



TOWNSHIP OF HILLSBOROUGH

COUNTY OF SOMERSET

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RESIDENTIAL SWIMMING POOLS

rev 4-25-2014

Based on the 2009 INTERNATIONAL RESIDENTIAL CODE NEW JERSEY EDITION

THIS GENERIC GUIDE IS FOR ONE AND TWO FAMILY DWELLINGS. THIS NOT AN ALL INCLUSIVE AND DOES NOT ADDRESS ALL CONDITIONS

Call before you dig! 1-800-272-1000 New Jersey One Call. Utility Mark Out.

Definitions:

SWIMMING POOL. Any structure intended for swimming or recreational bathing that contains water over 24 inches deep. This includes in-ground, above-ground and on-ground seasonal pools hot tubs, and spas.

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

Required inspections: Dependent on the type of pool installed, you may need the following:

Building: Footing, Sub grade preparation, Steel, Pre-collar, Post collar, Final and Barrier Inspection.

Electric: Trench, Bonding, Equipotential Bonding & Final

Plumbing: Bottom Drain Rough and Final.

Pools with heaters: Gas Pipe Rough, Final and Solar cover

Fire: Final for indoor pools with Gas Heaters

**PLANS MUST BE PREPARED BY A NEW JERSEY LICENSED DESIGN PROFESSIONAL
CONTRACTORS CAN NOT PREPARE PLANS FOR POOLS**

Section 1

All proposed on-ground, above-ground, in-ground pools or seasonal pools require approval from the Zoning Department prior to the submittal of a construction permit application. For an **IN GROUND POOL** provide proof of Zoning Approval prior to filing.

All proposed in-ground pools require approval from the Township Engineer as well as zoning.

All proposed on ground, above ground, in-ground pools or seasonal pools require a Construction Permit issued by the Township Construction Official. Swimming pools are to comply with the 2009 INTERNATIONAL RESIDENTIAL CODE N.J. Edition – APPENDIX G.

Pool Standards: These standards can be found on line @ www.ANSI.ORG.

- In-ground pools shall be designed and constructed in conformance with ANSI/NSPI-5-2003.
- Above ground and on-ground pools shall be designed and constructed in conformance with ANSI/NSPI-4-99.
- Permanently installed spas and hot tubs shall be designed and constructed in conformance with ANSI/NSPI-3-99.
- Portable spas and hot tubs shall be designed and constructed in conformance with ANSI/NSPI-6-99.

Section 2

The following must be submitted with the Construction Permit Application

Completed CONSTRUCTION PERMIT APPLICATION FOLDER, TECHNICAL FORMS: BUILDING, ELECTRIC, PLUMBING as applicable, and FIRE for indoor pools with gas heaters

Plans with the following information:

- Two site plans
 - a. Size, shape and location of the pool.
 - b. Size, shape and location of all other permanent structures.
 - c. Location of pool compliant barrier with gate locations.
 - d. Location and description of the filtration and pool heating systems.

Section 3 IN-GROUND POOLS

Provide two (2) copies of signed and sealed structural pool plans by a registered New Jersey Design Professional. Temporary fencing is required during IN-GROUND POOL construction.

Plans to include:

- Accurate plans showing dimensions and construction of the pool. Vertical elevations and sections through the pool showing depth of water.
- Manufacturer's specifications on prefabricated pools including sub-soil materials requirements.
- For concrete pools, structural steel design, re-bar size and spacing.
- Electrical bonding of the steel.
- Type of concrete finish material, P.S.I. of concrete.

- Type of coping material.
- Egress from the pool both shallow and deep end (steps, swim outs).
- Rope and Float location where the point of first slope changes.
- Slide locations and attachment.
- Diving boards.
 - a. Length of board and projection into the pool.
 - b. Height above water line and the water depth at diving board end of the pool.
- Two copies of the manufactures' specifications and installation instructions for any diving boards, stairways, slides, or ladders to be installed.
- Please see Plumbing and Electrical requirements for further details.

Section 4 ON or ABOVE GROUND POOLS and SEASONAL POOLS

Plans to include:

- Provide two (2) sets of manufactures' installation instructions for the pool, filtration system, ladder, slide and accessories.
- Please see Plumbing and Electrical requirements for further details.
- For any newly constructed decks or staircases associated with the pool, a construction application must be presented separately with its own related documents.
- Please see POOL BARRIERS to see if the proposed pool meets the barrier requirements.

Section 5 POOL BARRIERS

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 subject to this code. These design controls are intended to provide protection against potential drowning and near-drowning 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 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 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.
2. Openings in the barrier shall not allow passage of a 4-inch diameter 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 1¾ inches in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1 ¾ 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 shall not exceed 4 inches. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1¾ inches in width.

6. Maximum mesh size for chain link fences shall be a 2¼ inch square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 1¾ inches.

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 1¾ inches.

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 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 below the top of the gate; and
- 8.2. The gate and barrier shall have no opening larger than ½ inch within 18 inches of the release mechanism.
- If the only gate to access the pool is a double gate than a locking cane-bolt must be installed on the passive side. The active side must meet the requirements of pedestrian access gates.

9. Deleted

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 Deleted
- 10.2 The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AG105.2, Items 1 through 8.

AG105.3 Indoor Swimming Pool

Walls surrounding an indoor swimming pool shall comply with Section AG105.2, item 1-7.

AG105.4 Prohibited Locations

Barriers shall be located to prohibit permanent structures, equipment or similar objects from being used to climb them. This includes the structural angular buttresses used as part of the pool frame.

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 6: STAIRCASES

1. If staircases are incorporated in the pool barrier all parts of the staircase must comply with the above information and at no time be climbable.
2. All staircases must comply with the 2009 International Residential Code. New Jersey Edition.

Section 7: POOL BARRIER LOCATIONS

Check with the Township Zoning Department prior to planning the barrier location. Pool barriers shall be placed so as to completely encompass the whole pool (The home may be used as the barrier). The barrier may be placed at any point on the property up to the limits set by the Township Zoning Department. Pool barriers on a lot must be independent of adjoining properties' barriers, pool compliant or not. **Barriers not located on the lot with the installed pool can not be used as a barrier.** Sufficient distance should be set between ones lot pool compliant barrier and another lots barrier compliant or not. Refer to ANSI IAF-8 2005 Must be reviewed on a case by case basis.

Section 8: ELECTRICAL REQUIREMENTS

- Direct burial cable is not permitted for pool pump wiring. Metal or PVC conduit system is required outside the dwelling unit. A wet location wire with insulated green ground is required. Interior may be any wiring method recognized in chapter 3 of the 2011 NEC.
- Minimum filter motor attachment cord size #12 AWG (max 3 feet in length).
- Minimum wire size #12 AWG. A 20 ampere locking type outlet is required for filter motor connection for above ground pools. This receptacle shall be located not closer than 6 feet from the pool wall. It shall be ground fault protected and shall employ an In-Use cover. This circuit shall be dedicated to the filter motor.
- A convenience outlet shall be located not less than 6 feet and not more than 20 feet from the inside wall of the pool. It shall be ground fault protected and shall be connected to a general purpose branch circuit in the dwelling. In-Use cover is required
- All metal parts within 5 feet of the pool shall be bonded together with a #8 solid copper wire and shall be bonded to the filter motor. i.e. Fences, Bilco doors, Etc.
- Burial depth is routinely 18 inches for conduit (6 inches for rigid galvanized metal conduit)
- A #8 solid copper wire is required to be installed between the pool chassis and a lug provided on the filter motor. A proper lug, nut, bolt and lock washer is required on the pool chassis. (stainless or brass) An equipotential bonding grid must be formed around the pool with a minimum #8 solid copper wire and connected to the pool pump in at least 4 points equally spaced around a metal pool frame.
- The filter pump may be hard wired but a disconnecting means is required. A timer is required for the filter pump motor.
- Pool water must be bonded electrically (call for more information). A minimum 9 square inch in direct contact with the water.
- For pool spas and hot tubs, refer to the 2011 NATIONAL ELECTRIC CODE Article 680. (Other codes may apply)

Section 9: PLUMBING REQUIREMENTS

Pool Covers

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 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 as per. T.P. 2012 code.

Exception: Pools deriving over 70 percent of the energy for heating from site-recovered energy or solar energy source.

9.11 Surface Skimmer Systems

9.11.1 A surface skimming system or a perimeter overflow system shall be provided and shall be designed and constructed to skim the pool surface.

9.11.1.1 Surface skimming devices shall be tested by a national recognized testing laboratory and comply with ANSI/NSF 50 200 Circulation system components and related materials for swimming pools, spas/hot tubs or the latest revision.

9.11.2 Skimming devices shall be designed and installed so as not to constitute a hazard to the user.

9.11.3 Where automatic surface skimmers are used as the sole overflow system, at least one (1) surface skimmer shall be provided for each 800 square feet (74.32 m²) or fraction thereof of the water surface area. When skimmers are used, they shall be located to optimize skimming action over the pool surface.

9.12 Inlets and Outlets

9.12.1 Entrapment avoidance. The suction outlet(s) including covers, fittings and hardware shall be designed in accordance with manufacturer's specifications to provide protection from body and hair entrapment. (See appendix I, Entrapment avoidance.)

9.12.2 Testing and certification. Suction outlet(s) (other than skimmers) that measure less than 12 inches X 12 inches (144 sq. in.) shall be provided with covers that have been tested by a nationally recognized

testing laboratory and comply with ASME/ANSI A112.19.8 M 1987(R 1996) Suction fittings for use in swimming pools, wading pools, spas, hot tubs, and whirlpool bathtub appliances or the latest revision.

9.12.3 Outlets per pump. If a single or multiple pump suction system is located below the waterline and any one of the suction outlets becomes blocked, the flow through the remaining suction outlet shall be designed to accommodate 100% of the circulation turnover rate. If located at the waterline, a single suction outlet (such as a skimmer, overflow grate, infinity wall, etc.) shall be permitted, provided it is vented to the atmosphere.

9.12.4 Water velocity. Water velocity through suction grates shall be permitted to exceed 1.5 ft/sec (0.4m/sec) if the grate(s) comply with ASME/ANSI A112.19.8 M 1987 (R 1996) Suction fittings for use in swimming pools, wading pools, spas, hot tubs and whirlpool bathtub appliances or the latest revision.

9.12.5 Performance. Inlets and outlet(s) shall be provided and arranged to produce a uniform circulation of water and maintain the distribution of sanitizer residual throughout the pool.

9.12.6 Number of inlets. The number of return inlets(s) shall be based on a minimum of one (1) return inlet per 300 square feet (27.87 m²) of pool surface area, or fraction thereof. Return inlet fittings shall be of sufficient size or quantity to allow a full turnover rate of the circulation system in accordance with the manufacturer's specifications for return inlets.

9.12.7 Inlets and outlets from the circulation system shall be designed so that they do not constitute a hazard to the user.

9.12.8 Important safety consideration. The pool shall not be operated if any outlet grate is missing, broken, or secured in such a way that it is removable without the use of tools, unless removable still provides the equivalent means of protection.

9.12.9 If a suction outlet system, such as a filtration system booster system, automatic cleaning system, solar system, etc., has a single suction outlet, or multiple suction outlets which are capable of being isolated by valves, each suction outlet shall protect against bather entrapment by any of the following:

- an anti-entrapment cover that meets the ASME/ANSI A112.19.8M-1987 (R1996) Suction fittings for use in swimming pools and wading pools, spas, hot tubs and whirlpool bathtub appliances or the latest revision;
- a 12 inch X 12 inch (305 mm X 305 mm) grate or larger, which allows a maximum flow rate not to exceed 1.5 feet per second (fps) (457 per second); or
- by alternate designs or means that produce equivalent protection.

NOTE – See “Guidelines for Addressing Entrapment Hazards with Pools and spas”, U.S. consumer Product Safety Commission, Publication# 363-009801, (301) 504-0400 or www.cpsc.gov/cpscpub/pubs/363.pdf

9.12.10 Where provided, the vacuum cleaner fitting(s) shall be located in an accessible position(s) at least 6 inches (152 mm) and no greater than 18 inches (457 mm) below the minimum operating water level or as an attachment to the skimmer(s).

9.13 Heaters

9.13.1 Important safety consideration. Fossil Fuel like swimming pool heaters, produce poisonous carbon monoxide gas as a by-product of combustion. Proper venting of exhaust gases and the correct sizing of gas meters, gas supply piping, make-up air intakes, etc. are critical installation considerations in preventing potential carbon monoxide gas poisoning or loss of life.

9.13.2 This section pertains to appliances using either fossil fuels such as natural gas, propane (LPG), #2 fuel oil, or electric heating equipment for heating pool water.

9.13.3 Heaters shall be tested and comply with the requirements of ANSI-Z21.56-1991 Gas fired pool heaters or latest revision and/or UL 1261 2001 Electrical water heaters for pool and tubs or the latest revision. Heat Pumps shall comply with UL 1995 Standard for heating and cooling equipment 1999 or latest revision.

9.13.4 Owner/operator shall routinely check the in-pool water to ensure that the temperature does not exceed 104° F (40° C). If adjustments are necessary, those adjustments shall be performed in accordance with manufacturer's instructions or by a qualified technician.

9.13.5 Sizing. For efficient and economical operation, it is important that the heater be properly sized. Determine the proper size heater by first determining the area of the swimming pool in square feet. Then select from the manufacturer's charts the heater that is properly sized for that particular pool.

9.13.6 Installation. The heater(s) shall be installed in accordance with all federal, state, and local codes as well as the manufacturer's recommendations.

9.13.7 Support. Heaters shall be installed on a surface with sufficient structural strength to support the heater when it is full of water and operating. The heater shall be level after plumbing, gas and/or electrical connections are completed.

9.13.8 Combustible surfaces. If the heater requires a non-combustible surface as required by the manufacturer, it shall be placed on a cement or other accepted surface per ANSI Z21.56 1991, or the latest revision, or federal, state, and local codes.

9.13.9 Clearances. When installing a heater, adequate clearances shall be maintained on all sides and over the top of the unit. Consult manufacturer's instructions for proper clearances.

9.13.10 Ventilation. The heater shall have adequate ventilation in order to ensure proper operation.

9.13.11 Make-up air. When installing a fossil fuel heater indoors, proper openings to the room are a necessity. The heater shall be installed in accordance with federal, state, or local codes and the manufacturer's specifications.

9.13.12 Important safety consideration. Some manufacturers recommend that the heater be turned off prior to stopping the water flow. Mechanisms such as a “fireman’s switch” adapted to the time clock will turn the heater off long enough for it to cool down before the time clock turns the pump off.

NOTE – The “fireman’s switch” does not protect against a manual override or a system shut down in the event of power failure.

9.13.13 Important safety consideration. Heaters shall be so located as to prevent their being used as a means of access to the pool by young children.

9.13.14 Heating energy source

9.13.14.1 Natural gas energy supply. The heater gas supply piping shall comply with manufacturer’s specifications and ANSI/NFPA 54-1992, or the latest revision.

9.13.14.1.1 Important safety consideration. A gas cock shall be installed, properly sized and readily accessible outside the jacket, to stop the flow of natural gas at the heater for service or emergency shutdown.

9.13.14.2 Propane energy supply. Whenever a propane (LPG) appliance is installed, special attention shall be given to ensure that the storage tank, supply piping, and regulator shall be adequately sized to ensure operating fuel pressures as specified by the appliance manufacturer. Consult the fuel supply company and ensure that the system is installed in accordance with ANSI Z223.1/NFPA 58 2000 National fuel gas code or the latest revision.

9.13.14.2.1 Important safety consideration. Propane gas is heavier than air and therefore can create an extreme hazard of explosion or suffocation if the heater is installed in a pit or enclosed area. NFPA 58-2000 or the latest revision contains provisions for installing valves and other controls in pits and similar areas.

9.13.14.2.2 Important safety consideration. A gas cock shall be installed, properly sized and readily accessible outside the jacket, to stop the flow of propane (LPG) at the heater for service or emergency shutdown.

9.13.14.3 Electrical energy supply. Electric heating appliances shall be installed in accordance with the National Electrical Code 1999 (NEC) or the latest revision and any federal, state, or local codes.

9.13.14.3.1 Important safety consideration. Grounding and Bonding. The requirements for grounding and bonding are particularly important and shall be adhered to. Heater circulation system water flow through the heater, and any plumbing installations shall be done in compliance with manufacturer’s specifications and local codes.

