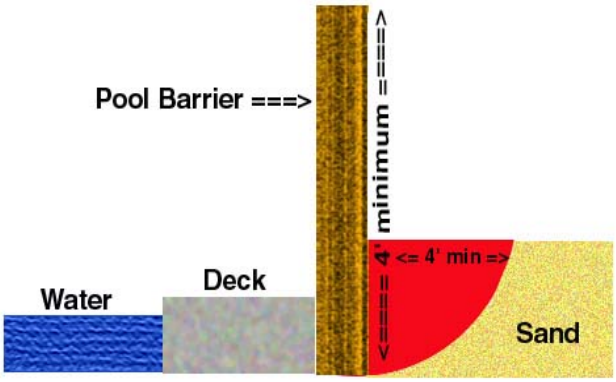


AG105.3 Indoor swimming pool. Walls surrounding an indoor swimming pool shall comply with Section AG105.2, Item 9.

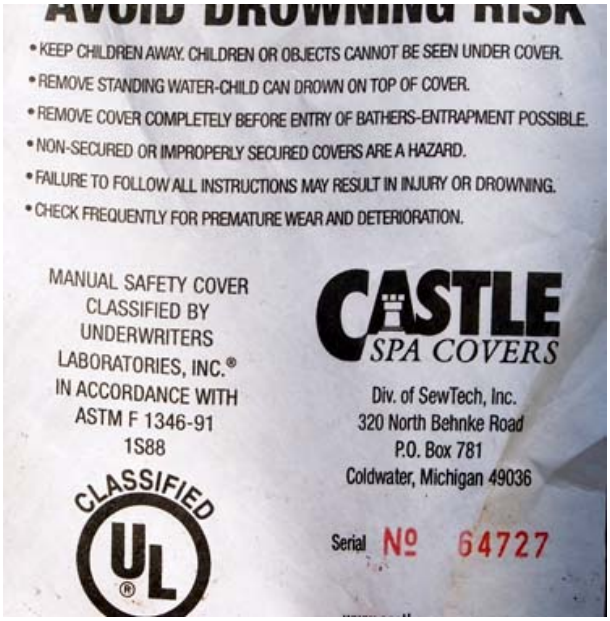


AG105.4 Prohibited locations. Barriers shall be located to prohibit permanent structures, equipment or similar objects from being used to climb them.





AV105.5 Barrier exceptions. Spas or hot tubs with a safety cover which complies with ASTM F1346, as listed in Section AG107, shall be exempt from the provisions of this appendix.



SECTION AV106
ENTRAPMENT PROTECTION FOR SWIMMING POOL AND SPA SUCTION OUTLETS

AV106.1 General. Suction outlets shall be designed to produce circulation throughout the pool or spa. Single-outlet systems, such as automatic vacuum cleaner systems, or multiple suction outlets, whether isolated by valves or otherwise, shall be protected against user entrapment.

AV106.2 Suction fittings. Pool and spa suction outlets shall have a cover that conforms to ANSI/ASME A112.19.8M, or an 18 inch x 23 inch (457 mm by 584 mm) drain grate or larger, or an approved channel drain system**.**

Exception: Surface skimmers

AV106.3 Atmospheric vacuum relief system required. Pool and spa single- or multiple-outlet circulation systems shall be equipped with atmospheric vacuum relief should grate covers located therein become missing or broken. This vacuum relief system shall include at least one approved or engineered method of the type specified herein, as follows:

1. Safety vacuum release system conforming to ASME A112.19.17; or
2. An approved gravity drainage system.

AV106.4 Dual drain separation. Single or multiple pump circulation systems shall be provided with a minimum of two suction outlets of the approved type. A minimum horizontal or vertical distance of 3 feet (914 mm) shall separate the outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum-relief-protected line to the pump or pumps.

AV 106.5 Pool cleaner fittings. Where provided, vacuum or pressure cleaner fitting(s) shall be located in an accessible position(s) at least 6 inches (152 mm) and not more than 12 inches (305 mm) below the minimum operational water level or as an attachment to the skimmer(s).

SECTION AG107 ABBREVIATIONS

AV107.1 General

ANSI – American National Standards Institute
11 West 42nd Street, New York, NY 10036

ASME – American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016-5990

ASTM – ASTM International
100 Barr Harbor Drive, West Conshohocken, PA 19428

NSPI – National Spa and Pool Institute
2111 Eisenhower Avenue, Alexandria, VA 22314

UL – Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, Illinois 60062 – 2096

SECTION AG108 STANDARDS

AV 108.1 General

ANSI/NSPI

ANSI/NSPI-3-99 Standard for Permanently Installed Residential Spas AG104.1

ANSI/NSPI-4-99 Standard for Above-ground/On-ground Residential Swimming Pools AG103.2

ANSI/NSPI-6-99 Standard for Residential Portable Spas AG104.2

ANSI/NSPI-5-2003 Standard for Residential In-ground Swimming Pools AG103.1

ANSI/ASME A112.19.8M-1987 (R1996) Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs and Whirlpool Bathing Appliances AG106.2

ASTM

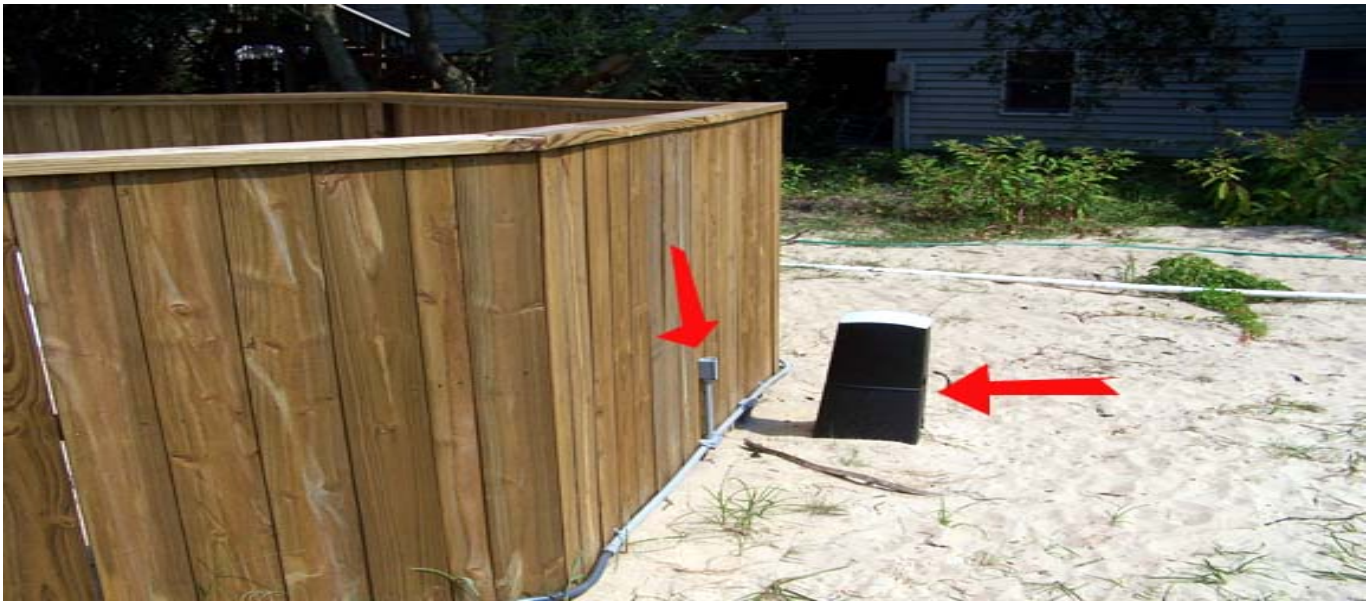
ASTM F 1346-91 (2003) Performance Specification For Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs	AG105.2, AG105.**5**

ASME

ASME A112.19.17 Manufacturers Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub and Wading Pool	AG106.3
UL2017-2000 Standard for General-purpose Signaling Devices and Systems-with Revisions Through June 2004	AG105.2

Additional Images

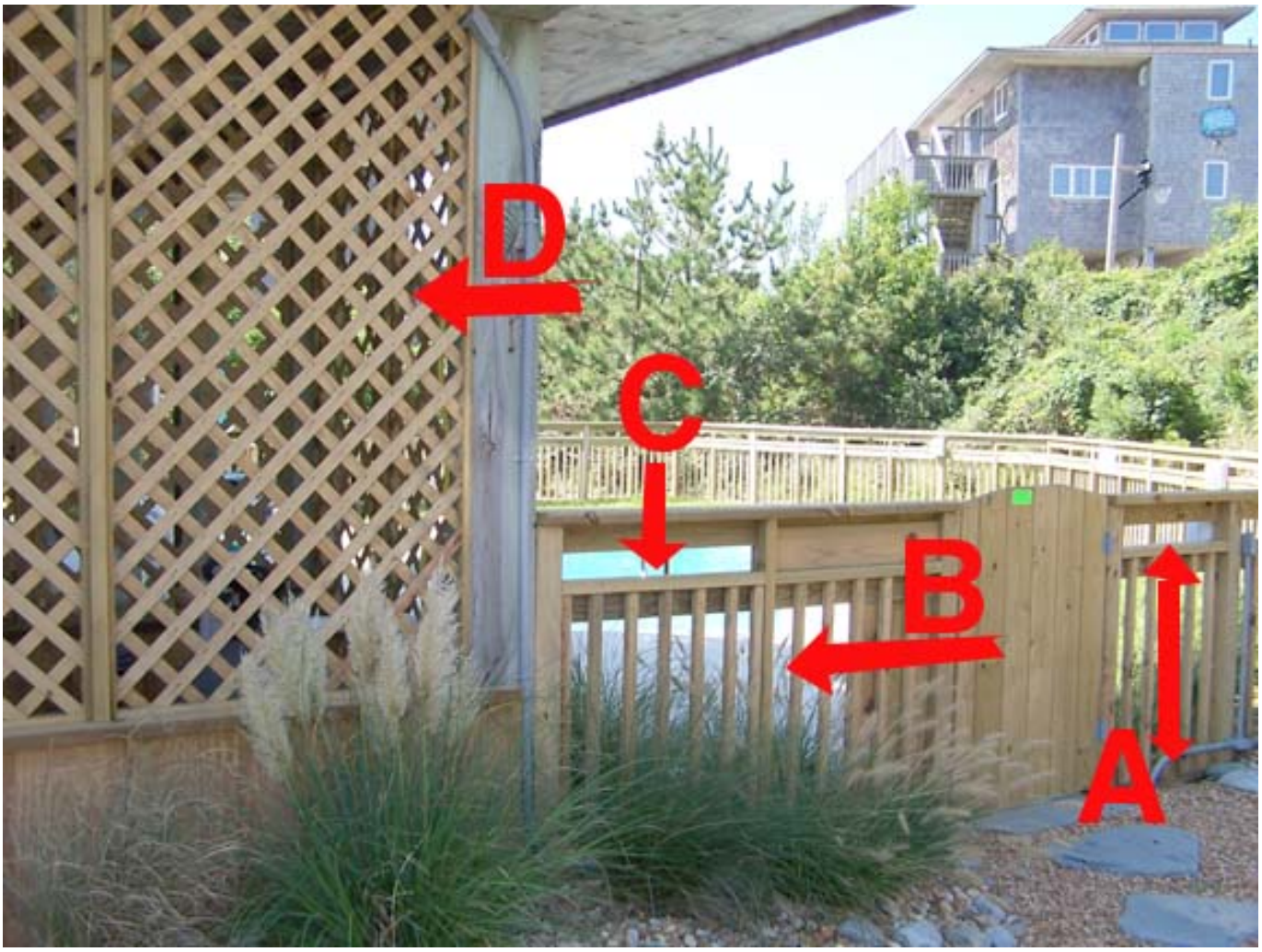
This barrier is 4 feet high and would meet barrier requirements if not for the electrical conduit. The conduit becomes a horizontal member and the location causes the horizontals to be less than 45 inches apart. This requires the conduit to be placed on the poolside, or on the top or bottom of the barrier to meet code.



This barrier meets the minimum 4 feet height and barrier wall construction requirements but the location of the optical lighting equipment and the electrical device box provide assistance in climbing the barrier thus violating the provisions of **Section AG105.4 Prohibited Locations .**

The above picture illustrates violations of **Section AG105.4 – Prohibited Locations**. The placement of this pool equipment and supporting electrical wiring help aid in climbing the barrier.

This barrier is 5 feet high and the lowest part of the pool equipment shed is 4 feet high. The horizontal members are spaced less than 45 inches apart so the verticals are spaced no more than 1 ¾ inches and the electrical conduit is OK. Problems: the optical lighting unit and the plumbing pipe location assist in climbing the barrier.



This barrier overall is 4 feet high. **(A)** The horizontals are less than 45 inches apart so they must be located on the poolside. **(B)** The required vertical spacing for verticals is a maximum of 1 ¾ inches when horizontals are spaced less than 45 inches apart. These verticals exceed the maximum spacing. **(C)** The decorative openings exceed the maximum 1 ¾ inches square allowed by code. **(D**) The lattice by the pool barrier violates Section AG105.4 in that the lattice spacing exceeds 1 ¾ inches there by providing a means to climb beside the barrier.

AG105.4 Prohibited locations. Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers. *(Also see pages 10 and 11 of this guide.)*

NOTE: Locating the pool barrier or locating structures, equipment or similar objects near the barrier may violate the provisions of AG105.4. Some equipment or materials such as electrical conduit, outlet boxes, plumbing, etc. that are attached to the pool barrier exterior may also be considered a part of the barrier construction itself and found non-compliant.

How do I schedule a required inspection

Please call our Mainland Office at 252-232-3378 or
Corolla Office at 252-543-8555

We hope you found the information in this guide useful. If you have any questions, please feel free to contact us.