

Chapter 3: General Compliance

General Comments

There are a significant number of aspects concerning pool and spa design and installation that are common to all. For example, piping materials, suction entrapment avoidance, decks, dimensional tolerances, circulation systems, heater systems and barriers have general characteristics that are the same no matter with what pool or spa they are connected. Placing the regulations for these common items in one location, Chapter 3, makes them easier to find and results in fewer coordination problems as the code is changed in future editions.

Purpose

Chapter 3 contains regulations for electrical, plumbing, energy consumption, barriers, decks, suction entrapment avoidance, circulation systems, heaters and lighting for all types of pools and spas. First and foremost, these regulations provide for the protection of the users of pools and spas. The regulations also provide for a level of quality necessary to ensure that the pools and spas are installed correctly to provide for long-term performance.

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.

- ❖ Many requirements for different types of pools or spas are identical. For example, barriers (such as fences and walls) have the same requirements no matter what pool or spa the barriers protect. Rather than repeat these common requirements for each type of pool or spa, the requirements are stated once in this chapter. Requirements that are specific to each type of pool or spa are indicated 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.

- ❖ Chapters 4 through 10 have requirements that are specific to each type of pool or spa. Where Chapter 3 has a requirement that is also discussed in each of Chapters 4 through 10, and the requirements are different, the requirements in Chapters 4 through 10 take precedence over the requirement in Chapter 3. In other words, the specific overrides the general.

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.

- ❖ The *National Electrical Code*® (NEC®), NFPA 70, is to be applied to the electrical installations in connection

with pools and spas, except for those pools and spas that are associated with residential structures covered by the *International Residential Code*® (IRC®). The IRC contains chapters on electrical installation that are based on residential-appropriate portions of NFPA 70. Internal wiring requirements for portable residential spas and portable residential exercise spas are covered under UL 1563 or CSA C22.2 No. 218.1. Chapter 10 requires portable residential spas and portable residential exercise spas to be listed and labeled to one of those standards.

This code references specific editions of NFPA 70 and the IRC. Unless the jurisdiction makes an amendment to the code at the time of adoption to change the year of NFPA 70 or the IRC that is referenced, the editions that are referenced in Chapter 11 are to be enforced. Note that a jurisdiction has the authority to adopt local amendments to the code as well as to NFPA 70 and the IRC. Local amendments to the electrical codes might be the result of formal interpretations (FI) or temporary interim amendments (TIA) that were generated by NFPA for the NEC. Designers and installers should never assume that these FIs or TIAs are part of the electrical codes being enforced in any jurisdiction. Designers and installers should always consult with each jurisdiction to determine what local amendments might apply for that jurisdiction.

This code, the IRC and the NEC do not address who is responsible for performing the design and installation of electrical work covered by the regulations in these codes. Each jurisdiction decides who is qualified to perform such work and typically requires licensure of those individuals at either a state or local level. The licensing laws of the jurisdiction dictate the extent of work that can be performed by licensed individuals.

Section 102.4 covers additions, alterations, renovations or repairs to existing pools and spas. The code official has the responsibility to decide how much of an existing electrical installation must be brought up to the current code. Designers and installers should always consult with each jurisdiction to determine the extent of

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electrical rework that is necessary for any remodeling project on a pool or spa.

The electrical requirements in NFPA 70 and the IRC are minimum requirements. These codes do not prohibit designs that exceed the minimum requirements.

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.

❖ This section addresses piping for the supply of potable water to the pool or spa and drainage (wastewater) from the pool or spa. The *International Plumbing Code*® (IPC®) has provisions for the installation of such piping.

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.

❖ The requirement for the listing and labeling of items to NSF 50 or NSF 14 provides for a certain level of quality for those items so that they will not structurally fail under the intended service conditions, not impart harmful chemicals to the water in the pool or spa, and will properly fit with other listed and labeled components. Where pipe, fittings, components, plastic jets and outlets are part of portable residential spas and portable residential exercise spas listed and labeled to UL 1563 or CSA C22.2 No. 218.1, the quality of the items are controlled, as necessary, by those standards.

Because on-ground storable pools are made for disassembly and storage, replacement of pipe and fittings is more easily accomplished. More frequent replacement of these types of components is generally expected by the owner of this type of pool. The owner will most likely not purchase replacement components listed and labeled to NSF 50 or NSF 14 because similar components that will “do the job” will be less expensive and be readily available at local hardware stores. Thus, from a manufacturer’s point of view, there is no need to initially build these systems with components meeting NSF 50 because replacement of components is relatively easy and inexpensive. See Section 704.5.

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

❖ Piping installed in trenches must be inspected prior to backfilling the trench so that the installation can be checked for leaks, proper piping bedding and the use of appropriate fittings.

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.

❖ Potable water supplies to pools or spas must be kept safe from contamination. The IPC or the IRC, as applicable, provides the necessary requirements for protection against backflow.

302.6 Wastewater discharge. Where wastewater from pools or spas, such as backwash water from filters and water from deck drains discharge to a building drainage system, the connection shall be through an air gap in accordance with the *International Plumbing Code* or the *International Residential Code* as applicable in accordance with Section 102.7.1.

❖ Wastewater from a pool or spa must be discharged to a building drainage system. The requirements of the IPC or the IRC, as applicable, must be followed.

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

❖ Air testing of plastic piping is dangerous because compressed air contains significant potential energy. Should the piping or fittings have imperfections or cracks created during manufacturing, such defects could explode during testing. Dirt, rocks and plastic pipe shrapnel propelled by a failure of the piping could injure nearby personnel. Testing piping systems, including equipment such as filters and pumps connected to the piping, with water, is much safer.

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

❖ Pools and spas that are not maintained become breeding grounds for mosquitoes. A pool or spa in need of repair can be dangerous to users and possibly to the environment where water leaks out of the pool or spa into the surrounding earth. This section provides the code official with the authority to make the owner of a pool or spa perform the necessary maintenance and repairs.

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.

❖ In order to properly maintain equipment associated with pools and spas, instructions in written form must be provided for each piece of equipment. Equipment manuals typically are included within the product or component packaging. Such materials, if not placed in a secure location, can be inadvertently lost, discarded or damaged. The contractor should deliver all product and component manuals, instructions, accompanying signage and other literature to the owner/operator at or before the completion of the project. Because manuals contain important end user safety, operation and maintenance information, it is helpful to include this requirement on inspection checklists.

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.

❖ The energy consumption of pools and permanent spas can be significant because filter pumps often operate continuously. This section covers methods and equipment to limit energy consumption. Note that Section 303.3 has additional requirements for residential pools and permanent residential spas.

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 setting 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.

❖ The provision of an easily accessed on-off switch for a heater goes a long way toward offering the user of the pool or spa a method to limit energy use. Where adjustment of a thermostat is required for turning off a heater, most users will elect not to make the adjustment because they have it set to their preferred temperature. The switch for the heater needs to be within close proximity to the heater (or mounted externally on the heater) so that a person knows to what piece of equipment the switch belongs. This is especially useful (and safe) for servicing a heater where there are multiple heaters in one location. Although NFPA 70 (and the electrical chapters of the IRC) do not require a separate switch where the circuit breaker is within sight of the equipment, having such a switch further enables users to turn off the heater when not in use. Some users might have safety concerns (generally unwarranted) about “flipping” a circuit breaker in a circuit breaker panel (having multiple circuit breakers). Also, some circuit breaker panel doors are difficult to open, especially those suitable for outdoor service. Older circuit breakers in existing circuit breaker panels might not have circuit breakers that are rated for “switch duty.” Frequent use of those older circuit breakers might result in damage to the circuit breaker. Gas heaters with “standing pilots” (continuously burning pilots) waste energy. There are other technologies available to provide ignition for gas-fired heaters.

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.

❖ The area where the pools or spas are located might not be open to users during certain hours of the day or

on certain days. A time switch is a simple way to automatically shut off heaters and pumps during these times. The first exception allows for not providing the time switch where the public health standards require that the pool be heated or circulated (or both) 24 hours per day. The second exception is for pools that are provided with a heat recovery pool heating system or solar heating system. Pumps for these systems need to run when the heat source is available to maximize the energy savings that those systems offer.

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 104.12.

Exception: Where more than 70 percent of the energy for heating, computed over an operating season, is from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required.

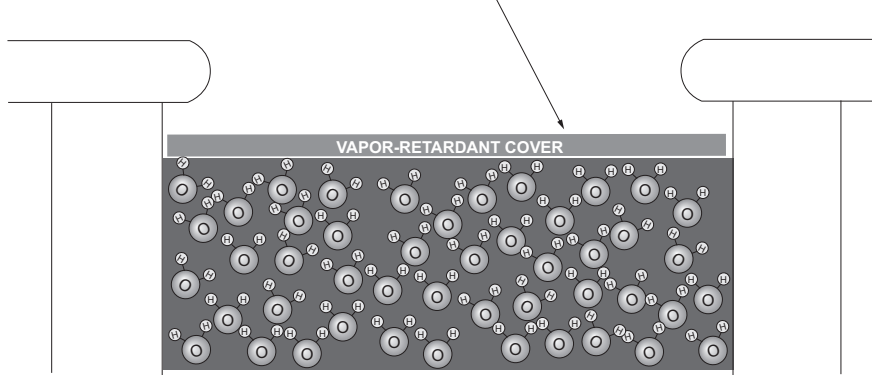
❖ The majority of energy loss from a heated pool or spa is from the open surface of the water, primarily because of the cooling effect that evaporation of water from the surface causes. Covering pools and spas with a vapor-retardant cover when the pool or spa is not in use is highly beneficial. As an encouragement for pool and spa owners to actually install a cover on the pool or spa, this section requires that a cover be present (but not necessarily installed) at final inspection. Although the code official cannot make the owner install the cover, it is hoped that if the owner incurred the expense for having the cover present, he will use it to his benefit for saving money on energy use.

A vapor-retardant cover is a solid layer of material (not mesh or netting) that rests on or at the water's surface to retard or curtail evaporation. In a swimming pool, the solid, vapor-retardant cover must touch most of the water's surface to impede the majority of water molecules from escaping [see Commentary Figures 303.1.3(1) and (2)].

On a spa, the vapor-retardant cover can be above the water's surface as long as all sides of the spa rim or coping are sealed by the cover to confine the water molecules that have escaped the water's surface to the airspace between the water and the cover, keeping them from escaping into the atmosphere [see Commentary Figure 303.1.3(3)].

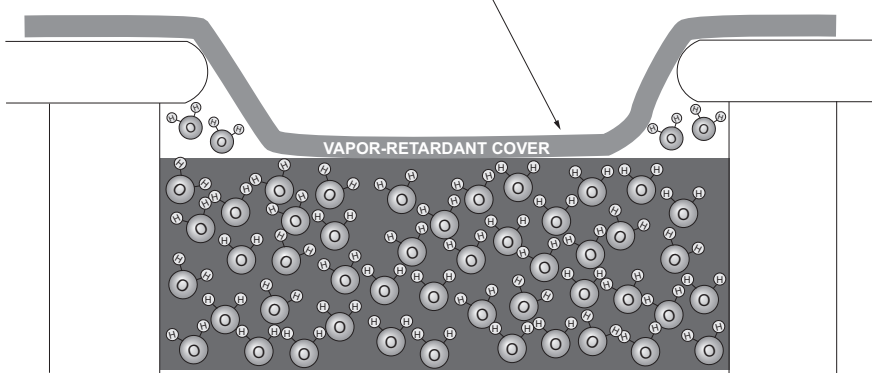
The exception recognizes that heat pump and solar heating types of pool and spa heaters are very efficient. A calculation of the amount of energy for heating the pool or spa water over an operating season is necessary. There could be a number of factors involved in making this calculation, such as the geographic area, the operating season length, the operating period within the year, the heat losses through pool walls and surface evaporation heat losses. Note that the code does not specify the temperature at which the pool or spa water is to be maintained for making this calculation. The total amount of required energy for the year is compared to the amount of energy that will be provided by a heat pump or solar heating system. Where the heat pump or solar heating system provides more than 70 percent of the required energy, then a vapor retarder or other vapor-retardant means need not be provided.

A SOLID VAPOR-RETARDANT COVER ON OR AT THE WATER'S SURFACE IN A SWIMMING POOL ONLY NEEDS TO BE APPROXIMATELY 0.010 INCH (2.5 mm) IN THICKNESS OR MORE TO REDUCE EVAPORATION AND CONSERVE ENERGY.



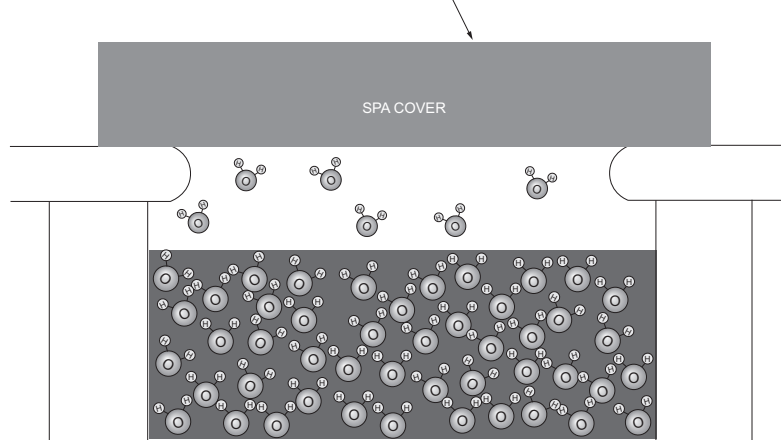
Commentary Figure 303.1.3(1)
FLOATING-TYPE SOLID VAPOR-RETARDANT COVER
{Illustration of Association of Pool and Spa Professionals (APSP)}

A SOLID VAPOR-RETARDANT COVER ON OR AT THE WATER'S SURFACE IN A SWIMMING POOL ONLY NEEDS TO BE APPROXIMATELY 0.010 INCH (2.5 mm) IN THICKNESS OR MORE TO REDUCE EVAPORATION AND CONSERVE ENERGY.



Commentary Figure 303.1.3(2)
POWERED OR PIN-DOWN TYPE SOLID VAPOR-RESISTANT COVER
{Illustration of Association of Pool and Spa Professionals (APSP)}

A VAPOR-RETARDANT SPA COVER CAN BE ABOVE THE WATER'S SURFACE AS LONG AS ALL SIDES OF THE SPA RIM OR COPING ARE SEALED BY AN APPROVED SPA COVER.



Commentary Figure 303.1.3(3)
SOLID VAPOR-RETARDANT SPA COVER
{Illustration of Association of Pool and Spa Professionals (APSP)}

Chapter 4: Public Swimming Pools

General Comments

The size of public swimming pools ranges from Olympic-size competition pools for diving or racing to much smaller pools serving neighborhoods or motels. These pools are used by persons who may be unfamiliar with the particular pool site. Such pools can be used by a large number of persons at one time. Public pools are required to have many features that make the pools safer to be used by the general population.

Purpose

This chapter covers a number of important safety topics for public pools including floor slope, diving envelopes, maximum bather loads, decks, depth markings and signage.

SECTION 401 GENERAL

401.1 Scope. The provisions of this chapter shall apply only to Class A, Class B, Class C, Class E and Class F public swimming pools.

❖ This chapter regulates all public pools, including public wading pools, except for Class D.

401.2 Intent. The provisions in this chapter shall govern the design, equipment, operation, warning signs, installation, sanitation, new construction, and alteration specific to the types of public swimming pools indicated in Section 401.1.

❖ This chapter covers the details of public pools.

401.3 Chapter 3 compliance required. In addition to the requirements of this chapter, public swimming pools shall comply with the requirements of Chapter 3.

❖ Chapter 3 requirements must be applied along with the requirements of this chapter. Note that Section 301.1.1 states that where differences occur between the provisions of this chapter and the provisions of Chapter 3, the provisions of this chapter control.

401.4 Dimensional tolerances. Finished pool dimensions, for other than Class A pools, shall be held within the construction tolerances shown in Table 401.4. Other dimen-

sions, unless otherwise specified, shall have a tolerance of ± 2 inches (51 mm).

❖ Because Class A pools are used for competitive events, the finished pool dimensions are held to very close tolerances. For other classes of pools, the tolerances in Table 401.4 provide for a reasonable level of quality control so that the actual pool dimensions don't stray too far from the design dimensions. Note that the negative construction tolerances must not apply to the minimum dimensions of the diving water envelopes given in Table 402.12. Of all the tolerances indicated, those for step treads and risers and waterline are most critical, as they directly relate to the safety of the users and sanitary conditions, respectively.

401.4.1 Class A pool tolerances. Dimensional tolerances for Class A pools shall be determined by the authority that provides the accreditation of the pool for competitive events.

❖ The tolerances for Class A pool dimensions are determined by the sanctioning body for the type of competitive events that are intended to be performed in the pool.

401.5 Floor slope. Except where required to meet the accessibility requirements in accordance with Section 307.9, the slope of the floor in the shallow area of a pool shall not exceed 1 unit

**TABLE 401.4
CONSTRUCTION TOLERANCES**

DESIGN ASPECT	CONSTRUCTION TOLERANCE
Depth—deep area, including diving area	± 3 inches
Depth—shallow area	± 2 inches
Length—overall	± 3 inches
Step treads & risers	$\pm \frac{1}{2}$ inch
Wall slopes	± 3 degrees
Waterline—pools with adjustable weir skimmers	$\pm \frac{1}{4}$ inch
Waterline—pools with nonadjustable skimming systems (gutters)	$\pm \frac{1}{8}$ inch
Width—overall	± 3 inches
All dimensions not otherwise specified herein	± 2 inches

For SI: 1 inch = 25.4 mm, 1 degree = 0.017 radians.

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vertical in 10 units horizontal (10-percent slope) for Class C pools and 1 unit vertical in 12 units horizontal (8-percent slope) for Class B pools. The slope limit shall apply in any direction to the point of the first slope change, where a slope change exists. The point of the first slope change shall be defined as the point at which the floor slope exceeds 1 unit vertical in 10 units horizontal (10-percent slope) for Class C pools and 1 unit vertical in 12 units horizontal (8-percent slope) for Class B pools.

❖ A Class B pool typically is large in size, outdoors and the land space area that it occupies is more than ample to accept low-sloped, shallow areas of pools. A Class C pool typically is not very large and is commonly installed either inside of a building or in a land space area that is compact in size. The steeper slope for shallow areas in Class C pools allows for a shorter pool length without compromising the safety of the user.

401.6 Dimensions for Class A pools. Class A pools shall be designed and constructed with the dimensions determined by the authority that provides the accreditation of the pool for competitive events.

❖ Class A pool dimensions and their tolerances are determined by the sanctioning body for the type of competitive events that are intended to be performed in the pool. Obviously, where winning or losing some competitive events is determined in 100ths of a second, dimensional tolerances of the swimming pool must be accurately controlled so that variations in dimensions such as lane length are small.

SECTION 402 DIVING

402.1 General. This section covers diving requirements for Class B, Class C, and Class E pools. Manufactured and fabricated diving equipment and appurtenances shall not be installed on Type O pools.

❖ Where a pool has provisions for a user to dive from a platform or board into a pool, the body of water needs to have a certain minimum shape to accommodate the trajectory of the diver in the water without the diver hitting the floor or walls of the pool at an unsafe speed. This section covers the requirements for diving for Class B, Class C and Class E pools. Type O pools do not have a body of water of a shape that can accommodate diving.

402.2 Manufactured and fabricated diving equipment. Manufactured and fabricated diving equipment shall be in accordance with this section and shall be designed for swimming pool use.

❖ Equipment for diving must be specifically designed for swimming pool diving purposes.

402.3 Installation. The installation of manufactured diving equipment shall be in accordance with Sections 402.3 through 402.14. Manufactured diving equipment shall be located in the deep area of the pool so as to provide the minimum dimensions shown in Table 402.12 and shall be installed in accordance with the manufacturer's instructions. Installation and use instructions for manufactured diving equipment shall be

provided by the manufacturer and shall specify the minimum diving water envelope dimensions required for each diving board and diving stand combination. The manufacturer's instructions shall refer to the water envelope type by dimensionally relating their products to Point A on the diving water envelopes shown in Table 402.12. The diving board manufacturer shall specify which boards fit on the design pool geometry types as indicated in Table 402.12.

❖ The type of diving equipment to be used on a pool drives the design of the pool with respect to the required diving envelope. Diving boards are tested and rated for pool type based on their length, spring characteristic and intended installation height, all of which can affect diver trajectory and velocity. Proper installation in accordance with the manufacturer's instructions is critical to ensure that the user is provided with a body of water in which to safely maneuver and complete the dive. Table 402.12 and the associated Figure 402.12 provide the minimum diving water envelope dimensions for different types of pools intended for diving.

402.4 Slip resistance. Diving equipment shall have slip-resistant walking surfaces.

❖ The need for slip-resistant walking surfaces on diving equipment is especially important to avoid falls onto the diving equipment or onto the deck of a pool.

402.5 Point A. For the application of Table 402.12, Point A shall be the point from which dimensions of width, length and depth are established for the minimum diving water envelope. If the tip of the diving board or diving platform is located at a distance of WA (see Figure 804.1) or greater from the deep end wall and the water depth at that location is equal to or greater than the water depth requirement at Point A, the point on the water surface directly below the center of the tip of the diving board or diving platform shall be identified as Point A.

❖ The location of Point A on the water surface establishes the position of where the outside of the minimum diving water envelope will be in the pool. The pool walls and floor must not encroach on the minimum diving envelope. The minimum diving water envelope is a three-dimensional space in the water. The actual construction of a pool for diving must not be made to exactly that same shape because other requirements in the code prevent such a design as floor slopes and ladders for egress must be outside the water envelope. Preferably, pools for diving would be designed to be much larger than the minimum diving water envelope because pool users do not always execute, by error or on purpose, a dive in the intended direction that the envelope assumes. Point A is located directly beneath the forward tip of the diving board, provided that the distance from that point to the deep end wall equals or exceeds the minimum specified for WA for the pool type in question and that the depth at this point equals or exceeds the depth specified at Point A.

402.6 Location of pool features in a diving pool. Where a pool is designed for use with diving equipment, the location of steps, pool stairs, ladders, underwater benches, underwater ledges, special features and other accessory items shall be

outside of the minimum diving water envelope. See Figure 322.2.

- ❖ Diving pools must be designed so that the minimum diving water envelope does not have any obstructions placed in it.

402.7 Stationary diving platforms and diving rocks. Where stationary diving platforms and diving rocks are built on site, flush with the wall and located in the diving area of the pool, Point A shall be in front of the wall at the platform or diving rock centerline.

- ❖ Some designs of diving pools have platforms or rocks placed at the edge of the deep end of the pool to enable diving. In these circumstances, Point A (see Section 402.5) is considered to be directly below the center of the front edge of the platform or rock at the water surface.

402.8 Location of diving equipment. Manufactured and fabricated diving equipment shall be located so that the tip of the board or platform is located directly above Point A as defined by Section 402.5.

- ❖ This section reinforces that once Point A has been established for a diving pool, the tip of the board or edge of the platform must be installed directly above Point A.

402.9 Elevation. The maximum elevation of a diving board above the *design waterline* shall be in accordance with the manufacturer's instructions.

- ❖ The diving board is designed and tested by the manufacturer to determine a maximum installation height, to ensure that a diver does not enter the pool at an unsafe velocity and will have sufficient room within the

specified diving envelope to safely maneuver and complete the dive. Installing a diving board higher than the maximum recommended height by the board manufacturer could result in diver injury.

402.10 Platform height above waterline. The height of an *approved* stationary diving apparatus, platform, or diving rock above the *design waterline* shall not exceed the limits of the manufacturer's specifications or the limits of the design prepared by a design professional.

- ❖ Manufacturers of stationary platforms establish the maximum height that the platform can be above the water, based on the depth of the water below the platform. Where stationary platforms are not manufactured but are field fabricated, the height at which they are installed must not exceed the maximum height that is provided by the platform's design professional.

402.11 Clearance. The diving equipment manufacturer shall specify the minimum headroom required above the tip of the board.

- ❖ This section applies to manufactured diving equipment, especially springboards and jump boards. The spring of such boards enables the diver to attain a higher altitude above the board than from a stationary surface. The manufacturer of the diving equipment must specify a required headroom above the tip of the board so that the diver doesn't hit overhead obstacles.

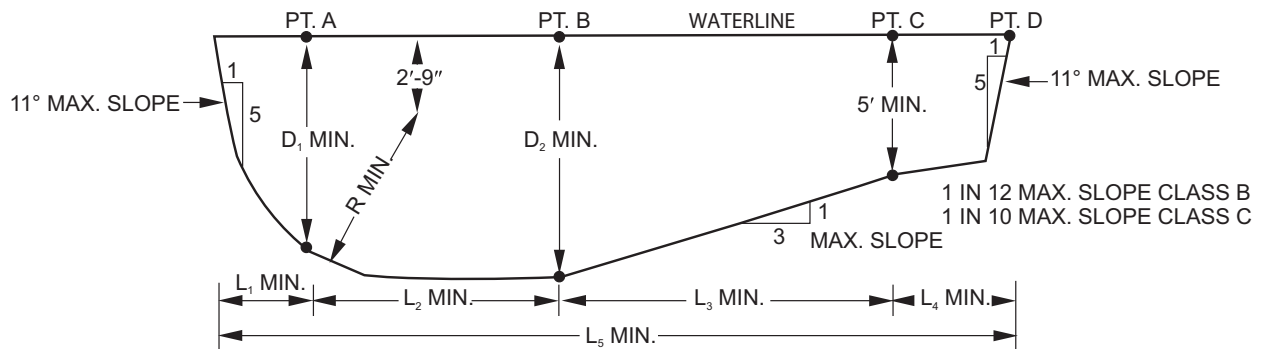
402.12 Water envelopes. The minimum diving water envelopes shall be in accordance with Table 402.12.

- ❖ Table 402.12 in conjunction with Figure 402.12 establishes the shape of the body of water that must be accommodated by the pool walls and floor so that div-

TABLE 402.12
MINIMUM DIVING WATER ENVELOPES
(See Figure 402.12)

POOL TYPE	MINIMUM DIMENSIONS								MINIMUM WIDTH OF POOL AT:		
	D ₁	D ₂	R	L ₁	L ₂	L ₃	L ₄	L ₅	Pt. A	Pt. B	Pt. C
VI	7'-0"	8'-6"	5'-6"	2'-6"	8'-0"	10'-6"	7'-0"	28'-0"	16'-0"	18'-0"	18'-0"
VII	7'-6"	9'-0"	6'-0"	3'-0"	9'-0"	12'-0"	4'-0"	28'-0"	18'-0"	20'-0"	20'-0"
VIII	8'-6"	10'-0"	7'-0"	4'-0"	10'-0"	15'-0"	2'-0"	31'-0"	20'-0"	22'-0"	22'-0"
IX	11'-0"	12'-0"	8'-6"	6'-0"	10'-6"	21'-0"	0	37'-6"	22'-0"	24'-0"	24'-0"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.



For SI: 1 degree = 0.017 rad, 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE 402.12
(MINIMUM DIVING WATER ENVELOPES)
CONSTRUCTION DIMENSIONS FOR WATER ENVELOPES FOR CLASS B AND CLASS C POOLS

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ing is practical and relatively safe. Note that the dimensions in the table are minimum dimensions. The tolerances of Table 401.4 do not apply.

402.13 Ladders for diving equipment. Ladders shall be provided with two grab rails or two handrails. There shall be a uniform distance between ladder treads, with a 7-inch (178 mm) minimum distance and a 12-inch (305 mm) maximum distance.

Exception: The distance between treads for the top and bottom riser can vary but shall be not less than 7 inches (178 mm) and not greater than 12 inches (305 mm).

❖ Uniform tread depth and uniform tread spacing on ladders decrease the probability that a user could slip and fall back onto the deck. Slip-resistant surfaces on ladder treads are especially necessary in a wet environment. Climbing a set of treads is nearly impossible without using two hands on separate grab rails or handrails. The separation between the rails is necessary to provide stability for the ladder user. The exception recognizes that some variation between the top and bottom tread to the surface at the top and bottom of the ladder is possible as the fabrication of ladders is more economically produced with the same tread spacing.

402.14 Springboard fall protection guards. Springboards located at a height greater than 5 feet (1524 mm) above the pool deck shall have a fall protection guard on each side of the springboard. The design and the selection of the materials of construction of the fall protection guards shall be determined by the manufacturer of the springboard support structure. The installation and maintenance of the fall protection guards shall be in accordance with the fall protection guard manufacturer's instructions.

❖ Springboards (diving boards) that are above a deck can be dangerous if someone falls off the springboard before that person has moved out on the board enough to be over the water. Springboard manufacturers will provide the design for guards or might provide the guards along with the springboard.

SECTION 403 BATHER LOAD

403.1 Maximum bather load. The maximum bather load of Class B and Class C pools shall be in accordance with Table 403.1.

❖ Ultimately, the number of bathers in a pool establishes the demand for sanitation and requires a circulation turnover rate to achieve minimum sanitary conditions. The required turnover rates established elsewhere in

the code were determined based on a maximum bather load for the pool. Table 403.1 shows how to compute a maximum bather load so that the operator of the pool has some means to decide how many persons can have access to the pool. The table provides the maximum densities of users according to various areas of the pool and is based on the deck area around the pool. The information provides the operator of the pool some means to decide how many persons can have access to the pool at any given time.

SECTION 404 REST LEDGES

404.1 Rest ledges. Rest ledges along the pool walls are permitted. They shall be not less than 4 feet (1220 mm) below the water surface. Where a ledge is provided, the width of the ledge shall be not less than 4 inches (102 mm) and not greater than 6 inches (152 mm).

❖ A rest ledge is a narrow stepping zone that is not less than 4 feet (1219 mm) underwater. Users can stand or put a foot on a rest ledge to help them stay or rest at the side or end of the pool. The resting area can be either a ledge or a recessed area for placing the feet.

SECTION 405 WADING POOLS

405.1 Wading pools. Class F wading pools shall be separate pools with an independent circulation system, shall be physically separated from the main pool and shall be constructed in accordance with Sections 405.2 through 405.6.

❖ Wading pools are intended for use by small children. Children can have accidental bowel movements or throw up in a wading pool. Keeping the circulation system for wading pools independent from other pools protects the other pools from contamination should an accident happen in the wading pool. The words "physically separated" might or might not mean that a barrier must be between other pools and a wading pool. The code official will have to interpret what "physically separated" means.

405.2 Nonentry areas. The areas where the water depth at the edge of the pool exceeds 9 inches (229 mm) shall be considered to be nonentry areas.

❖ Although wading pools are shallow, any water depth at the perimeter of the wading pool that is greater than 9 inches (229 mm) poses an entry hazard, especially for adults carrying small children into the pool. The intent is for users, adult and children, to use the provided

TABLE 403.1
MAXIMUM BATHER LOAD

POOL/DECK AREA	SHALLOW INSTRUCTIONAL OR WADING AREAS	DEEP AREA (NOT INCLUDING THE DIVING AREA)	DIVING AREA (PER EACH DIVING BOARD)
Pools with minimum deck area	15 sq. ft. per user	20 sq. ft. per user	300 sq. ft.
Pools with deck area at least equal to water surface area	12 sq. ft. per user	15 sq. ft. per user	300 sq. ft.
Pools with deck area at least twice the water surface area	8 sq. ft. per user	10 sq. ft. per user	300 sq. ft.

For SI: 1 square foot = 0.09 square meters.