City of MURFREESBORO TENNESSEE

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To: All Pool Contractors

From: Murfreesboro Building and Codes Dept.

Date: August 24, 2010

RE: STATE OF TENNESSEE POOL ALARM REQUIREMENTS

Attached please find a copy of Tennessee Code Annotated Title 47 and Title 68, Chapter 14 related to swimming pools which require a pool alarm to sound when people or objects weighing 15 pounds or more enters a pool. The City of Murfreesboro will begin enforcing this State Law for all pool permits issued on or after January 1, 2011. After construction of the pool is completed and the fence is installed, a final inspection is required by the City of Murfreesboro. This pool alarm must be installed and operational at the time of the final inspection.

Please call our office at (615) 893-3750 if you need further information.

Building & Codes
111 West Vine Street, 2nd Floor * P.O. Box 1139 * Murfreesboro, TN 37133-1139 * Office: 615 893 3750 * Fax: 615 217 3016

PUBLIC CHAPTER NO. 850

SENATE BILL NO. 3019

By Burks, Marrero, Henry, Ford, Haynes, Barnes, Berke, Jackson, Herron, Finney, Kyle, Stewart, Tate, Harper

Substituted for: House Bill No. 3156

By Curtiss, Moore, Hardaway, Cooper, Gilmore

AN ACT to amend Tennessee Code Annotated, Title 47 and Title 68, Chapter 14, relative to swimming pools.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Title 68, Chapter 14, is amended by adding the following as a new part thereto:

§ 68-14-801. This part shall be known and may be cited as "Katie Beth's Law".

§ 68-14-802. For purposes of this part, unless the context otherwise requires:

(1) "Pool alarm" means a device which emits a sound of at least fifty (50) decibels when a person or an object weighing fifteen (15) pounds or more enters the water in a swimming pool, but shall not include, swimming protection alarm devices designed for individual use, such as an alarm attached to a child that sounds when the child exceeds a certain distance or becomes submerged in water;

(2) "Residential dwelling" means a one-family or two-family dwelling structure; and

(3) "Swimming pool" means any structure that is intended for swimming or recreational bathing and contains water over thirty-six inches (36") deep, including, but not limited to, in-ground, aboveground, and on-ground swimming pools; hot tubs; and nonportable spas.

§ 68-14-803. Each person, enterprise, agency or entity that sells swimming pools to the general public shall post in a prominent place a sign, at least six inches (6") high and fourteen inches (14") wide, that reads as follows:

STATE LAW REQUIRES A POOL ALARM BE INSTALLED.

§ 68-14-804. Each person, enterprise, agency or entity that purchases or acquires a swimming pool to be installed after the effective date of this act shall install a pool alarm before using or making available for use such swimming pool.

§ 68-14-805.

(a) When an electrical inspection is required for the installation of a swimming pool, the electrical inspector shall not give final approval for the electrical wiring unless a properly functioning swimming pool alarm has been installed.

(b)(1) No local government shall issue a building permit for the construction or substantial alteration of a swimming pool located at a residential dwelling unless the project calls for a functioning swimming pool alarm to be installed prior to the completion of the construction project.

(2) It is an offense for any person, firm, association or corporation to knowingly accept a building permit for a swimming pool located at a residential dwelling unless a functioning swimming pool alarm will be installed prior to the completion of the construction project.

§ 68-14-806. A violation of this part is a Class C misdemeanor, punishable by a fine only not to exceed one hundred dollars ($100). Second and subsequent offenses shall be punishable by a fine only of not more than five hundred dollars ($500).

§ 68-14-807. The provisions of this part shall not apply to public swimming pools or multi-family residential housing swimming pools, as defined in § 68-14-302.

SECTION 2. This act shall take effect January 1, 2011, the public welfare requiring it.

PASSED: April 22, 2010

RON RAMSEY
SPEAKER OF THE SENATE

KENT WILLIAMS, SPEAKER
HOUSE OF REPRESENTATIVES

APPROVED this 30th day of April 2010

PHIL BREDESEN, GOVERNOR

City of MURFREESBORO TENNESSEE

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TO: All Pool Contractors and Electrical Contractors

FROM: Murfreesboro Building and Codes Dept.

RE: Bonding of Pool Area

DATE: May 6, 2013

Attached is a copy of Article 680.26 Bonding from the 2002 National Electrical Code. This article outlines the requirements for bonding pool areas of permanently installed pools.

A permanent pool is a pool capable of holding water a depth greater than 42" and all pools installed inside a building regardless of water depth. Water depth is defined as the highest level water can reach before it spills out. Above ground pools with a maximum water depth greater than 42" are classified as permanent pools.

The purpose of this document is not to list specific code requirements, but to give a brief overview of the code so that installers will better understand the pool bonding requirements that will need to be completed prior to our electrical inspection.

Article 680.26 Bonding (Permanent Pools) requires bonding of the metal parts of a pool structure including the reinforcing metal of the pool shell, coping stones, deck, underwater light fixtures, metal fittings, metal parts of electrical equipment associated with the pool water circulating system, metal parts of pool covers, metal sheathed cable, metal piping and fixed metal parts.

Please refer to the actual code text for a specific description of the bonding requirements.

bonding of pool areas/memo to pool & elec cont./Robert let/5/6/13

Building & Codes Department
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* Phone 615 893 3750 * Fax 615 848 3248
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ing terminal of the pool equipment panelboard and the grounding terminal of the applicable service equipment or source of a separately derived system. For other than (1) existing feeders covered in 680.25(A), Exception or (2) feeders to separate buildings that do not utilize an insulated equipment grounding conductor in accordance with 680.25(B)(2), this equipment grounding conductor shall be insulated.

(1) Size. This conductor shall be sized in accordance with 250.122 but not smaller than 12 AWG. On separately derived systems, this conductor shall be sized in accordance with Table 250.66 but not smaller than 8 AWG.

(2) Separate Buildings. A feeder to a separate building shall be permitted to supply swimming pool equipment branch circuits, or feeders supplying swimming pool equipment branch circuits, if the grounding arrangements in the separate building meet the requirements in 250.32. Where installed, a separate equipment grounding conductor shall be an insulated conductor.

680.26 Bonding.

(A) Performance. The bonding required by this section shall be installed to eliminate voltage gradients in the pool area as prescribed.

FPN: This section does not require that the 8 AWG or larger solid copper bonding conductor be extended or attached to any remote panelboard, service equipment, or any electrode.

(B) Bonded Parts. The parts specified in 680.26(B)(1) through (B)(5) shall be bonded together.

(1) Metallic Structural Components. All metallic parts of the pool structure, including the reinforcing metal of the pool shell, coping stones, and deck, shall be bonded. The usual steel tie wires shall be considered suitable for bonding the reinforcing steel together, and welding or special clamping shall not be required. These tie wires shall be made tight. If reinforcing steel is effectively insulated by an encapsulating nonconductive compound at the time of manufacture and installation, it shall not be required to be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, provisions shall be made for an alternate means to eliminate voltage gradients that would otherwise be provided by unencapsulated, bonded reinforcing steel.

(2) Underwater Lighting. All forming shells and mounting brackets of no-niche luminaires (fixtures) shall be bonded unless a listed low-voltage lighting system with nonmetallic forming shells not requiring bonding is used.

(3) Metal Fittings. All metal fittings within or attached to the pool structure shall be bonded. Isolated parts that are not over 100 mm (4 in.) in any dimension and do not penetrate into the pool structure more than 25 mm (1 in.) shall not require bonding.

(4) Electrical Equipment. Metal parts of electrical equipment associated with the pool water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors, shall be bonded. Metal parts of listed equipment incorporating an approved system of double insulation and providing a means for grounding internal nonaccessible, non–current-carrying metal parts shall not be bonded.

Where a double-insulated water-pump motor is installed under the provisions of this rule, a solid 8 AWG copper conductor that is of sufficient length to make a bonding connection to a replacement motor shall be extended from the bonding grid to an accessible point in the motor vicinity. Where there is no connection between the swimming pool bonding grid and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit.

(5) Metal Wiring Methods and Equipment. Metal-sheathed cables and raceways, metal piping, and all fixed metal parts except those separated from the pool by a permanent barrier shall be bonded that are within the following distances of the pool:

(1) Within 1.5 m (5 ft) horizontally of the inside walls of the pool
(2) Within 3.7 m (12 ft) measured vertically above the maximum water level of the pool, or any observation stands, towers, or platforms, or any diving structures

(C) Common Bonding Grid. The parts specified in 680.26(B) shall be connected to a common bonding grid with a solid copper conductor, insulated, covered, or bare, not smaller than 8 AWG. Connection shall be made by exothermic welding or by pressure connectors or clamps that are labeled as being suitable for the purpose and are of stainless steel, brass, copper, or copper alloy. The common bonding grid shall be permitted to be any of the following:

(1) The structural reinforcing steel of a concrete pool where the reinforcing rods are bonded together by the usual steel tie wires or the equivalent
(2) The wall of a bolted or welded metal pool
(3) A solid copper conductor, insulated, covered, or bare, not smaller than 8 AWG
(4) Rigid metal conduit or intermediate metal conduit of brass or other identified corrosion-resistant metal conduit

(D) Connections. Where structural reinforcing steel or the walls of bolted or welded metal pool structures are used as

a common bonding grid for nonelectrical parts, the connections shall be made in accordance with 250.8.

(E) Pool Water Heaters. For pool water heaters rated at more than 50 amperes that have specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded, and only those parts designated to be grounded shall be grounded.

680.27 Specialized Pool Equipment.

(A) Underwater Audio Equipment. All underwater audio equipment shall be identified for the purpose.

(1) Speakers. Each speaker shall be mounted in an approved metal forming shell, the front of which is enclosed by a captive metal screen, or equivalent, that is bonded to and secured to the forming shell by a positive locking device that ensures a low-resistance contact and requires a tool to open for installation or servicing of the speaker. The forming shell shall be installed in a recess in the wall or floor of the pool.

(2) Wiring Methods. Rigid metal conduit or intermediate metal conduit of brass or other identified corrosion-resistant metal, liquidtight flexible nonmetallic conduit (LFNC-B), or rigid nonmetallic conduit shall extend from the forming shell to a listed junction box or other enclosure as provided in 680.24. Where rigid nonmetallic conduit or liquidtight flexible nonmetallic conduit is used, an 8 AWG insulated solid or stranded copper equipment grounding conductor shall be installed in this conduit. The equipment grounding conductor shall be terminated in the forming shell and the junction box. The termination of the 8 AWG equipment grounding conductor in the forming shell shall be covered with, or encapsulated in, a listed potting compound to protect such connection from the possible deteriorating effect of pool water.

(3) Forming Shell and Metal Screen. The forming shell and metal screen shall be of brass or other approved corrosion-resistant metal. All forming shells shall include provisions for terminating an 8 AWG copper conductor.

(B) Electrically Operated Pool Covers.

(1) Motors and Controllers. The electric motors, controllers, and wiring shall be located not less than 1.5 m (5 ft) from the inside wall of the pool unless separated from the pool by a wall, cover, or other permanent barrier. Electric motors installed below grade level shall be of the totally enclosed type. The device that controls the operation of the motor for an electrically operated pool cover shall be located so that the operator has full view of the pool.

FPN No. 1: For cabinets installed in damp and wet locations, see 312.2(A).

FPN No. 2: For switches or circuit breakers installed in wet locations, see 404.4.

FPN No. 3: For protection against liquids, see 430.11.

(2) Protection. The electric motor and controller shall be connected to a circuit protected by a ground-fault circuit interrupter.

(C) Deck Area Heating. These provisions of this section shall apply to all pool deck areas, including a covered pool, where electrically operated comfort heating units are installed within 6.0 m (20 ft) of the inside wall of the pool.

(1) Unit Heaters. Unit heaters shall be rigidly mounted to the structure and shall be of the totally enclosed or guarded types. Unit heaters shall not be mounted over the pool or within the area extending 1.5 m (5 ft) horizontally from the inside walls of a pool.

(2) Permanently Wired Radiant Heaters. Radiant electric heaters shall be suitably guarded and securely fastened to their mounting device(s). Heaters shall not be installed over a pool or within the area extending 1.5 m (5 ft) horizontally from the inside walls of the pool and shall be mounted at least 3.7 m (12 ft) vertically above the pool deck unless otherwise approved.

(3) Radiant Heating Cables Not Permitted. Radiant heating cables embedded in or below the deck shall not be permitted.

III. Storable Pools

680.30 General. Electrical installations at storable pools shall comply with the provisions of Part I and Part III of this article.

680.31 Pumps. A cord-connected pool filter pump shall incorporate an approved system of double insulation or its equivalent and shall be provided with means for grounding only the internal and nonaccessible non–current-carrying metal parts of the appliance.

The means for grounding shall be an equipment grounding conductor run with the power-supply conductors in the flexible cord that is properly terminated in a grounding-type attachment plug having a fixed grounding contact member.

680.32 Ground-Fault Circuit Interrupters Required. All electrical equipment, including power-supply cords, used with storable pools shall be protected by ground-fault circuit interrupters.

FPN: For flexible cord usage, see 400.4.

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TO: All Swimming Pool Contractors

FROM: Gary Whitaker, Director
City of Murfreesboro Building and Codes Dept.

RE: Electrical wiring for above ground swimming pools

DATE: May 15, 2012

This memo is to clarify electrical requirements for above ground swimming pool equipment as per the 2002 National Electrical Code.

All above ground pools, unless meeting the definition of storable pools as defined in the 2002 NEC, must have a GFCI protected receptacle extended to the location of the pool equipment. The maximum length of a cord-connected pool filter pump is 3' and all pool equipment must be listed by an approved testing agency. The pump/filter equipment must be grounded to an approved ground rod unless double insulated.

Storable pools which are defined as those that are constructed on or above ground and are capable of holding water for a maximum depth of 42 inches or a pool with nonmetallic, molded polymeric walls or inflatable fabric walls regardless of dimension must comply with the following: all storable pool equipment must have GFCI protection. The 3 wire cord provided for storable pool filter equipment must be equipped with a grounding conductor included in the cord and may be longer than 3' and up to 25' if factory installed and listed by an approved testing agency. Additionally, the pump filter equipment must be double insulated or the equivalent of.

GW/bls:swimming pool contractors memo/gary let/5/14/12

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APPENDIX G

SWIMMING POOLS, SPAS AND HOT TUBS

SECTION AG101
GENERAL

AG101.1 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 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.

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

AG103.1 In-ground pools. In-ground pools shall be designed and constructed in conformance with ANSI/NSPI-5 as listed in Section AG108.

AG103.2 Above-ground and on-ground pools. Above-ground and on-ground pools shall be designed and constructed conformance with ANSI/NSPI-4 as listed in Section AG108.

SECTION AG104
SPAS AND HOT TUBS

AG104.1 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 AG108.

AG104.2 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 AG108.

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 $1^3/_4$ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed $1^3/_4$ 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 $1^3/_4$ inches (44 mm) in width.
6. Maximum mesh size for chain link fences shall be a $2^1/_4$-inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than $1^3/_4$ 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 $1^3/_4$ 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 $^1/_2$ 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 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 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.

SECTION AG106
ENTRAPMENT PROTECTION FOR SWIMMING POOL AND SPA SUCTION OUTLETS

AG106.1 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.

AG106.2 Suction fittings. Pool and spa suction outlets shall have a cover that conforms to ANSI/ASME A112.19.8M, or an 18 inch × 23 inch (457 mm by 584 mm) drain grate or larger, or an approved channel drain system.

Exception: Surface skimmers

AG106.3 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.

AG106.4 Dual drain separation. Single or multiple pump circulation systems have 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.

AG106.5 Pool cleaner fittings. Where provided, vacuum or pressure cleaner fitting(s) shall be located in an accessible posi-

tion(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

AG107.1 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

AG108.1 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-5-99 Standard for Residential In-ground Swimming Pools AG103.1

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

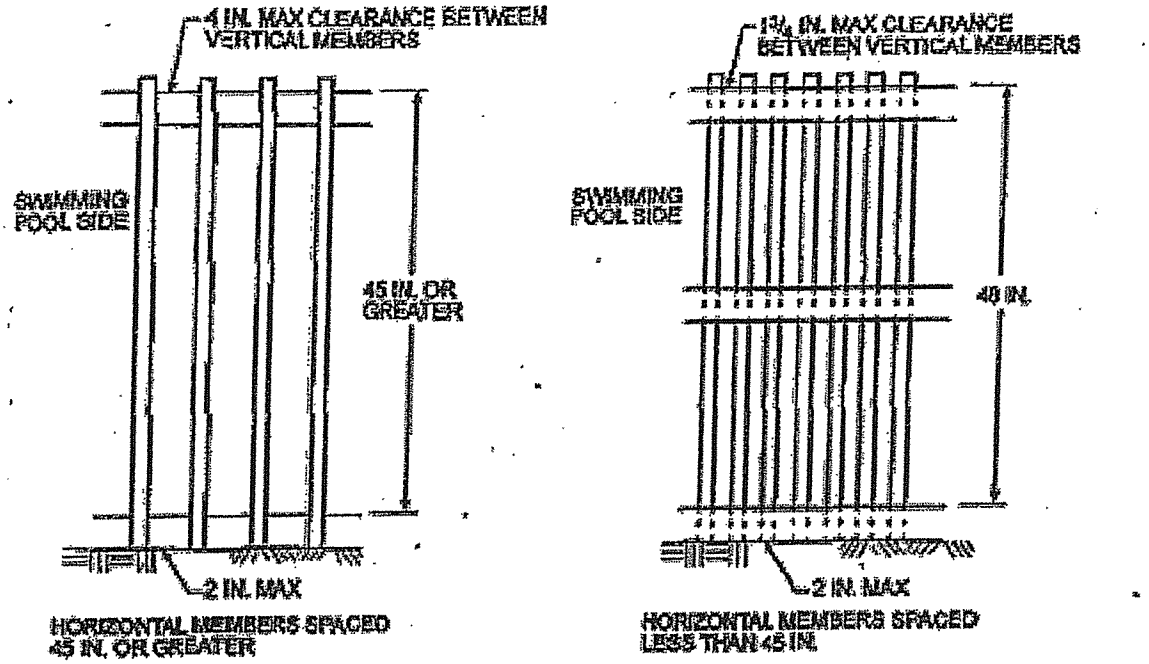
ASTM F 1346-91 (2003) Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs AG105.2, AG105.5

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

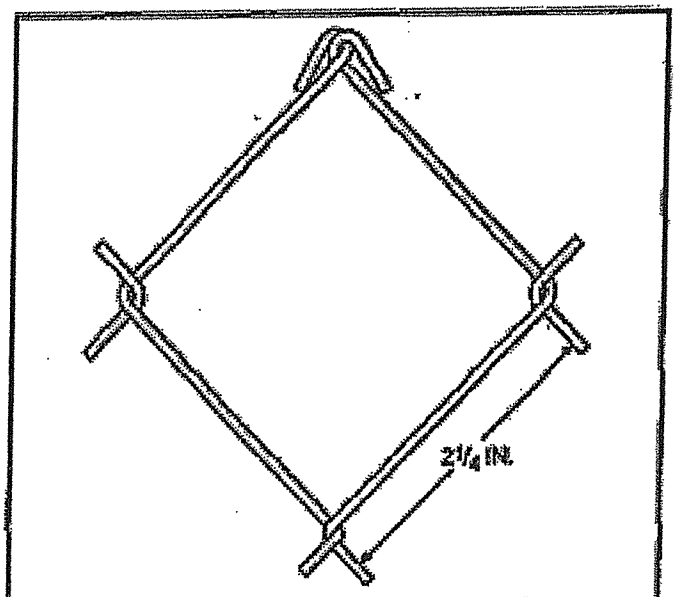
UL

UL2017-2000 Standard for General-purpose Signaling Devices and Systems—with Revisions through June 2004. . . . . AG105.2



For SI: 1 inch = 25.4 mm.

Figure AG105.2(2)
PRIVATE SWIMMING POOL BARRIER CONSTRUCTION



For SI: 1 inch = 25.4 mm.

Figure AG105.2(3)
CHAIN-LINK FENCE MESH FOR PRIVATE SWIMMING POOLS

403.2.3 Building cavities (Mandatory). Building framing cavities shall not be used as supply ducts.

403.3 Mechanical system piping insulation (Mandatory). Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

403.4 Circulating hot water systems (Mandatory). All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily *accessible* manual switch that can turn off the hot-water circulating pump when the system is not in use.

403.5 Mechanical ventilation (Mandatory). Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

403.6 Equipment sizing (Mandatory). Heating and cooling equipment shall be sized in accordance with Section M1401.3 of the *International Residential Code*.

403.7 Systems serving multiple dwelling units (Mandatory). Systems serving multiple dwelling units shall comply with Sections 503 and 504 in lieu of Section 403.

403.8 Snow melt system controls (Mandatory). Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.

403.9 Pools (Mandatory). Pools shall be provided with energy-conserving measures in accordance with Sections 403.9.1 through 403.9.3.

403.9.1 Pool heaters. All pool heaters shall be equipped with a readily *accessible* on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas or LPG shall not have continuously burning pilot lights.

403.9.2 Time switches. Time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Where pumps are required to operate solar- and waste-heat-recovery pool heating systems.

403.9.3 Pool covers. Heated pools shall be equipped with a vapor-retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12.

Exception: Pools deriving over 60 percent of the energy for heating from site-recovered energy or solar energy source.

SECTION 404
ELECTRICAL POWER AND LIGHTING SYSTEMS

404.1 Lighting equipment. A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

SECTION 405
SIMULATED PERFORMANCE ALTERNATIVE (Performance)

405.1 Scope. This section establishes criteria for compliance using simulated energy performance analysis. Such analysis shall include heating, cooling, and service water heating energy only.

405.2 Mandatory requirements. Compliance with this section requires that the mandatory provisions identified in Section 401.2 be met. All supply and return ducts not completely inside the *building thermal envelope* shall be insulated to a minimum of R-6.

405.3 Performance-based compliance. Compliance based on simulated energy performance requires that a proposed residence (*proposed design*) be shown to have an annual energy cost that is less than or equal to the annual energy cost of the *standard reference design*. Energy prices shall be taken from a source *approved* by the *code official*, such as the Department of Energy, Energy Information Administration's *State Energy Price and Expenditure Report*. *Code officials* shall be permitted to require time-of-use pricing in energy cost calculations.

Exception: The energy use based on source energy expressed in Btu or Btu per square foot of *conditioned floor area* shall be permitted to be substituted for the energy cost. The source energy multiplier for electricity shall be 3.16. The source energy multiplier for fuels other than electricity shall be 1.1.

405.4 Documentation.

405.4.1 Compliance software tools. Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the *code official*.

405.4.2 Compliance report. Compliance software tools shall generate a report that documents that the *proposed design* complies with Section 405.3. The compliance documentation shall include the following information:

1. Address or other identification of the residence;
2. An inspection checklist documenting the building component characteristics of the *proposed design* as listed in Table 405.5.2(1). The inspection checklist shall show results for both the *standard reference design* and the *proposed design*, and shall document all inputs entered by the user necessary to reproduce the results;
3. Name of individual completing the compliance report; and