

## CHAPTER 3 - GENERAL COMPLIANCE

### **SECTION 301 GENERAL**

**301.1 Scope.** The provisions of this chapter shall govern the general design and construction of public and residential pools and spas and related piping, equipment, and materials. Provisions that are unique to a specific type of pool or spa are located in Chapters 4 through 10.

**301.1.1 Application of Chapters 4 through 10.** Where differences occur between the provisions of this chapter and the provisions of Chapters 4 through 10, the provisions of Chapters 4 through 10 shall apply.

### **SECTION 302 ELECTRICAL, PLUMBING, MECHANICAL AND FUEL GAS REQUIREMENTS**

**302.1 Electrical.** Electrical requirements for aquatic facilities shall be in accordance with NFPA 70 or the International Residential Code, as applicable in accordance with Section 102.7.1.

Exception: Internal wiring for portable residential spas and portable residential exercise spas.

**302.2 Water service and drainage.** Piping and fittings used for water service, makeup and drainage piping for pools and spas shall comply with the International Plumbing Code. Fittings shall be approved for installation with the piping installed.

**302.3 Pipe, fittings and components.** Pipe, fittings and components shall be listed and labeled in accordance with NSF 50 or NSF 14. Plastic jets, fittings, and, outlets used in public spas shall be listed and labeled in accordance with NSF 50.

Exceptions:

1. Portable residential spas and portable residential exercise spas listed and labeled in accordance with UL 1563 or CSA C22.2 No. 218.1.
2. Onground storable pools supplied by the pool manufacturer as a kit that includes all pipe, fittings and components.

**302.4 Concealed piping inspection.** Piping, including process piping that is installed in trenches shall be inspected prior to backfilling.

**302.5 Backflow protection.** Water supplies for pools and spas shall be protected against backflow in accordance with the International Plumbing Code or the International Residential Code, as applicable in accordance with Section 102.7.1.

**302.6 Waste-water discharge.** Where waste water from pools and spas, backwash from filters and water from deck drains discharge to the building drainage system, such installation shall be in accordance with the International Plumbing Code or the International Residential Code, as applicable in accordance with Section 102.7.1.

**302.7 Tests.** Tests on water piping systems constructed of J plastic piping shall not use compressed air for the test.

**302.8 Maintenance.** Pools and spas shall be maintained in a clean and sanitary condition, and in good repair.

**302.8.1 Manuals.** An operating and maintenance manual in accordance with industry accepted standards shall be provided for each piece of equipment requiring maintenance.

## **SECTION 303 ENERGY**

**303.1 Energy consumption of pools and permanent spas.** The energy consumption of pools and permanent spas shall be controlled by the requirements in Sections 303.1.1 through 303.1.3.

**303.1.1 Heaters.** The electric power to heaters shall be controlled by a readily accessible on-off switch that is an integral part of the heater, mounted on the exterior of the heater or external to and within 3 feet (914 mm) of the heater. Operation of such switch shall not change the set-ting of the heater thermostat. Such switches shall be in addition to a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.

**303.1.2 Time switches.** Time switches or other control methods that can automatically turn off and on heaters and pump motors according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate solar- or waste-heat recovery pool heating systems.

**303.1.3 Covers.** Outdoor heated pools and outdoor permanent spas shall be provided with a vapor-retardant cover or other approved vapor-retardant means in accordance with Section 104.11. |

Exception: Where more than 70 percent of the energy for heating, computed over an operating season, is from site-recovered energy such as from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required. 303.2 Portable spas. The energy consumption of electric- powered portable spas shall be controlled by the requirements of APSP 14.

**303.3 Residential pools and permanent residential spas.** The energy consumption of residential swimming pools and

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Permanent residential spas shall be controlled in accordance with the requirements of APSP 15.

## **SECTION 304 FLOOD HAZARD AREAS**

**304.1 General.** The provisions of Section 304 shall control the design and construction of pools and spas installed in flood hazard areas.

**[BS] 304.2 Determination of impacts based on location.** Pools and spas located in flood hazard areas indicated within the International Building Code or the International Residential Code shall comply with Section 304.2.1 or 304.2.2.

Exception: Pools and spas located in riverine flood hazard areas that are outside of designated floodways and pools and spas located in flood hazard areas where the source of flooding is tides, storm surges or coastal storms.

**[BS] 304.2.1 Pools and spas located in designated floodways.** Where pools and spas are located in designated floodways, documentation shall be submitted to the code official that demonstrates that the construction of the pools and spas will not increase the design flood elevation at any point within the jurisdiction. **[BS] 304.2.2 Pools and spas located where floodways have not been designated.** Where pools and spas are located where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed pool or spa and any associated grading and filling, will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

**[BS] 304.3 Pools and spas in coastal high-hazard areas.** Pools and spas installed in coastal high-hazard areas shall be designed and constructed in accordance with ASCE 24.

**[BS] 304.4 Protection of equipment.** Equipment shall be elevated to or above the design flood elevation or be anchored to prevent flotation and protected to prevent water from entering or accumulating within the components during conditions of flooding.

**304.5 GFCI protection.** Electrical equipment installed below the design flood elevation shall be supplied by branch circuits that have ground-fault circuit interrupter protection for personnel.

## **SECTION 305 BARRIER REQUIREMENTS**

**305.1 General.** The provisions of this section shall apply to the design of barriers for pools and spas. These design controls are intended to provide protection against the potential drowning and near drowning by restricting access to such pools or spas. These requirements provide an integrated level of protection against potential drowning through the use of physical barriers and warning devices.

Exceptions:

1. Spas and hot tubs with a lockable safety cover that complies with ASTM F 1346.14
2. Swimming pools with a powered safety cover that complies with ASTM F 1346.

**305.2 Outdoor swimming pools and spas.** Outdoor pools and spas and indoor swimming pools shall be surrounded by a barrier that complies with Sections 305.2.1 through 305.7.

**305.2.1 Barrier height and clearances.** Barrier heights and clearances shall be in accordance with all of the following:

1. The top of the barrier shall be not less than 48 inches (1219 mm) above grade where measured on the side of the barrier that faces away from the pool or spa. Such height shall exist around the entire perimeter of the barrier and for a distance of 3 feet (914 mm) measured horizontally from the outside of the required barrier.
2. The vertical clearance between grade and the bottom of the barrier shall not exceed 2-inches (51 mm) for grade surfaces that are not solid, such as grass or gravel, where measured on the side of the barrier that faces away from the pool or spa.
3. The vertical clearance between a surface below the barrier to a solid surface, such as concrete, and the bottom of the required barrier shall not exceed 4 inches (102 mm) where measured on the side of the required barrier that faces away from the pool or spa.
4. Where the top of the pool or spa structure is above grade, the barrier shall be installed on grade or shall be mounted on top of the pool or spa structure. Where the barrier is mounted on the top of the pool or spa, the vertical clearance between the top of the pool or spa and the bottom of the barrier shall not exceed 4 inches (102 mm).

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

**305.2.3 Solid barrier surfaces.** Solid barriers that do not have openings shall not contain indentations or protrusions that form handholds and footholds, except for normal construction tolerances and tooled masonry joints.

**305.2.4 Mesh fence as a barrier.** Mesh fences, other than chain link fences in accordance with Section 305.2.7, shall be installed in accordance with the manufacturer's instructions and shall comply with the following:

1. The bottom of the mesh fence shall be not more than 1 inch (25 mm) above the deck or installed surface or grade.
2. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall not permit the fence to be lifted more than 4 inches (102 mm) from grade or decking.
3. The fence shall be designed and constructed so that it does not allow passage of a 4-inch (102 mm) sphere under any mesh panel. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall not be more than 4 inches (102 mm) from grade or decking.

4. An attachment device shall attach each barrier section at a height not lower than 45 inches (1143 mm) above grade. Common attachment devices include, but are not limited to, devices that provide the security equal to or greater than that of a hook-and-eye type latch incorporating a spring-actuated retaining lever such as a safety gate hook.
5. Where a hinged gate is used with a mesh fence, the gate shall comply with Section 305.3.
6. Patio deck sleeves such as vertical post receptacles that are placed inside the patio surface shall be of a nonconductive material.
7. Mesh fences shall not be installed on top of onground residential pools.

**305.2.5 Closely spaced horizontal members.** 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 pool or spa 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 cut-outs shall not exceed 1 3/4 inches (44 mm) in width.

**305.2.6 Widely spaced horizontal members.** 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, the interior width of the cutouts shall not exceed 1 3/4 inches (44 mm).

**305.2.7 Chain link dimensions.** The maximum opening formed by a chain link fence shall be not more than 1 3/4 inches (44 mm). Where the fence is provided with slats fastened at the top and bottom which reduce the openings, such openings shall be not more than 1 3/4 inches (44 mm).

**305.2.8 Diagonal members.** Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not more than 1 3/4 inches (44 mm), The angle of diagonal members shall be not greater than 45 degrees (0.79 rad) from vertical.

**305.2.9 Clear zone.** There shall be a clear zone of not less than 36 inches (914 mm) between the exterior of the barrier and any permanent structures or equipment such as pumps, filters and heaters that can be used to climb the barrier,

**305.2.10 Poolside barrier setbacks.** The pool or spa side of the required barrier shall be not less than 20 inches (508 mm) from the water's edge.

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**305.3.1 Utility or service gates.** Gates not intended for pedestrian use, such as utility or service gates, shall remain locked when not in use.

**305.3.2 Double or multiple gates.** Double gates or multiple gates shall have at least one leaf secured in place and the adjacent leaf shall be secured with a self-latching device. The gate and barrier shall not have openings larger than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the latch release mechanism. The self-latching device shall comply with the requirements of Section 305.3.3.

**305.3.3 Latches.** Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from grade, the release mechanism shall be located on the pool or spa side of the gate not less than 3 inches (76 mm) below the top of the gate, and the gate and barrier shall not have openings greater than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.

**305.4 Structure wall as a barrier.** Where a wall of a dwelling or structure serves as part of the barrier and where doors or windows provide direct access to the pool or spa through that wall, one of the following shall be required:

1. Operable windows having a sill height of less than 48 inches (1219 mm) above the indoor finished floor and doors shall have an alarm that produces an audible warning when the window, door or their screens are opened. The alarm shall be listed and labeled as a water hazard entrance alarm in accordance with UL 2017. In dwellings or structures not required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located 54 inches (1372 mm) or more above the finished floor. In dwellings or structures required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1219 mm) above the finished floor.
2. A safety cover that is listed and labeled in accordance with ASTM F 1346 is installed for the pools and spas.
3. An approved means of protection, such as self-closing doors with self-latching devices, is provided. Such means of protection shall provide a degree of protection that is not less than the protection afforded by Item 1 or 2,

**305.5 Onground residential pool structure as a barrier.** An onground residential pool wall structure or a barrier mounted on top of an onground residential pool wall structure shall serve as a barrier where all of the following conditions are present:

1. Where only the pool wall serves as the barrier, the bottom of the wall is on grade, the top of the wall is not

**305.3 Gates.** Access gates shall comply with the requirements of Sections 305.3.1 through 305.3.3 and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool or spa, shall be self-closing and shall have a self-latching device less than 48 inches (1219 mm) above grade for the entire perimeter of the pool, the wall complies with the requirements of Section 305.2 and the pool manufacturer allows the wall to serve as a barrier.

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2. Where a barrier is mounted on top of the pool wall, the top of the barrier is not less than 48 inches (1219 mm) above grade for the entire perimeter of the pool, and the wall and the barrier on top of the wall comply with the requirements of Section 305.2.
3. Ladders or steps used as means of access to the pool are capable of being secured, locked or removed to prevent access except where the ladder or steps are surrounded by a barrier that meets the requirements of Section 305.
4. Openings created by the securing, locking or removal of ladders and steps do not allow the passage of a 4- inch (102 mm) diameter sphere.
5. Barriers that are mounted on top of onground residential pool walls are installed in accordance with the pool manufacturer's instructions.

**305.6 Natural barriers.** In the case where the pool or spa area abuts the edge of a lake or other natural body of water, public access is not permitted or allowed along the shoreline, and required barriers extend to and beyond the water's edge not less than 18 inches (457 mm), a barrier is not required between the natural body of water shoreline and the pool or spa.

**305.7 Natural topography.** Natural topography that prevents direct access to the pool or spa area shall include but not be limited to mountains and natural rock formations. A natural barrier approved by the governing body shall be acceptable provided that the degree of protection is not less than the protection afforded by the requirements of Sections 305.2 through 305.5.

## **SECTION 306 DECKS**

**306.1 General.** Decks shall be designed and installed in accordance with the International Residential Code or the International Building Code, as applicable in accordance with Section 102.7.1, except as provided in this section.

**306.2 Slip resistant.** Decks, ramps, coping, and similar step surfaces shall be slip resistant and cleanable. Special features in or on decks such as markers, brand insignias, and similar materials shall be slip resistant.

**306.3 Step risers and treads.** Step risers for decks of public; pools and spas shall be uniform and have a height not less than 3 3/4 inches (95 mm) and not greater than 7 1/2 inches (191 mm). The tread distance from front to back shall be not less than 11 inches (279 mm). Step risers for decks of residential pools and spas shall be uniform and shall have a height not exceeding 7 1/2 inches (191 mm). The tread distance from front to back shall be not less than 10 inches (254 mm).

**306.4 Deck steps handrail required.** Public pool and spa deck steps having three or more risers shall be provided with a handrail.

**306.5 Slope.** The minimum slope of decks shall be in accordance with Table 306.5 except where an alternative drainage method is provided that prevents the accumulation or

pooling of water. The slope for decks, other than wood decks, shall be not greater than 1/2 inch per foot (1 mm per 24 mm) except for ramps. The slope for wood and wood/plastic composite decks shall be not greater than 1/4 inch per 1 foot (1 mm per 48 mm). Decks shall be sloped so that standing water will not be deeper than 1/8 inch (3.2 mm), 20 minutes after the cessation of the addition of water to the deck.

**306.6 Gaps.** Gaps shall be provided between deck boards in wood and wood/plastic composite decks. Gaps shall be consistent with approved engineering methods with respect to the type of wood used and shall not cause a tripping hazard.

**306.6.1 Maximum gap.** The open gap between pool decks and adjoining decks or walkways, including joint material, shall be not greater than 3/4 inch (19.1 mm). The difference in vertical elevation between the pool deck and the adjoining sidewalk shall be not greater than 1 inch (6.4 mm).

**306.7 Concrete joints.** Isolation joints that occur where the pool coping meets the concrete deck shall be water tight.

**306.7.1 Joints at coping.** Joints that occur where the pool coping meets the concrete deck shall be installed to protect the coping and its mortar bed from damage as a result of the anticipated movement of adjoining deck.

**306.7.2 Crack control.** Joints in a deck shall be provided to minimize visible cracks outside of the control joints caused by imposed stresses or movement of the slab.

**306.7.3 Movement control.** Areas where decks join existing concrete work shall be provided with a joint to protect the pool from damage caused by relative movement.

**306.8 Deck edges.** The edges of decks shall be radiused, tapered, or otherwise designed to eliminate sharp corners.

Surface	Minimum Drainage Slope (inch per foot)
Carpet	1/2
Exposed Aggregate	1/4
Textured, hand finished concrete	1/8
Travertine/brick-set pavers, residential pools or spas	3/8
Travertine/brick-set pavers, residential pools or spas	1/8
Wood	1/8
Wood/plastic composite	1/8



SURFACE	MINIMUM DRAINAGE SLOPE (INCH PER FOOT)
Carpet	$\frac{1}{2}$
Exposed aggregate	$\frac{1}{4}$
Textured, hand-finished concrete	$\frac{1}{8}$
Travertine/brick-set pavers, public pools or spas	$\frac{3}{8}$
Travertine/brick-set pavers, residential pools or spas	$\frac{1}{8}$
Wood	$\frac{1}{8}$
Wood/plastic composite	$\frac{1}{8}$