

CHAPTER 7

ONGROUND STORABLE RESIDENTIAL SWIMMING POOLS

SECTION 701 GENERAL

701.1 Scope. This chapter describes certain criteria for the design, manufacturing, and testing of *onground storable pools* intended for *residential* use. This includes portable pools with flexible or nonrigid side walls that achieve their structural integrity by means of uniform shape, support frame or a combination thereof, and that can be disassembled for storage or relocation. This chapter includes what has been commonly referred to in past standards or codes as onground or above-ground pools.

701.1.1 Permanent inground residential swimming pool. This chapter does not apply to permanent inground *residential* pools, as defined in Chapter 8.

701.2 General. In addition to the requirements of this chapter, onground storable *residential* swimming pools shall comply with the requirements of Chapter 3.

701.3 Floor slopes. Floor slopes shall be uniform and in accordance with Sections 701.3.1 through 701.3.4.

701.3.1 Shallow end. The slope of the floor from the shallow end wall towards the deep area shall not exceed 1 unit vertical in 7 units horizontal (14-percent slope) to the point of the first slope change.

701.3.2 Transition. The slope of the floor from the point of the first slope change towards the deepest point shall not exceed 1 unit vertical in 3 units horizontal (33-percent slope).

701.3.3 Adjacent. The slope adjacent to the shallow area shall not exceed 1 unit vertical in 3 units horizontal (33-percent slope) and the slope adjacent to the side walls shall not exceed 1 unit vertical in 1 unit horizontal (100-percent slope).

701.3.4 Change point. The point of the first slope change shall be defined as the point at which the shallow area slope exceeds 1 unit vertical in 7 units horizontal (14-percent slope) and is not less than 6 feet (1889 mm) from the shallow end wall of the pool.

701.4 Identification. For onground storable *residential* pools with a vinyl liner, the manufacturer's name and the liner identification number shall be affixed to the liner. For onground storable *residential* pools without a liner, the manufacturer's name and identification number shall be affixed to the exterior of the pool structure.

701.5 Installation. *Onground storable pools* shall be installed in accordance with the manufacturer's instructions.

SECTION 702 LADDERS AND STAIRS

702.1 Ladders and stairs. Pools shall have a means of entry and exit consisting of not less than one ladder or a ladder and staircase combination.

702.2 Type A and Type B ladders. Type A, double access, and Type B, limited access, A-frame ladders shall comply with Sections 702.2.1 through 702.2.7. See Figure 702.2.

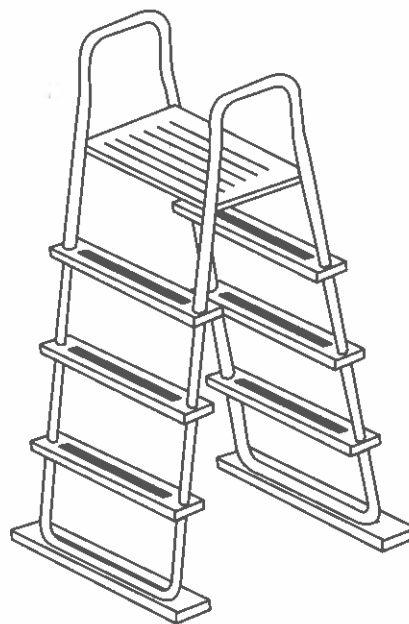


FIGURE 702.2
TYPICAL A-FRAME LADDER, TYPES A AND B

702.2.1 Barrier required. Ladders in the pool shall have a physical barrier to prevent children from swimming through the riser openings or behind the ladder.

Exception: Barriers for ladders shall not be required where the ladder manufacturer provides a certification statement that the ladder complies with the ladder entrapment test requirements of APSP 4.

702.2.2 Platform. Where an A-frame ladder has a platform between the handrails, the platform shall have a width of not less than 12 inches (305 mm) and a length of not less than 12 inches (305 mm). The platform shall be at or above the highest ladder tread. The walking surface of the platform shall be slip resistant.

702.2.3 Handrails or handholds. A-frame ladders shall have two handrails or handholds that serve all treads. The height of the handrails and handholds shall be not less than 20 inches (508 mm) above the platform or uppermost tread, whichever is higher.

702.2.4 Diameter. The outside diameter of handrails and handholds shall be not less than 1 inch (25 mm) and not greater than 1.9 inches (48 mm).

702.2.5 Clear distance. The clear distance between ladder handrails shall be not less than a space of 12 inches (305 mm).

702.2.6 Treads. Ladder treads shall have a horizontal uniform depth of not less than 2 inches (51 mm).

702.2.7 Riser height. Risers, other than the bottom riser, shall be of uniform height that is not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The bottom riser height shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The vertical distance from the platform or top of the pool structure to the uppermost tread shall be the same as the uniform riser heights.

702.3 Type C staircase ladders (ground to deck). Type C staircase ladders shall comply with Sections 702.3.1 through 702.3.6. See Figure 702.3.



FIGURE 702.3
TYPICAL STAIRCASE LADDER, TYPE C

702.3.1 Handrails or handholds. Staircase ladders shall have not less than two handrails or handholds that serve all treads. The height of the handrails and handholds shall be not less than 20 inches (508 mm) above the platform or uppermost tread, whichever is higher.

702.3.2 Diameter. The outside diameter of handrails and handholds shall be not less than 1 inch (25 mm) and not greater than 1.9 inches (48 mm).

702.3.3 Treads. Ladder treads shall have a horizontal uniform depth of not less than 4 inches (102 mm).

702.3.4 Riser height. Risers, other than the bottom riser, shall be of uniform height that is not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The bottom riser height shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The vertical distance from the platform or top of the pool structure to the uppermost tread shall be the same as the uniform riser heights.

702.3.5 Top step. The top step of a staircase ladder shall be flush with the deck or 7 inches (178 mm) to 12 inches (305 mm) below the deck level.

702.3.6 Width. Steps shall have a minimum unobstructed width of 19 inches (483 mm) between the side rails.

702.4 Type D in-pool ladders. Type D in-pool ladders shall be in accordance with Sections 702.4.1 through 702.4.7. See Figure 702.4.

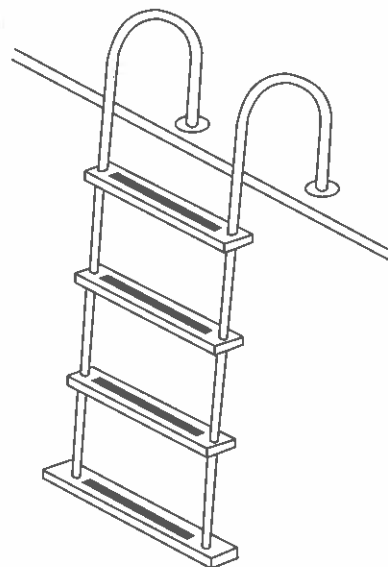


FIGURE 702.4
TYPICAL IN-POOL LADDER, TYPE D

702.4.1 Clearance. There shall be a clearance of not less than 3 inches (76 mm) and not greater than 6 inches (152 mm) between the pool wall and the ladder.

702.4.2 Handrails or handholds. Ladders shall be equipped with two handrails or handholds that extend above the platform or deck not less than 20 inches (508 mm).

702.4.3 Clear distance. The clear distance between ladder handrails shall be not less than 12 inches (305 mm).

702.4.4 Diameter. The outside diameter of handrails and handholds shall be not less than 1 inch (25 mm) and not greater than 1.9 inches (48 mm).

702.4.5 Riser height. Risers, other than the bottom riser, shall be of uniform height that is not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The bottom riser height shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm).

702.4.6 Top tread. The vertical distance from the pool coping, deck, or step surface to the uppermost tread shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm) and uniform with other riser heights.

702.4.7 Tread depth. Ladder treads shall have a horizontal uniform depth of not less than 2 inches (51 mm).

702.5 Type E protruding in-pool stairs. Type E protruding in-pool stairs shall be in accordance with Sections 702.5.1 through 702.5.7. See Figure 702.5.

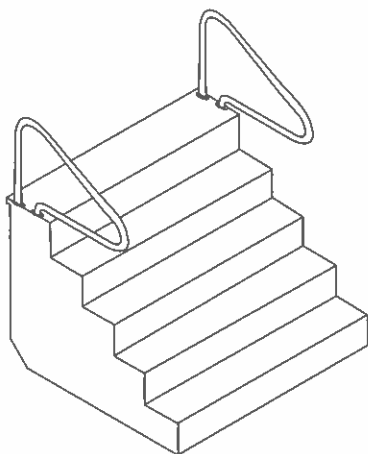


FIGURE 702.5
TYPICAL IN-POOL STAIRCASE TYPES, E AND F

702.5.1 Barrier required. In-pool stairs shall have a physical barrier to prevent children from swimming through the riser openings or behind the in-pool stairs.

702.5.2 Handrails or handholds. In-pool stairs shall be equipped with not less than one handrail or handhold that serves all treads with a height of not less than 20 inches (508 mm) above the platform or uppermost tread, whichever is higher.

702.5.3 Removable handrails. Where handrails are removable, they shall be installed such that they cannot be removed without the use of tools.

702.5.4 Leading edge distance. The leading edge of handrails shall be 18 inches (457 mm) \pm 3 inches (\pm 76 mm), horizontally from the vertical plane of the bottom riser.

702.5.5 Diameter. The outside diameter of handrails and handholds shall be not less than 1 inch (25 mm) and not greater than 1.9 inches (48 mm).

702.5.6 Tread width and depth. Treads shall have an unobstructed horizontal depth of not less than 10 inches (254 mm) and an unobstructed surface area of not less than 240 square inches (0.15 m²).

702.5.7 Uniform riser height. Risers, other than the bottom riser, shall be of uniform height that is not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The bottom riser height shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The verti-

cal distance from the pool coping, deck or step surface to the uppermost tread of the stairs shall be the same as the uniform riser heights.

702.6 Type F recessed in-pool stairs. Type F recessed in-pool stairs shall be in accordance with Sections 702.6.1 through 702.6.7. See Figure 702.5.

702.6.1 Barrier required. In-pool stairs shall have a physical barrier to prevent children from swimming through the riser openings or behind the in-pool stairs.

702.6.2 Handrails or handholds. In-pool stairs shall be equipped with not less than one handrail or handhold that serves all treads with a height of not less than 20 inches (508 mm) above the platform or uppermost tread, whichever is higher.

702.6.3 Removable handrails. Where handrails are removable, they shall be installed such that they cannot be removed without the use of tools.

702.6.4 Leading edge distance. The leading edge of handrails shall be 18 inches (457 mm) \pm 3 inches (\pm 76 mm), horizontally from the vertical plane of the bottom riser.

702.6.5 Diameter. The outside diameter of handrails and handholds shall be not less than 1 inch (25 mm) and not greater than 1.9 inches (48 mm).

702.6.6 Tread width and depth. Treads shall have an unobstructed horizontal depth of not less than 10 inches (254 mm) at all points and an unobstructed surface area of not less than 240 square inches (0.15 m²).

702.6.7 Uniform riser height. Risers, other than the bottom riser, shall be of uniform height that is not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The bottom riser height shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The vertical distance from the pool coping, deck or step surface to the uppermost tread of the stairs shall be the same as the uniform riser heights.

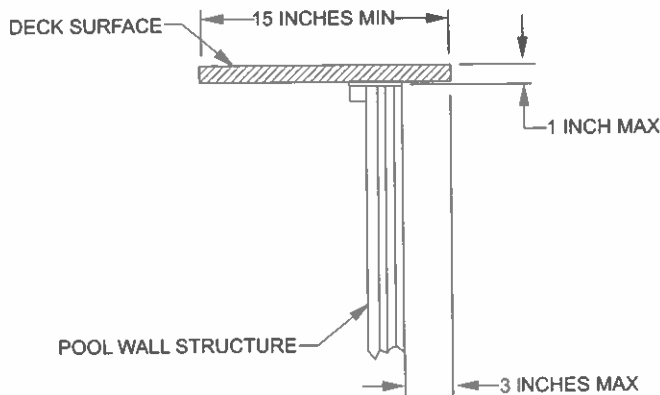
SECTION 703 DECKS

703.1 General. Decks provided by the pool manufacturer shall be installed in accordance with the manufacturer's instructions. Decks fabricated on-site shall be in accordance with the *International Residential Code*.

703.2 Cantilevered. The top surface of a cantilevered deck shall be not greater than 1 inch (25 mm) higher than the top of the pool wall. See Figure 703.4. The top surface of a noncantilevered deck shall be not higher than the top of the pool wall.

703.3 No gaps. Decks that are installed flush with the top rail of the pool shall have all gap openings between the deck and top rails closed-off or capped.

703.4 Extension over pool. Where a deck extends inside the top rail of the pool, it shall extend not more than 3 inches (76 mm) beyond the inside of the top rail of the pool in accordance with Figure 703.4 and shall have a smooth finish.

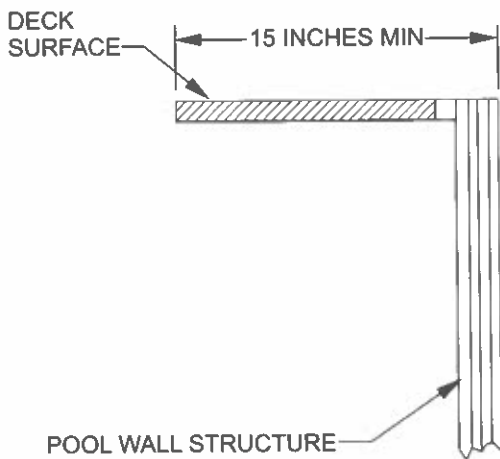


For SI: 1 inch = 25.4 mm.

FIGURE 703.4
TYPICAL CANTILEVERED DECK SUPPORT

703.5 Slip resistant. The deck walking surface shall be slip resistant.

703.6 Walk-around decks. Walk-around decks shall have a level walking surface of not less than 15 inches (381 mm) in width, as measured from the inside edge of the pool top rail to the outside of the pool walk-around. See Figure 703.6.



For SI: 1 inch = 25.4 mm.

FIGURE 703.6
WALK-AROUND DECK WIDTH

SECTION 704
CIRCULATION SYSTEM

704.1 General. A circulation system consisting of pumps, hoses, tubing, piping, return inlets, suction outlets, filters and other related equipment that provides for the circulation of water throughout the pool shall be located so that such items cannot be used by young children as a means of access to the pool.

704.2 Installation and support. Circulation equipment shall be installed, mounted and supported in accordance with the manufacturer's instructions.

704.3 Draining the system. In climates subject to freezing, circulation system equipment shall be designed and fabricated to drain the pool water from the equipment and exposed piping, by removal of drain plugs and manipulating valves or by other methods in accordance with the manufacturer's instructions.

704.4 Turnover. A pump including a motor shall be provided for circulation of the pool water. The equipment shall be sized to provide a turnover of the pool water not less than once every 12 hours. The system shall be designed to provide the required turnover rate based on the manufacturer's specified maximum flow rate of the filter, with a clean media condition of the filter. The system flow shall not exceed the filter manufacturer's maximum filter flow rate.

704.5 Piping and fittings. The process piping of the circulation system, including but not limited to hoses, tubing, piping, and fittings, shall be made of nontoxic material and shall be capable of withstanding an internal pressure of not less than 1½ times the rated pressure of the pump. Piping on the suction side of the pump shall not collapse when flow into such piping is blocked.

704.6 Filters. Pressure-type filters shall have an automatic internal means or a manual external means to relieve accumulated air pressure inside the filter tank. Filter tanks composed of upper and lower tank lids that are held in place by a perimeter clamp shall have a perimeter clamp that provides for a slow and safe release of air pressure before the clamp disengages the lids.

704.6.1 Automatic internal air relief. Filter tanks incorporating an automatic internal air relief as the principal means of air release shall be designed with a means to provide for a slow and safe release of pressure.

704.6.2 Separation tank. A separation tank used in conjunction with a filter tank shall have a manual air release or the tank shall be designed to provide for a slow and safe release of pressure when the tank is opened.

704.7 Pumps. Pool pumps shall be tested and certified by a nationally recognized testing laboratory in accordance with UL 1081.

704.7.1 Cleanable strainer. Where a pressure-type filter is installed, a cleanable strainer or screen that captures materials such as solids, debris, hair and lint shall be provided upstream of the circulation pump.

704.7.2 Accessible pumps and motors. Pumps and motors shall be accessible for inspection and service in accordance with the pump and motor manufacturer's instructions.

704.7.3 Pump shutoff valves. An accessible means of shut off of the suction and discharge piping for the pump shall be provided for maintenance and removal of the pump.

704.8 Outlets and return inlets. Outlets or suction outlets and return inlets shall be provided and arranged to produce

uniform circulation of water so that sanitizer residual is maintained throughout the pool. Where installed, submerged suction outlets shall conform to APSP 16.

704.9 Surface skimmer systems. The surface skimming system provided shall be designed and constructed to skim the pool surface when the water level is maintained between the minimum and maximum fill level of the pool.

704.9.1 Coverage where used as a sole outlet. Where surface skimmers are used as the only pool water outlet system, not less than one skimmer shall be provided for each 800 square feet (74.3 m²), or fraction thereof, of the water surface area.

704.9.2 Coverage where used in combination with other outlets. Where surface skimmers are not the only outlet for pool water, they shall be considered to cover only that fraction of the 800 square feet (74.3 m²).

704.9.3 Location and venting. Skimmers shall be equipped with a vent that serves as a vacuum break.

SECTION 705 SAFETY SIGNS

705.1. Signs to be installed prior to final inspection. Safety signage such as "NO DIVING" signs and other safe use instruction signs that are provided by the pool and ladder manufacturer shall be posted in accordance with the manufacturer's instructions prior to final inspection.

705.2 Safety signs for ladders. Safety signage for ladders shall be in accordance with Sections 705.2.1 through 705.2.3.2.

705.2.1 A-frame ladders. Safety signage for A-frame ladders shall be in accordance with Sections 705.2.1.1 through 705.2.1.4.1. The words on the signage shall be readable by persons standing in the pool and standing outside of the pool as applicable for the required location of each sign.

705.2.1.1 No diving warning. A-frame ladders shall have the following words posted on the in-pool side of the ladder and on the pool entry side of the ladder: "NO DIVING." The location of the words shall be above the elevation of the design water level of the pool.

705.2.1.2 Entrapment warning. A-frame ladders shall have the following words posted on the pool side of the ladder: "TO PREVENT ENTRAPMENT OR DROWNING DO NOT SWIM THROUGH, BEHIND, OR AROUND LADDER."

705.2.1.3 Type A, A-frame ladders. Type A double access A-frame ladders shall have the following words posted on the ladder: "REMOVE AND SECURE LADDER WHEN POOL IS NOT OCCUPIED."

705.2.1.4 Type B, A-frame ladders. Type B limited access A-frame ladders shall have the following words posted on the ladder: "SECURE LADDER WHEN POOL IS NOT OCCUPIED."

705.2.1.4.1 Swing up or slide up secured ladders. Type B limited access A-frame ladders that utilize

swing-up or slide-up sections for limiting access to the pool shall have the following words posted on the ladder as applicable for the type of securing method:

1. "WHEN POOL IS NOT OCCUPIED, SWING UP AND SECURE."
2. "WHEN POOL IS NOT OCCUPIED, LIFT OFF."
3. "WHEN POOL IS NOT OCCUPIED, SLIDE UP AND SECURE."

705.2.2 Type C staircase ladders. Type C staircase ladders that swing up to limit access to the pool or that are removed to limit access to the pool shall have the following words posted on the ladder: "WHEN NOT IN USE SWING UP AND SECURE OR REMOVE."

705.2.3 Type D in-pool ladder. Safety signage for Type D in-pool ladders shall be in accordance with Sections 705.2.3.1 and 705.2.3.2. The words on the signage shall be readable by persons standing in the pool or standing outside the pool as applicable for the required location of each sign.

705.2.3.1 No diving warning. Type D in-pool ladders shall have the following words posted on the in-pool side of the ladder and on the pool entry side of the ladder: "NO DIVING." The location of the words shall be above the elevation of the design water level of the pool.

705.2.3.2 Entrapment warning. Type D in-pool ladders shall have the following words posted on the ladder: "WARNING: TO PREVENT ENTRAPMENT OR DROWNING, DO NOT SWIM THROUGH, BEHIND, OR AROUND LADDER."