



SWIMMING POOLS

MASSACHUSETTS BUILDING CODE 780 CMR 120.M



SWIMMING POOLS, SPAS AND HOT TUBS

General (120.M101.1): The provisions of this appendix shall control the design and construction of swimming pools, spas and hot tubs.

Note 1: *Public and semi-public outdoor in-ground swimming pool enclosures shall conform to the requirements of MGL c.140 Section 206.*

Note 2: *Also see 521 CMR, Section 19.*

Note 3: *Also see 105 CMR which regulates swimming pool requirements.*

Note 4: *Installation of electrical wiring and electrical devices shall be in accordance with the Massachusetts Electrical Code, 527 CMR 12.*

Note 5: *Installation of gas-fired pool heaters shall be in accordance with the Massachusetts Fuel Gas and Plumbing Code.*

DEFINITIONS (Section 120.M.102)

For the purposes of these requirements, the terms used shall be defined as follows and as set forth in Chapter 52.

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 walls of said structure.

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

SWIMMING POOLS (Section 120.M103)

In-ground pools: In-ground pools shall be designed and constructed in conformance with ANSI/NSPI-5 as listed in Section 120.M107.

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 120.M.107.

SPAS AND HOT TUBS (Section 120.M104)

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 120.M.107.

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 120.M.107.

BARRIER REQUIREMENTS (Section 120.M.105)

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 drowning and near-drowning by restricting access to swimming pools, spas and hot tubs.

Outdoor swimming pool: An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be provided with 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 aboveground 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 1.75 inches (44 mm) in width. 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 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 is provided with slats fastened at the top or the bottom which reduce the openings to not more than 1.75 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 1.75 inches (44 mm).
8. Access gates shall comply with the requirements of Section 120.M.105.2, items 1-7, 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:
 - a. 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
 - b. The gate and barrier shall have no opening greater than 0.5 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.
9. Where a wall of a dwelling serves as part of the barrier one of the following conditions shall be met:
 - a. The pool shall be equipped with a powered safety cover in compliance with ASTM F1346; or
 - b. All 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 its screen, if present, are opened. The alarm shall sound continuously for a minimum of 30 seconds immediately after the door is 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 touchpad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall last for not more than 15 seconds. The deactivation switch (or switches) shall be located at least 54 inches (1372 mm) above the threshold of the door; or
 - c. 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 9a or 9b described above.
10. Where an aboveground 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, then:
 - a. The ladder or steps shall be capable of being secured, locked or removed to prevent access, or
 - b. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section 120.M.105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the pass of a 4 inch diameter (102 mm) sphere.

Note that for private, above ground pools:

1. The pool wall of an outdoor, above-ground pool (with pool walls extending at least 48 inches above grade at all points along the pool), substitutes for a fence or other barrier around the pool with the exception of the ladder area of the pool.

2. A retractable, lockable ladder, that cannot be removed (without tools or special knowledge available to a small child), which retracts, by hinge or sliding mechanism, to 48 inches or more above the finished grade level and has provision for securing in the retracted mode with a locking device, shall be considered an acceptable alternative to the applicable required enclosure (fence or other gate barrier) of the current 6th Edition Building Code, Section 421 or the new 7th Edition Building Code for One- and Two-Family Dwellings, Appendix 120.M.
3. The retractable ladder locking/release device must be located at least 54 inches above the finished grade level in immediate vicinity of the retractable ladder or such locking/release mechanism shall be located on the pool side of the ladder (forcing “reach around”) and located at least three (3) inches below the top of the ladder and the ladder shall not have an opening greater than ½ inch within 18 inches of the locking/release mechanism.

Exception: Public and semi-public outdoor in-ground swimming pool enclosures shall conform to the requirements of MGL c.140 Section 206.

Indoor swimming pool: All walls surrounding an indoor swimming pool shall comply with Section 120.M.105.2, Item 9.

Prohibited locations: Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

Barrier exceptions: Spas or hot tubs with a safety cover which complies with ASTM F 1346, as listed in Section 120.M107, shall be exempt from the provisions of this appendix.

ENTRAPMENT PROTECTION FOR SWIMMING POOL AND SPA SUCTION OULETS (780 CMR 120.M 106)

General: Suction outlets shall be designed to produce circulation throughout the pool or spa. Single outlet systems, such as automatic vacuum cleaner systems, or other such multiple suction outlets whether isolated by valves or otherwise shall be protected against user entrapment. *Note: Also refer to 105 CMR 430.00 and 435.000.*

Suction Fittings: All Pool and Spa suction outlets shall be provided with a cover that conforms with ANSI/ASMEA112.19.8M, or a 12” x 12” drain grate or larger, or an approved channel drain system. *Exception: Surface skimmers.*

Atmospheric Vacuum Relief System Required: All 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. Such vacuum relief systems 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.

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 three feet shall separate such outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum relief-protected line to the pump(s).

Pool Cleaner Fittings: Where provided, vacuum or pressure cleaner fitting(s) shall be located in an accessible position(s) at least six inches and not greater than twelve inches below the minimum operational water level or as an attachment to the skimmer(s).

ABBREVIATIONS (780 CMR 120.M 107)

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

ASTM: American Society for Testing and Materials: 1916 Race Street Philadelphia, PA 19103

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

STANDARDS (780 CMR 120.M 108)

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 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/ASME A112.19.8M-1987 Suction fittings for use in swimming pools, wading pools, spas, hot tubs and whirlpool bathing appliances AG106.2

ASTM

ASTM F 1346-91 (1996) 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

ADDITIONAL REQUIREMENTS FROM 2009 INTERNATIONAL ENERGY CONSERVATION CODE

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

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.

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.

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% of the energy for heating from site-recovered energy or solar energy source.

Pools: Pools shall be provided with energy conserving measures in accordance with Sections 504.7.1 through 504.7.3.

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.

Time Switches: Time switches that can automatically turn off and on heaters and pumps according to 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.

SAUNA HEATERS (Section 914)

Location and Protection: Sauna heaters shall be located so as to minimize the possibility of accidental contact by a person in the room.

Guards: Sauna heaters shall be protected from accidental contact by an approved guard or barrier of material having a low coefficient of thermal conductivity. The guard shall not substantially affect the transfer of heat from the heater to the room.

Installation: Sauna heaters shall be listed and labeled in accordance with UL 875 and shall be installed in accordance with their listing and the manufacturer's installation instructions.

Access: Panels, grilles and access doors that are required to be removed for normal servicing operations shall not be attached to the building.

Heat and Time Controls: Sauna heaters shall be equipped with a thermostat that will limit room temperature to 194°F (90°C). If the thermostat is not an integral part of the sauna heater, the heat-sensing element shall be located within 6 inches (152mm) of the ceiling. If the heat-sensing element is a capillary tube and bulb, the assembly shall be attached to the wall or other support, and shall be protected against physical damage.

Timers: A timer, if provided to control main burner operation, shall have a maximum operating time of 1 hour. The control for the timer shall be located outside the sauna room.

Sauna Room: A ventilation opening into the sauna room shall be provided. The opening shall not be less than 4 inches by 8 inches (102 mm by 203 mm) located near the top of the door into the sauna room.

Warning Notice: The following permanent notice, constructed of approved material, shall be mechanically attached to the sauna room on the outside:

WARNING: DO NOT EXCEED 30 MINUTES IN SAUNA. EXCESSIVE EXPOSURE CAN BE HARMFUL TO HEALTH. ANY PERSON WITH POOR HEALTH SHOULD CONSULT A PHYSICIAN BEFORE USING SAUNA.

The words shall contrast with the background and the wording shall be in letters not less than ¼-inch (6.4 mm) high.

Exception: This section shall not apply to one and two-family dwellings.

POOL AND SPA HEATERS

Pool and spa heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired pool and spa heaters shall be tested in accordance with UL 1261.