



# 2012 INTERNATIONAL SWIMMING POOL AND SPA CODE™

# ISPSC™

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*The Association of  
Pool & Spa Professionals™*

# 2012 INTERNATIONAL SWIMMING POOL AND SPA CODE™ *A Member of the International Code Family®* ISPSC™

## ALSO INCLUDES

AMERICAN NATIONAL STANDARD FOR  
SUCTION ENTRAPMENT AVOIDANCE IN  
SWIMMING POOLS, WADING POOLS,  
SPAS, HOT TUBS, AND CATCH BASINS  
(APSP-7 2006)

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2012 International Swimming Pool and Spa Code™

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# PREFACE

## Introduction

Internationally, code officials recognize the need for a modern, up-to-date code governing the design, construction, alteration, repair and maintenance of swimming pools, spas, hot tubs and aquatic facilities. This first edition, the 2012 edition, of the *International Swimming Pool and Spa Code™*, is designed to meet this need through model code regulations in a single document that contains clear and specific requirements that safeguard the public health and safety in all communities.

This 2012 edition is fully compatible with all of the *International Codes®* (I-Codes®) published by the International Code Council (ICC)®, including the *International Building Code®*, *International Energy Conservation Code®*, *International Existing Building Code®*, *International Fire Code®*, *International Fuel Gas Code®*, *International Green Construction Code™*, *International Mechanical Code®*, *ICC Performance Code®*, *International Plumbing Code®*, *International Private Sewage Disposal Code®*, *International Property Maintenance Code®*, *International Residential Code®*, *International Wildland-Urban Interface Code®* and *International Zoning Code®*.

The *International Swimming Pool and Spa Code* provisions provide many benefits, among which is the model code development process that offers an international forum for code officials, design professionals, pool and industry representatives and other interested parties to discuss performance and prescriptive code requirements relative to aquatic safety. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

## Development

This first edition of the 2012 *International Swimming Pool and Spa Code* is the culmination of an effort that started in 2010 with the drafting of Public Version 1.0 by the Swimming Pool Code Drafting Committee (SPCDC) established by the ICC Board of Directors, with The Association of Pool & Spa Professionals® (APSP®) as a cooperating sponsor. The goal of the SPCDC was to draft a code which coordinated and enhanced the provisions previously found in the International Codes and APSP standards to upgrade pool and spa safety and to meet the requirements of the Virginia Graeme Baker Pool and Safety Act.

Following drafting of Public Version 1.0, a full cycle of code development in accordance with ICC's Code Development Procedures was held in 2011. This included the submission of code change proposals followed by a Code Development Hearing, the submission of public comments and a Final Action Hearing. A new edition of the code will be promulgated every three years.

This code is founded on principles intended to establish provisions consistent with the scope of a swimming pool and spa code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

## Adoption

The *International Swimming Pool and Spa Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings established in the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample legislation. The sample adoption ordinance on page ix addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

## Maintenance

The *International Swimming Pool and Spa Code* will be kept up to date through the review of proposed changes submitted by code officials, pool and industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The contents of this work are subject to change both through the Code Development Cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the International Code Council.

While the development procedure of the *International Swimming Pool and Spa Code* assures the highest degree of care, ICC and APSP, their memberships and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions because ICC and APSP do not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Note that, for the development of the 2015 edition of the I-Codes, there will be two groups of code development committees and they will meet in separate years. The groupings are as follows::

| <b>Group A Codes<br/>(Heard in 2012, Code Change Proposals<br/>Deadline: January 3, 2012)</b> | <b>Group B Codes<br/>(Heard in 2013, Code Change Proposals<br/>Deadline: January 3, 2013)</b>                                                               |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| International Building Code                                                                   | Administrative Provisions (Chapter 1 all codes except IRC and ICC PC, administrative updates to currently referenced standards, and designated definitions) |
| International Fuel Gas Code                                                                   | International Energy Conservation Code                                                                                                                      |
| International Mechanical Code                                                                 | International Existing Building Code                                                                                                                        |
| International Plumbing Code                                                                   | International Fire Code                                                                                                                                     |
| International Private Sewage Disposal Code                                                    | International Green Construction Code                                                                                                                       |
|                                                                                               | ICC Performance Code                                                                                                                                        |
|                                                                                               | International Property Maintenance Code                                                                                                                     |
|                                                                                               | International Residential Code                                                                                                                              |
|                                                                                               | International Swimming Pool and Spa Code                                                                                                                    |
|                                                                                               | International Wildland-Urban Interface Code                                                                                                                 |
|                                                                                               | International Zoning Code                                                                                                                                   |

## Italicized Terms

Selected terms set forth in Chapter 2, Definitions, are italicized where they appear in code text. Such terms are not italicized where the definition set forth in Chapter 2 does not impart the intended meaning in the use of the term. The terms selected have definitions which the user should read carefully to facilitate better understanding of the code.

# EFFECTIVE USE OF THE INTERNATIONAL SWIMMING POOL AND SPA CODE

The *International Swimming Pool and Spa Code* (ISPSC) is a model code that regulates the minimum requirements for the design, construction, alteration, repair and maintenance of swimming pools, spas, hot tubes and aquatic facilities. This includes public swimming pools, public spas, public exercise spas, aquatic recreation facilities, onground storable residential pools, permanent inground residential pools, permanent residential spas, permanent residential exercise spas, portable residential spas and portable residential exercise spas. In this code, these applications fall under the defined term “aquatic vessels” in Chapter 2.

In many jurisdictions, in addition to code officials having the responsibility for reviewing plans and inspecting the construction of aquatic vessels, environmental health officials also have a responsibility for oversight of the operation of aquatic vessels. In order to prevent disease and prevent injuries, environmental health officials conduct operational evaluations (inspections). This may include water chemistry, credentials and training of pool operators and lifeguards, proper water circulation, facility staff’s preparedness to respond to injuries and accidents, and proper sanitation and safety of the facility.

Code officials and environmental health officials commonly work closely in the plan review and inspection of aquatic vessels. This collaboration between departments to jointly review plans and inspect aquatic vessels is critical in order to achieve a safe and healthy environment for all that utilize these facilities.

The Association of Pool & Spa Professionals (APSP), a cooperating sponsor with ICC in the development and update of the ISPSC, further notes: “While it is recognized that proper construction and installation are essential, safe use of pools and spas requires common sense, including constant adult supervision of children, and proper maintenance. It is assumed and intended that pool users will exercise appropriate personal judgment and responsibility (including constant adult supervision of children) and that operators will create and enforce rules and warning appropriate for their pool/spa.”

## Arrangement and Format of the 2012 ISPSC

The format of the ISPSC allows each chapter to be devoted to a particular subject with the exception of Chapter 3 which contains general compliance subject matter that is coordinated with the provisions for each type of aquatic vessel regulated in Chapters 4 – 10. The ISPSC is divided into eleven different parts:

| Chapters | Subjects                                                           |
|----------|--------------------------------------------------------------------|
| 1        | Scope and Administration                                           |
| 2        | Definitions                                                        |
| 3        | General Compliance                                                 |
| 4        | Public Swimming Pools                                              |
| 5        | Public Spas and Public Exercise Spas                               |
| 6        | Aquatic Recreation Facilities                                      |
| 7        | Onground Storable Residential Swimming Pools                       |
| 8        | Permanent Inground Residential Swimming Pools                      |
| 9        | Permanent Residential Spas and Permanent Residential Exercise Spas |
| 10       | Portable Residential Spas and Portable Residential Exercise Spas   |
| 11       | Referenced Standards                                               |

The following is a chapter-by-chapter synopsis of the scope and intent of the provisions of the *International Swimming Pool and Spa Code*:

**Chapter 1 Scope and Administration.** This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. The scope is noted as applying to “aquatic vessels,” a term which is defined in Chapter 2. In addition to establishing the scope of the code, Chapter 1 identifies which swimming pools and spas come under its purview. Chapter 1 is largely concerned with maintaining “due process of law” in enforcing the design and construction criteria contained in the body of the code. Only through careful observation of the administrative provisions can the code official reasonably expect to demonstrate that “equal protection under the law” has been provided.

**Chapter 2 Definitions.** All terms that are defined in the code are listed alphabetically in Chapter 2. While a defined term may be used in one chapter or another, the meaning provided in Chapter 2 is applicable throughout the code. Of specific importance is the definition of “aquatic vessels” which addresses the types of vessels regulated by the code and specific water depth considerations which dictate the application of the code.

Where understanding of a term’s definition is especially key to or necessary for understanding of a particular code provision, the term is shown in italics wherever it appears in the code. This is true only for those terms that have a meaning that is unique to the code. In other words, the generally understood meaning of a term or phrase might not be sufficient or consistent with the meaning prescribed by the code; therefore, it is essential that the code-defined meaning be known.

Guidance regarding tense, gender and plurality of defined terms as well as guidance regarding terms not defined in this code is provided.

**Chapter 3 General Compliance.** Chapter 3, “General Compliance,” is broad in scope. It includes a variety of requirements for pools and spas. This chapter provides requirements that are intended to maintain a minimum level of safety and sanitation for both the general public and the users of pools or spas. Chapter 3 provides specific criteria for electrical, plumbing, mechanical and fuel gas requirements; energy savings requirements; construction in flood hazard areas; barrier requirements; decks around pools and spas; general design; dimensional design; equipment; suction entrapment avoidance; circulation systems; filters; pumps and motors; return and suction fittings; skimmers; heaters; air blowers and air induction systems; water supply; sanitizing equipment; waste water disposal; lighting; ladders and recessed treads; and safety. It is important to note that Chapter 3 is intended to provide general requirements not found in Chapters 4 – 10. Chapters 4 – 10 specifically reference Chapter 3 in order to coordinate the general provisions with the specific provisions based on the type of vessel.

**Chapter 4 Public Swimming Pools.** The purpose of Chapter 4 is to set forth specific requirements in the code for public swimming pools with regard to diving equipment, bather load limitations, rest ledges, wading pools, decks, deck equipment, filters, dressing and sanitary facilities, special features and signage. The term “public swimming pool” is defined in Chapter 2 and includes the different classes of pools (Class A – Class E).

**Chapter 5 Public Spas and Public Exercise Spas.** Chapter 5 establishes the specific criteria for public spas and public exercise spas with regard to materials, structure and design, pumps and motors, return and suction fittings, heater and temperature requirements, water supply, sanitation, oxidation equipment and chemical feeders, and safety features. The term “spa” is defined in Chapter 2.

**Chapter 6 Aquatic Recreation Facilities.** The purpose of Chapter 6 is to establish specific requirements for aquatic recreation facilities with regard to floors, markings and indications, circulation systems, handholds and ropes, depths, barriers, number of occupants, toilet rooms and bathrooms, special features and signage. The term “aquatic recreation facilities” is defined in Chapter 2 and includes wave pools, leisure rivers, inner tube rides and body slides, to name a few.

**Chapter 7 Onground Storable Residential Swimming Pools.** The purpose of Chapter 7 is to establish specific requirements for onground storable residential swimming pools with regard to ladders and stairs, decks and circulation systems. The term “onground storable pool” is defined in Chapter 2. This chapter applies to what has been commonly referred to in past standards and codes as onground or above-ground pools. The application of the provisions for onground residential pools is limited to pools associated with detached one- and two-family dwellings and townhouses not more than three stories high in accordance with the definition of the term “residential” in Chapter 2.

**Chapter 8 Permanent Inground Residential Swimming Pools.** The purpose of Chapter 8 is to establish specific requirements for permanent inground residential swimming pools with regard to design, construction tolerances, diving water envelopes, walls, offset ledges, pool floors, diving equipment, special features, circulation systems and safety features. The application of the provisions for inground residential pools is limited to pools associated with detached one- and two-family dwellings and townhouses not more than three stories high in accordance with the definition of the term “residential” in Chapter 2.

**Chapter 9 Permanent Residential Spas and Permanent Residential Exercise Spas.** The purpose of Chapter 9 is to establish specific requirements for permanent residential spas and permanent residential exercise spas with regard to safety features. The application of the provisions for residential spas (“spa” is defined in Chapter 2) is limited to spas associated with detached one- and two-family dwellings and townhouses not more than three stories high in accordance with the definition of the term “residential” in Chapter 2.

**Chapter 10 Portable Residential Spas and Portable Residential Exercise Spas.** The purpose of Chapter 10 is to establish specific requirements for portable residential spas and portable residential exercise spas with regard to standards that the equipment must meet. The application of the provisions for residential spas (“spa” is defined in Chapter 2) is limited to spas associated with detached one- and two-family dwellings and townhouses not more than three stories high in accordance with the definition of the term “residential” in Chapter 2.

**Chapter 11 Referenced Standards.** The code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 11 contains a comprehensive list of all standards that are referenced in the code. The standards are part of the code to the extent of the reference to the standard. Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with the code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the code official, contractor, designer and owner.

Chapter 11 is organized in a manner that makes it easy to locate specific standards. It lists all of the referenced standards, alphabetically, by acronym of the promulgating agency of the standard. Each agency’s standards are then listed in either alphabetical or numeric order based upon the standard identification. The list also contains the title of the standard; the edition (date) of the standard referenced; any addenda included as part of the ICC adoption; and the section or sections of this code that reference the standard.



# LEGISLATION

The *International Codes* are designed and promulgated to be adopted by reference by legislative action. Jurisdictions wishing to adopt the 2012 *International Swimming Pool and Spa Code* as an enforceable regulation governing swimming pools, spas, hot tubs, aquatic facilities and related equipment should ensure that certain factual information is included in the adopting legislation at the time adoption is being considered by the appropriate governmental body. The following sample adoption legislation addresses several key elements, including the information required for insertion into the code text.

## SAMPLE LEGISLATION FOR ADOPTION OF THE INTERNATIONAL SWIMMING POOL AND SPA CODE ORDINANCE NO. \_\_\_\_\_

A[N] [ORDINANCE/STATUTE/REGULATION] of the [JURISDICTION] adopting the 2012 edition of the International Swimming Pool and Spa Code, regulating and governing the design, construction, alteration, movement, renovation, replacement, repair and maintenance of swimming pools, spas, hot tubs, aquatic facilities and related equipment in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefore; repealing [ORDINANCE/STATUTE/REGULATION] No. \_\_\_\_\_ of the [JURISDICTION] and all other ordinances or parts of laws in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

**Section 1.** That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the *International Swimming Pool and Spa Code*, 2012 edition, as published by the International Code Council, be and is hereby adopted as the Pool and Spa Code of the [JURISDICTION], in the State of [STATE NAME] regulating and governing the design, construction, alteration, movement, renovation, replacement, repair and maintenance of swimming pools, spas, hot tubs, aquatic facilities and related equipment as herein provided; providing for the issuance of permits and collection of fees therefore; and each and all of the regulations, provisions, penalties, conditions and terms of said Pool and Spa Code on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this legislation, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

**Section 2.** The following sections are hereby revised:

Section 101.1. Insert: [NAME OF JURISDICTION]

Section 105.6.2. Insert: [APPROPRIATE SCHEDULE]

Section 105.6.3: [PERCENTAGE IN TWO LOCATIONS]

Section 107.4. Insert: [OFFENSE]

Section 107.4. Insert: [DOLLAR AMOUNT]

Section 107.4. Insert: [NUMBER OF DAYS]

Section 107.5. Insert: [DOLLAR AMOUNT IN TWO LOCATIONS]

**Section 3.** That [ORDINANCE/STATUTE/REGULATION] No. \_\_\_\_\_ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE LEGISLATION OR LAWS IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of laws in conflict herewith are hereby repealed.

**Section 4.** That if any section, subsection, sentence, clause or phrase of this legislation is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this law, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

**Section 5.** That nothing in this legislation or in the Pool and Spa Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this law; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this legislation.

**Section 6.** That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this legislation to be published. (An additional provision may be required to direct the number of times the legislation is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)



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**Section 7.** That this law and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect **[TIME PERIOD]** from and after the date of its final passage and adoption.



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# CHAPTER 1

## SCOPE AND ADMINISTRATION

### PART 1—SCOPE AND APPLICATION

#### SECTION 101 GENERAL

**101.1 Title.** These regulations shall be known as the International Swimming Pool and Spa Code of [NAME OF JURISDICTION], hereinafter referred to as “this code.”

**101.2 Scope.** The provisions of this code shall apply to the construction, alteration, movement, renovation, replacement, repair and maintenance of *aquatic vessels*.

**101.3 Intent.** The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location and maintenance or use of *aquatic vessels*.

**101.4 Severability.** If any section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

#### SECTION 102 APPLICABILITY

**102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**102.2 Existing installations.** Any *aquatic vessel* and related mechanical, electrical and plumbing systems lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continued if the use, maintenance or repair is in accordance with the original design and no hazard to life, health or property is created.

**102.3 Maintenance.** All *aquatic vessel* and related mechanical, electrical and plumbing systems, both existing and new, and all parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. All devices or safeguards required by this code shall be maintained in compliance with the code edition under which they were installed.

The *owner* or the *owner's* designated agent shall be responsible for maintenance of all systems. To determine compliance with this provision, the *code official* shall have the authority to require any system to be reinspected.

**102.4 Additions, alterations or repairs.** Additions, *alterations*, renovations or *repairs* to any *aquatic vessel* and related

systems shall conform to that required for a new system without requiring the existing systems to comply with all of the requirements of this code. Additions, *alterations* or *repairs* shall not cause existing systems to become unsafe, insanitary or overloaded.

Minor additions, *alterations*, renovations and *repairs* to existing systems shall be permitted in the same manner and arrangement as in the existing system, provided that such repairs or replacement are not hazardous and are *approved*.

**102.5 Historic buildings.** The provisions of this code relating to the construction, alteration, repair, enlargement, restoration, relocation or moving of *aquatic vessels* or systems shall not be mandatory for existing aquatic vessels or systems identified and classified by the state or local jurisdiction as part of a historic structure when such *aquatic vessels* or systems are judged by the *code official* to be safe and in the public interest of health, safety and welfare regarding any proposed construction, alteration, repair, enlargement, restoration, relocation or moving of such *aquatic vessel*.

**102.6 Moved aquatic vessels.** Except as determined by Section 102.2, systems that are a part of *aquatic vessels* or systems moved into or within the *jurisdiction* shall comply with the provisions of this code for new installations.

**102.7 Referenced codes and standards.** The codes and standards referenced in this code shall be those that are listed in Chapter 11 and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements.

**102.7.1 Application of the International Codes.** Where the *International Residential Code* is referenced in this code, the provisions of the *International Residential Code* shall apply to related systems in detached one- and two-family dwellings and townhouses not more than three stories in height. All other related systems shall comply with the applicable International Code or referenced standard.

**102.8 Requirements not covered by code.** Any requirements necessary for the strength, stability or proper operation of an existing or proposed system, or for the public safety, health and general welfare, not specifically covered by this code shall be determined by the *code official*.

**102.9 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**102.10 Application of references.** References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

## PART 2—ADMINISTRATION AND ENFORCEMENT

### SECTION 103 DEPARTMENT OF BUILDING SAFETY

**103.1 Creation of enforcement agency.** The Department of Building Safety is hereby created and the official in charge thereof shall be known as the *code official*.

**103.2 Appointment.** The *code official* shall be appointed by the chief appointing authority of the jurisdiction.

**103.3 Deputies.** In accordance with the prescribed procedures of the jurisdiction and with the concurrence of the appointing authority, the *code official* shall have the authority to appoint a deputy code official, the related technical officers, inspectors, plans examiners and other employees. Such employees shall have powers as delegated by the *code official*.

**103.4 Liability.** The *code official*, member of the board of appeals or employee charged with the enforcement of this code, while acting for the *jurisdiction* in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The *code official* or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

### SECTION 104 DUTIES AND POWERS OF THE CODE OFFICIAL

**104.1 General.** The *code official* is hereby authorized and directed to enforce the provisions of this code. The code official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

**104.2 Applications and permits.** The code official shall receive applications, review construction documents and issue *permits* for the erection, alteration, demolition and moving of aquatic vessels, related mechanical, electrical, plumbing systems, to inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

**104.3 Notices and orders.** The *code official* shall issue all necessary notices or orders to ensure compliance with this code.

**104.4 Inspections.** The *code official* shall make all of the required inspections, or the *code official* shall have the

authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such *approved* agency or by the responsible individual. The *code official* is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise, subject to the approval of the appointing authority.

**104.5 Identification.** The *code official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *code official* has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, dangerous or hazardous, the *code official* is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the *code official* shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the *code official* shall have recourse to the remedies provided by law to secure entry.

**104.7 Department records.** The *code official* shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

**104.8 Modifications.** Wherever there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the *code official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen sustainability, health, accessibility, life safety and structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

**104.9 Alternative materials, methods and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be approved where the *code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, durability and safety.

**104.10 Required testing.** Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims



for alternative materials or methods, the *code official* shall have the authority to require tests as evidence of compliance to be made at no expense to the *jurisdiction*.

**104.10.1 Test methods.** Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the code official shall approve the testing procedures.

**104.10.2 Testing agency.** All tests shall be performed by an *approved agency*.

**104.10.3 Test reports.** Reports of tests shall be retained by the *code official* for the period required for retention of public records.

**104.11 Alternative engineered design.** The design, documentation, inspection, testing and approval of an alternative engineered design shall comply with Sections 104.11.1 through 104.11.6.

**104.11.1 Design criteria.** An alternative engineered design shall conform to the intent of the provisions of this code and shall provide an equivalent level of quality, strength, effectiveness, durability and safety. Material, equipment or components shall be designed and installed in accordance with the manufacturer's installation instructions.

**104.11.2 Submittal.** The registered design professional shall indicate on the permit application that the system is an alternative engineered design. The *permit* and permanent permit records shall indicate that an alternative engineered design was part of the approved installation.

**104.11.3 Technical data.** The registered design professional shall submit sufficient technical data to substantiate the proposed alternative engineered design and to prove that the performance meets the intent of this code.

**104.11.4 Construction documents.** The registered design professional shall submit to the *code official* two complete sets of signed and sealed construction documents for the alternative engineered design.

**104.11.5 Design approval.** Where the *code official* determines that the alternative engineered design conforms to the intent of this code, the system shall be approved. If the alternative engineered design is not approved, the *code official* shall notify the registered design professional in writing, stating the reasons thereof.

**104.11.6 Inspection and testing.** The alternative engineered design shall be tested and inspected in accordance with the requirements of Section 106.12.

**104.12 Material and equipment reuse.** Materials, equipment and devices shall not be reused unless such elements have been reconditioned, tested, placed in good and proper working condition and *approved*.

## SECTION 105 PERMITS

**105.1 When required.** Any *owner*, or authorized agent who desires to construct, enlarge, alter, *repair*, move, or demolish

an *aquatic vessel* or to erect, install, enlarge, alter, repair, remove, convert or replace any system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *code official* and obtain the required *permit* for the work.

**105.2 Application for permit.** Each application for a permit, with the required fee, shall be filed with the *code official* on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or an authorized agent. The permit application shall contain such other information required by the *code official*.

**105.3 Construction documents.** *Construction documents*, engineering calculations, diagrams and other such data shall be submitted in two or more sets with each application for a *permit*. The *code official* shall require construction documents, computations and specifications to be prepared and designed by a registered design professional when required by state law. *Construction documents* shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code.

**105.4 Time limitation of application.** An application for a *permit* for any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a permit has been issued; except that the *code official* is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

**105.5 Permit issuance.** The application, construction documents and other data filed by an applicant for permit shall be reviewed by the code official. If the *code official* finds that the proposed work conforms to the requirements of this code and all laws and ordinances applicable thereto, and that the fees specified in Section 105.6 have been paid, a permit shall be issued to the applicant.

**105.5.1 Approved construction documents.** When the *code official* issues the permit where construction documents are required, the construction documents shall be endorsed in writing and stamped "APPROVED." Such approved construction documents shall not be changed, modified or altered without authorization from the code official. All work shall be done in accordance with the approved construction documents.

The *code official* shall have the authority to issue a permit for the construction of a part of a system before the entire construction documents for the whole system have been submitted or approved, provided adequate information and detailed statements have been filed complying with all pertinent requirements of this code. The holders of such permit shall proceed at their own risk without assurance that the *permit* for the entire system will be granted.

**105.5.2 Validity.** The issuance of a *permit* or approval of construction documents shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or any other ordinance of the



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jurisdiction. No permit presuming to give authority to violate or cancel the provisions of this code shall be valid.

The issuance of a *permit* based upon *construction documents* and other data shall not prevent the code official from thereafter requiring the correction of errors in said construction documents and other data or from preventing building operations being carried on there under when in violation of this code or of other ordinances of this jurisdiction.

**105.5.3 Expiration.** Every *permit* issued shall become invalid unless the work authorized by such *permit* is commenced within 180 days after its issuance, or if the work authorized by such *permit* is suspended or abandoned for a period of 180 days after the time the work is commenced. The *code official* is authorized to grant, in writing, one or more extensions of time, for a period not more than 180 days. The extension shall be requested in writing and justifiable cause demonstrated.

**105.5.4 Extensions.** Any permittee holding an unexpired *permit* shall have the right to apply for an extension of the time within which the permittee will commence work under that *permit* when work is unable to be commenced within the time required by this section for good and satisfactory reasons. The *code official* shall extend the time for action by the permittee for a period not exceeding 180 days if there is reasonable cause. The fee for an extension shall be one-half the amount required for a new permit for such work.

**105.5.5 Suspension or revocation of permit.** The *code official* shall revoke a permit or approval issued under the provisions of this code in case of any false statement or misrepresentation of fact in the application or on the construction documents upon which the *permit* or approval was based.

**105.5.6 Retention of construction documents.** One set of *approved construction documents* shall be retained by the *code official* for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws. One set of *approved construction documents* shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress.

**105.6 Fees.** A *permit* shall not be valid until the fees prescribed by law have been paid. An amendment to a *permit* shall not be released until the additional fee, if any, has been paid.

**105.6.1 Work commencing before permit issuance.** Any person who commences any work on a system before obtaining the necessary *permits* shall be subject to a fee as indicated in the adopted fee schedule and would be in addition to the required permit fees.

**105.6.2 Fee schedule.** The fees for all work shall be as indicated in the following schedule:

[JURISDICTION TO INSERT APPROPRIATE SCHEDULE]

**105.6.3 Fee refunds.** The *code official* shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.
2. Not more than [SPECIFY PERCENTAGE] percent of the *permit* fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than [SPECIFY PERCENTAGE] percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The *code official* shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

## SECTION 106 INSPECTIONS

**106.1 General.** Construction or work for which a *permit* is required shall be subject to inspection by the code official and such construction or work shall remain *accessible* and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the *jurisdiction* shall not be valid. It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the *code official* nor the *jurisdiction* shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

**106.2 Preliminary inspection.** Before issuing a *permit*, the *code official* is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

**106.3 Required inspections and testing.** All *aquatic vessel* installations or alterations thereto, including equipment, piping, and appliances related thereto, shall be inspected by the *code official* to ensure compliance with all of the requirements of this code.

**106.4 Other inspections.** In addition to the inspections specified above, the *code official* is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced.

**106.5 Inspection request.** It shall be the duty of the holder of the *permit* or their duly authorized agent to notify the *code official* when work is ready for inspection. It shall be the duty of the *permit* holder to provide access to and means for inspections of such work that are required by this code.

**106.6 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *code official*. The *code official*, upon notification, shall make the requested inspection and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his other agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the code official.

**106.7 Approved agencies.** Test reports submitted to the *code official* for consideration shall be developed by approved agencies that have satisfied the requirements as to qualifications and reliability.

**106.8 Evaluation and follow-up inspection services.** Prior to the approval of a closed, prefabricated system and the issuance of a permit, the *code official* shall require the submittal of an evaluation report on each prefabricated system indicating the complete details of the system, including a description of the system and its components, the basis upon which the system is being evaluated, test results and similar information, and other data as necessary for the *code official* to determine conformance to this code.

**106.9 Evaluation service.** The *code official* shall designate the evaluation service of an approved agency as the evaluation agency, and review such agency's evaluation report for adequacy and conformance to this code.

**106.10 Follow-up inspection.** Except where ready access is provided to all systems, service equipment and accessories for complete inspection at the site without disassembly or dismantling, the *code official* shall conduct the frequency of in-plant inspections necessary to ensure conformance to the approved evaluation report or shall designate an independent, approved inspection agency to conduct such inspections. The inspection agency shall furnish the *code official* with the follow-up inspection manual and a report of inspections upon request, and the system shall have an identifying label permanently affixed to the system indicating that factory inspections have been performed.

**106.11 Test and inspection records.** All required test and inspection records shall be available to the *code official* at all times during the fabrication of the system and the installation of the system, or such records as the *code official* designates shall be filed.

**106.12 Special inspections.** Special inspections of alternative engineered design systems shall be conducted in accordance with Section 104.11.6.

**106.13 Periodic inspection.** The registered design professional or designated inspector shall periodically inspect and observe the alternative engineered design to determine that the installation is in accordance with the approved construction documents. All discrepancies shall be brought to the immediate attention of the contractor for correction. Records shall be kept of all inspections.

**106.14 Written report.** The registered design professional shall submit a final report in writing to the *code official* upon completion of the installation, certifying that the alternative

engineered design conforms to the approved construction documents. A notice of approval for the system shall not be issued until a written certification has been submitted.

**106.15 Testing.** Systems shall be tested as required by this code. Tests shall be made by the *permit* holder and the *code official* shall have the authority to witness such tests.

**106.16 New, altered, extended or repaired systems.** New systems and parts of existing systems that have been altered, extended or repaired shall be tested as prescribed by this code.

**106.17 Equipment, material and labor for tests.** All equipment, material and labor required for testing a system or part thereof shall be furnished by the *permit* holder.

**106.18 Reinspection and testing.** Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the *code official* for inspection and testing.

**106.19 Approval.** After the prescribed tests and inspections indicate that the work complies in all respects with this code, a notice of approval shall be issued by the *code official*.

**106.19.1 Revocation.** The *code official* is authorized to, in writing, suspend or revoke a notice of approval issued under the provisions of this code wherever the notice is issued in error, or on the basis of the incorrect information supplied, or where it is determined that the building or structure, premise, system or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

**106.20 Temporary connection.** The *code official* shall have the authority to authorize the temporary connection of the building or system to the utility source for the purpose of testing systems.

**106.21 Connection of service utilities.** A person shall not make connections from a utility, source of energy, fuel, power, water system or sewer system to any building or system that is regulated by this code for which a *permit* is required until authorized by the *code official*.

## SECTION 107 VIOLATIONS

**107.1 Unlawful acts.** It shall be unlawful for any person, firm or corporation to erect, construct, alter, *repair*, remove, demolish or utilize any system, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

**107.2 Notice of violation.** The *code official* shall serve a notice of violation or order to the person responsible for the erection, installation, alteration, extension, *repair*, removal or demolition of work in violation of the provisions of this code, or in violation of a detail statement or the approved construction documents there under, or in violation of a *permit* or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.



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**107.3 Prosecution of violation.** If the notice of violation is not complied with promptly, the code official shall request the legal counsel of the *jurisdiction* to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful aquatic vessel in violation of the provisions of this code or of the order or direction made pursuant thereto.

**107.4 Violation penalties.** Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter or repair an *aquatic vessel* in violation of the *approved construction documents* or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

**107.5 Stop work orders.** Upon notice from the *code official*, work on any system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the *code official* shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**107.6 Abatement of violation.** The imposition of the penalties herein prescribed shall not preclude the legal officer of the *jurisdiction* from instituting appropriate action to prevent violation, or to prevent illegal use of an *aquatic vessel*, or to stop an illegal act, conduct, business or utilization of the plumbing on or about any premises.

**107.7 Unsafe systems.** Any system regulated by this code that is unsafe or that constitutes a fire or health hazard, insanitary condition, or is otherwise dangerous to human life is hereby declared unsafe. Any use of a system regulated by this code constituting a hazard to safety, health or public welfare by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster, damage or abandonment is hereby declared an unsafe use. Any such unsafe system is hereby declared to be a public nuisance and shall be abated by repair, rehabilitation, demolition or removal.

**107.7.1 Authority to condemn a system.** Whenever the *code official* determines that any system, or portion thereof, regulated by this code has become hazardous to life, health or property or has become insanitary, the *code official* shall order in writing that such system either be removed or restored to a safe or sanitary condition. A time limit for compliance with such order shall be specified in the written notice. No person shall use or maintain a defective system after receiving such notice.

When such a system is to be disconnected, written notice as prescribed in Section 107.2 shall be given. In cases of immediate danger to life or property, such disconnection shall be made immediately without such notice.

**107.7.2 Authority to disconnect service utilities.** The *code official* shall have the authority to authorize disconnection of utility service to the *aquatic vessel* regulated by the technical codes in case of an emergency, where necessary, to eliminate an immediate danger to life or property. Where possible, the owner and occupant of the building where the aquatic vessel is located shall be notified of the decision to disconnect utility service prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building shall be notified in writing, as soon as practical thereafter.

**107.7.3 Connection after order to disconnect.** No person shall make connections from any energy, fuel, power supply or water distribution system or supply energy, fuel or water to any equipment regulated by this code that has been disconnected or ordered to be disconnected by the *code official* or the use of which has been ordered to be discontinued by the *code official* until the *code official* authorizes the reconnection and use of such equipment.

When any system is maintained in violation of this code, and in violation of any notice issued pursuant to the provisions of this section, the code official shall institute any appropriate action to prevent, restrain, correct or abate the violation.

## SECTION 108 MEANS OF APPEAL

**108.1 Application for appeal.** Any person shall have the right to appeal a decision of the *code official* to the board of appeals. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted there under have been incorrectly interpreted, the provisions of this code do not fully apply, or an equally good or better form of construction is proposed. The application shall be filed on a form obtained from the *code official* within 20 days after the notice was served.

**108.2 Membership of board.** The board of appeals shall consist of five members appointed by the chief appointing authority as follows: one for 5 years, one for 4 years, one for 3 years, one for 2 years and one for 1 year. Thereafter, each new member shall serve for 5 years or until a successor has been appointed.

**108.2.1 Qualifications.** The board of appeals shall consist of five individuals, one from each of the following professions or disciplines:

1. Registered design professional who is a registered architect; or a builder or superintendent of building construction with at least 10 years' experience, 5 years of which shall have been in responsible charge of work.
2. Registered design professional with structural engineering or architectural experience.



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3. Registered design professional with mechanical and plumbing engineering experience; or a mechanical and plumbing contractor with at least 10 years' experience, 5 years of which shall have been in responsible charge of work.
4. Registered design professional with electrical engineering experience; or an electrical contractor with at least 10 years' experience, 5 years of which shall have been in responsible charge of work.
5. Registered design professional with *aquatic vessel* experience; or a contractor with at least 10 years' experience, 5 years of which shall have been in responsible charge of work.

**108.2.2 Alternate members.** The chief appointing authority shall appoint two alternate members who shall be called by the board chairman to hear appeals during the absence or disqualification of a member. Alternate members shall possess the qualifications required for board membership, and shall be appointed for 5 years or until a successor has been appointed.

**108.2.3 Chairman.** The board shall annually select one of its members to serve as chairman.

**108.2.4 Disqualification of member.** A member shall not hear an appeal in which that member has any personal, professional or financial interest.

**108.2.5 Secretary.** The chief administrative officer shall designate a qualified clerk to serve as secretary to the board. The secretary shall file a detailed record of all proceedings in the office of the chief administrative officer.

**108.2.6 Compensation of members.** Compensation of members shall be determined by law.

**108.3 Notice of meeting.** The board shall meet upon notice from the chairman, within 10 days of the filing of an appeal or at stated periodic meetings.

**108.4 Open hearing.** All hearings before the board shall be open to the public. The appellant, the appellant's representative, the *code official* and any person whose interests are affected shall be given an opportunity to be heard.

**108.4.1 Procedure.** The board shall adopt and make available to the public through the secretary procedures under which a hearing will be conducted. The procedures shall not require compliance with strict rules of evidence, but shall mandate that only relevant information be received.

**108.5 Postponed hearing.** When five members are not present to hear an appeal, either the appellant or the appellant's representative shall have the right to request a postponement of the hearing.

**108.6 Board decision.** The board shall modify or reverse the decision of the *code official* by a concurring vote of three members.

**108.6.1 Resolution.** The decision of the board shall be by resolution. Certified copies shall be furnished to the appellant and to the *code official*.

**108.6.2 Administration.** The *code official* shall take immediate action in accordance with the decision of the board.

**108.7 Court review.** Any person, whether or not a previous party of the appeal, shall have the right to apply to the appropriate court to correct errors of law. Application for review shall be made in the manner and time required by law following the filing of the decision in the office of the chief administrative officer.

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## CHAPTER 2

# DEFINITIONS

### SECTION 201 GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *International Building Code*, *International Energy Conservation Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *International Plumbing Code* or *International Residential Code*, such terms shall have the meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION 202 DEFINITIONS

**ACCESSIBLE.** Signifies access that requires the removal of an access panel or similar removable obstruction.

**ACTIVITY POOL.** A pool designed primarily for play activity that uses constructed features and devices including lily pad walks, flotation devices, small slide features, and similar attractions.

**AIR INDUCTION SYSTEM.** A system whereby a volume of air is introduced into hollow ducting built into a spa floor, bench, or *hydrotherapy jets*.

**ALTERATION.** Construction or renovation to an *existing aquatic vessel* other than repair that requires a permit.

**APPROVED.** Acceptable to the *code official* or authority having jurisdiction.

**APPROVED AGENCY.** An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the *code official*.

**AQUATIC RECREATION FACILITY.** A facility that is designed for free-form aquatic play and recreation. The facilities may include, but are not limited to, wave or surf action pools, leisure rivers, sand bottom pools, vortex pools, *activity pools*, inner *tube rides* and body slides, and interactive play attractions.

**AQUATIC VESSEL.** A vessel, permanent or temporary, intended for swimming, bathing, or wading and that is designed and manufactured to be connected to a *circulation*

*system*. Portable vessels 12 inches (305 mm) or less in designed water depth which are drained and filled daily are not considered aquatic vessels. For purposes of this code, the term is used to identify all the types of vessels governed by this code, including: swimming pools, aquatic facilities, *spas* and hot tubs, and related equipment. Such vessels are either used in a *residential* application or in a public application.

**BACKWASH.** The process of cleansing the *filter* medium and/or elements by the reverse flow of water through the *filter*.

**BACKWASH CYCLE.** The time required to *backwash* the filter medium and/or elements and to remove debris in the *filter* vessel.

**BARRIER.** A permanent fence, wall, building wall, or combination thereof that completely surrounds the *aquatic vessel* and obstructs the access to the vessel. Permanent shall mean “not being able to be removed, lifted, or relocated without the use of a tool.”

**BATHER.** A person using a pool, *spa*, or hot tub and adjoining deck area for the purpose of water sports, recreation, therapy or related activities.

**BATHER LOAD.** The number of persons in the pool/*spa* water at any given moment or during any stated period of time.

**BEACH ENTRY.** Sloping entry starting above the waterline at deck level and ending below the waterline. The presence of sand is not required. Also called “zero entry.”

**CHEMICAL FEEDER.** A device (floating or mechanical) for adding a chemical to pool or spa water.

**CIRCULATION EQUIPMENT.** The components of a *circulation system*.

**CIRCULATION SYSTEM.** The mechanical components that are a part of a re-circulation system on a pool or spa. *Circulation equipment* may be, but is not limited to, categories of pumps, *hair and lint strainers*, filters, valves, gauges, meters, heaters, surface *skimmers*, inlet/outlet fittings, and chemical feeding devices. The components have separate functions, but when connected to each other by piping, perform as a coordinated system for purposes of maintaining pool or spa water in a clear and sanitary condition.

**CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

**CONSTRUCTION DOCUMENTS.** Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*.

**COVER.** A device that covers, protects, or *spa*, or hot tub. See safety cover.

## DEFINITIONS

**DEEP AREA.** Water depth areas exceeding 5 feet (1.52 meters).

**DESIGN RATE OF FLOW.** The rate of flow used for design calculations in a system.

**DESIGN WATERLINE.** The centerline of the *skimmer* or other point as defined by the design professional.

**DIVING AREA.** The area of a swimming pool that is designed for diving.

**DIVING BOARD.** A flexible board secured at one end that is used for diving such as a spring board or a *jump board*.

**DIVING PLATFORM.** Stationary platform designed for diving.

**DIVING STAND.** Any supporting device for a springboard, *jump board* or *diving board*.

**EXERCISE SPA (Also known as a swim spa).** Variants of a *spa* in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. Exercise *spas* can include peripheral jetted seats intended for water therapy, heater, circulation and *filtration* system, or can be a separate distinct portion of a combination *spa/exercise spa* and can have separate controls. These *aquatic vessels* are of a design and size such that it has an unobstructed volume of water large enough to allow the 99th Percentile Man as specified in APSP 16 to swim or exercise in place.

**EXISTING AQUATIC VESSEL.** An *aquatic vessel* constructed prior to the date of adoption of this code, or one for which a legal building permit has been issued.

**FILTER.** A device that removes undissolved particles from water by recirculating the water through a porous substance (a *filter* medium or elements).

**FILTRATION.** The process of removing undissolved particles from water by recirculating the water through a porous substance (a *filter* medium or elements).

**FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.

**FLUME.** A trough-like or tubular structure, generally recognized as a water slide, that directs the path of travel and the rate of descent by the rider.

**GUTTER.** Overflow trough in the perimeter wall of a pool that is a component of the *circulation system* or flows to waste.

**HAIR AND LINT STRAINER.** A device attached on or in front of a pump to which the influent line (suction line) is connected for the purpose of entrapping lint, hair, or other debris that could damage the pump.

**HANDRAIL.** A support device that is intended to be gripped by a user for the purpose of resting or steadying, typically

located within or at exits to the pool or *spa* or as part of a set of steps.

**HYDROTHERAPY JET.** A fitting that blends air and water, creating a high-velocity turbulent stream of air-enriched water.

**JUMP BOARD.** A manufactured *diving board* that has a coil spring, leaf spring, or comparable device located beneath the board that is activated by the force exerted by jumping on the board's end.

**JURISDICTION.** The governmental unit that has adopted this code under due legislative authority.

**LABEL.** An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an *approved* agency and that indicates that the representative sample of the product or material has been tested and evaluated by an *approved* agency.

**LABELED.** Equipment, materials or products to which has been affixed a *label*, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LADDER.** A structure for ingress/egress that usually consists of two long parallel side pieces joined at intervals by cross-pieces (treads).

**TYPE A DOUBLE ACCESS LADDER.** An "A-Frame" ladder that straddles the pool wall of an above-ground pool and provides ingress and egress and is intended to be removed when not in use.

**TYPE B LIMITED ACCESS LADDER.** An "A-Frame" ladder that straddles the pool wall of an above-ground/onground pool. Type B ladders are removable and have a built-in feature that prevents entry to the pool when the pool is not in use.

**TYPE C LADDER.** A "ground to deck" staircase ladder that allows access to an above-ground pool deck and has a built-in entry-limiting feature.

**TYPE D IN POOL LADDER.** Located in the pool to provide a means of ingress and egress from the pool to the deck.

**TYPE E or F IN POOL STAIRCASE LADDER.** Located in the pool to provide a means of ingress and egress from the pool to the deck.

**LIFELINE.** An anchored line thrown to aid in rescue.

**LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the *code official* and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**MAIN DRAIN.** A submerged *suction outlet* to conduct water to the recirculating pump.

**NEGATIVE EDGE.** See “Vanishing edge.”

**NONENTRY AREA.** An area of the deck from which entry into the vessel is not permitted.

**ONGROUND STORABLE POOL.** A pool which can be disassembled for storage or transport. This includes portable pools with flexible/nonrigid walls that achieve their structural integrity by means of uniform shape, support frame or a combination thereof, and can be disassembled for storage or relocation.

**OUTLET FITTING.** The aperture or fitting through which the water flows from the pool, *spa*, or hot tub.

**OVERFLOW GUTTER.** The gutter around the top perimeter of the pool/*spa*, which is used to skim the surface.

**OWNER.** Any person, agent, firm or corporation having a legal or equitable interest in the property.

**PERMIT.** An official document or certificate issued by the authority having jurisdiction that authorizes performance of a specified activity.

**POWER SAFETY COVER.** A pool cover that is placed over the water area, and is opened and closed with a motorized mechanism activated by a control switch.

**PUBLIC SWIMMING POOL (Public Pool).** A pool, other than a *residential pool*, that is intended to be used for swimming or bathing and is operated by an *owner*, lessee, operator, licensee, or concessionaire, regardless of whether a fee is charged for use. Public pools shall be further classified and defined as follows:

**CLASS A, COMPETITION POOL.** A pool intended for use for accredited competitive aquatic events such as Federation Internationale De Natation (FINA), USA Swimming, USA Diving, USA Synchronized Swimming, USA Water Polo, National Collegiate Athletic Association (NCAA), National Federation of State High School Associations (NFHS). The use of the pool is not limited to competitive events.

**CLASS B, PUBLIC POOL.** A pool intended for public recreational use.

**CLASS C, SEMI-PUBLIC POOL.** A pool operated solely for and in conjunction with lodgings such as hotels, motels, apartments, condominiums.

**CLASS D-1, WAVE ACTION POOL.** A pool designed to simulate breaking or cyclic waves for purposes of general play or surfing.

**CLASS D-2, ACTIVITY POOL.** A pool designed for casual water play ranging from simple splashing activity to the use of attractions placed in the pool for recreation.

**CLASS D-3, CATCH POOL.** A body of water located at the termination of a manufactured waterslide attraction. The body of water is provided for the purpose of terminating the slide action and providing a means for exit to a deck or walkway area.

**CLASS D-4, LEISURE RIVER.** A manufactured stream of water of near-constant depth in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices.

**CLASS D-5, VORTEX POOL.** A circular pool equipped with a method of transporting water in the pool for the purpose of propelling riders at speeds dictated by the velocity of the moving stream of water.

**CLASS D-6, INTERACTIVE PLAY ATTRACTION.** A manufactured water play device or a combination of water-based play devices in which water flow volumes, pressures, or patterns can be varied by the bather without negatively influencing the hydraulic conditions for other connected devices. These attractions incorporate devices or activities such as slides, climbing and crawling structures, visual effects, user-actuated mechanical devices and other elements of bather-driven and bather-controlled play.

**CLASS E.** Pools used for instruction, play or therapy and with temperatures above 86°F (30°C).

*Public pools* are either a diving or nondiving type. Diving types of *public pools* are classified into types as an indication of the suitability of a pool for use with diving equipment.

**TYPES VI-IX.** Public pools suitable for the installation of diving equipment by type.

**TYPE O.** A nondiving *public pool*.

**RECESSED TREADS.** A series of vertically spaced cavities in a pool/*spa* wall creating tread areas for step holes.

**RECIRCULATION SYSTEM.** See “Circulation system.”

**REPAIR.** The restoration to good or sound condition of any part of an *aquatic vessel* for the purpose of its maintenance.

**RESIDENTIAL.** For purposes of this code, residential applies to detached one- and two-family dwellings and townhouses not more than three stories in height.

**RESIDENTIAL SWIMMING POOL (Residential Pool).** A pool intended for use which is accessory to a *residential* setting and available only to the household and its guests. All other pools shall be considered *public pools* for purposes of this code.

**TYPES I –V.** Residential pools suitable for the installation of diving equipment by type.

**TYPE O.** A nondiving residential pool.

**RETURN INLET.** The aperture or fitting through which the water under positive pressure returns into a pool.

**RING BUOY.** A ring-shaped floating buoy capable of supporting a user, usually attached to a throwing line.

**ROPE AND FLOAT LINE.** A continuous line not less than  $\frac{1}{4}$  inch (6 mm) in diameter that is supported by buoys and attached to opposite sides of a pool to separate the deep and shallow ends.

**RUNOUT.** A continuation of water slide flume surface where riders are intended to decelerate and/or come to a stop.

## DEFINITIONS

**SAFETY COVER.** A *barrier* intended to be completely removed before entry of users for swimming pools, *spas*, hot tubs or wading pools, attendant appurtenances and/or anchoring mechanisms that will, when properly labeled, installed, used, and maintained in accordance with the manufacturer's published instructions. These *covers* are either a power or manual type.

**SHALL.** The term, when used in the code, is construed as mandatory.

**SHALLOW AREAS.** Portions of a pool or *spa* with water depths less than 5 feet (1524 mm).

**SKIMMER.** A device installed in the pool or *spa* that permits the removal of floating debris and surface water to the filter.

**SLIP RESISTANT.** A surface that has been so treated or constructed to significantly reduce the chance of a user slipping. The surface shall not be an abrasion hazard.

**SLOPE BREAK.** Occurs at the point where the slope of the pool floor changes to a greater slope.

**SPA.** A product intended for the immersion of persons in temperature-controlled water circulated in a closed system, and not intended to be drained and filled with each use. A *spa* usually includes a filter, a heater (electric, solar, or gas), a pump or pumps, and a control, and may also include other equipment, such as lights, blowers, and water-sanitizing equipment.

**PERMANENT RESIDENTIAL SPA.** A *spa*, intended for use that is accessory to a *residential* setting and available to the household and its guests and where the water heating and water-circulating equipment is not an integral part of the product. The *spa* is intended as a permanent plumbing fixture and not intended to be moved.

**PORTABLE RESIDENTIAL SPA.** A *spa* intended for use that is accessory to a *residential* setting and available to the household and its guests and where it is either self-contained or nonself-contained.

**PUBLIC SPA.** A *spa* other than a *permanent residential spa* or *portable residential spa* which is intended to be used for bathing and is operated by an owner, licensee, concessionaire, regardless of whether a fee is charged for use.

**SELF-CONTAINED SPA.** A factory-built *spa* in which all control, water heating and water-circulating equipment is an integral part of the product. Self-contained *spas* may be permanently wired or cord connected.

**NONSELF-CONTAINED SPA.** A factory-built *spa* in which the water heating and circulating equipment is not an integral part of the product. Nonself-contained *spas* may employ separate components such as an individual filter, pump, heater and controls, or they may employ assembled combinations of various components.

**SPRAY POOL.** A pool or basin occupied by constructed features that spray water in various arrays for the purpose of wetting the persons playing in the spray streams.

**SUBMERGED VACUUM FITTING.** A fitting intended to provide a point of connection for suction side automatic swimming pool, *spa*, and hot tub cleaners.

**SUCTION OUTLET.** See "Outlet fitting."

**SURFACE SKIMMING SYSTEM.** A device or system installed in the pool/*spa* that permits the removal of floating debris and surface water to the filter.

**SURGE CAPACITY.** The storage volume in a *surge tank*, gutter, and plumbing lines. See "System capacity."

**SURGE TANK.** A storage vessel within the pool recirculating system used to contain the water displaced by bathers.

**SWIMMING POOL.** See "*Public swimming pool*" and "*residential swimming pool*."

**SWIMOUT.** An *underwater seat* area that is placed completely outside of the perimeter shape of the pool. Where located at the deep end, swimouts are permitted to be used as the deep-end means of entry/exit to the pool.

**TUBE RIDE.** A gravity flow attraction found at a waterpark designed to convey riders on an inner-tube-like device through a series of chutes, channels, flumes, or pools.

**TURNOVER RATE.** The period of time (usually in hours) required to circulate a volume of water equal to the pool or *spa* capacity.

**UNDERWATER LEDGE.** A narrow shelf projecting from the side of a vertical structure whose dimensions are defined in the appropriate standard.

**UNDERWATER SEAT.** An underwater ledge that is placed completely inside the perimeter shape of the pool, generally located in the shallow end of the pool.

**VANISHING EDGE.** Water-feature detail in which water flows over the edge of at least one of the pool walls and is collected in a catch basin. Also called "Negative edge."

**WATERLINE.** See "Design waterline."

**WAVE POOL CAISSON.** A large chamber used in wave generation. This chamber houses pulsing water and air surges in the wave generation process and is not meant for human occupancy.

**ZERO ENTRY.** See "Beach entry."

## 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 aquatic vessels* and all related piping, equipment, and materials. Provisions that are unique to a specific type of *aquatic vessel* 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 Chapter 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 *aquatic vessels* 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.

**Exception:** *Portable residential spas* and *portable residential exercise spas* *listed* and *labeled* in accordance with UL 1563 or CSA C22.2 No. 218.1.

**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 *aquatic vessels* 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 Wastewater discharge.** Where wastewater from *aquatic vessels*, 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 piping systems constructed of plastic piping shall not use compressed air for the test.

**302.8 Maintenance.** *Aquatic vessels* 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 General.** The energy requirements for pools and inground permanently installed *spas* shall be as specified in Sections 303.2 through 303.4 and APSP 15. The energy requirements for *residential portable electric spas* shall be in accordance with APSP 14.

**303.2 Heaters.** Heaters shall be equipped with an external on-off switch to allow the heater to be shutoff without adjusting the thermostat setting. Such switch shall be provided with ready access. Gas-fired heaters shall not be equipped with continuous pilot burners.

**Exception:** *Portable residential spas* and *portable residential exercise spas*.

**303.3 Time switches.** Time switches or other control methods that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed with or on all heaters and pumps. Heaters, pumps and motors that have built-in timers shall be deemed in compliance with this requirement.

**Exceptions:**

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate waste-heat recovery pool heating systems.
3. *Portable residential spas* and *portable residential exercise spas*.

**303.4 Covers.** Heated pools and inground permanently installed *spas* shall be provided with a vapor retardant *cover*.

**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.

### SECTION 304 FLOOD HAZARD AREAS

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

**304.2 Determination of impacts based on location.** *Aquatic vessels* located in flood hazard areas indicated within the



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*International Building Code* or the *International Residential Code* shall comply with Section 304.2.1 or 304.2.2.

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

**304.2.1 Aquatic vessels located in designated floodways.** Where *aquatic vessels* are located in designated floodways, documentation shall be submitted to the *code official* that demonstrates that the construction of the aquatic vessel will not increase the design flood elevation at any point within the jurisdiction.

**304.2.2 Aquatic vessels located where floodways have not been designated.** Where *aquatic vessels* 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 *aquatic vessel* 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.

**304.3 Aquatic vessels in flood hazard areas subject to high-velocity wave action.** *Aquatic vessels* installed in flood hazard areas subject to high-velocity wave action (coastal high hazard areas) shall be designed and constructed in accordance with ASCE 24.

**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 *aquatic vessels*. These design controls are intended to provide protection against the potential drowning and near drowning by restricting access to such vessels. 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.
2. Swimming pools with a *powered safety cover* that complies with ASTM F 1346.

**305.2 Outdoor swimming pools and spas.** All outdoor *aquatic vessels* 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 *aquatic vessel*. Such height shall exist around the entire perimeter of the vessel and for a distance of 3 feet (914 mm) where measured horizontally from 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 vessel.
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 vessel.
4. Where the top of the vessel structure is above grade, the *barrier* shall be installed on grade or shall be mounted on top of the vessel structure. Where the *barrier* is mounted on the top of the vessel, the vertical clearance between the top of the vessel 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 (102 mm) diameter 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 restraining barrier/fence.** 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 restraining 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 secu-

urity 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 *barrier*, the gate shall comply with Section 305.3.
6. Patio deck sleeves such as vertical post receptacles which are placed inside the patio surface shall be of a nonconductive material.
7. Mesh fences shall not be used on top of on ground *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 *aquatic vessel* 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.

**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, spacing within the cutouts shall not exceed 1.75 inches (44 mm) in width.

**305.2.7 Chain link dimensions.** The maximum opening formed by a chain link fence shall be not more than 1.75 inches (44 mm). Where the fence is provided with slats fastened at the top and bottom which reduces the openings, such openings shall be not more than 1.75 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 1.75 inches (44 mm). The angle of diagonal members shall not be 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) around the exterior of the *barrier* and around 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 *aquatic vessel* side of the required *barrier* shall be not less than 20 inches (508 mm) from the water's edge.

**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 vessel and shall be self-closing and have a self-latching device.

**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  $\frac{1}{2}$  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 vessel side of the gate at least 3 inches (76 mm) below the top of the gate, and the gate and *barrier* shall not have openings greater than  $\frac{1}{2}$  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*, doors and operable windows with a sill height of less than 48 inches (1219 mm) that provide direct access to the *aquatic vessel* through the wall, shall be equipped with one or more of the following:

1. An alarm that produces an audible warning when the door or its screen or window, is 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 deactivation switch shall be located 54 inches (1372 mm) or more above the threshold of the door. In dwellings or structures required to be Accessible units, Type A units or Type B units, the deactivation switch shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1219 mm) above the threshold of the door.
2. A safety cover that is *listed* and *labeled* in accordance with ASTM F 1346.
3. An *approved* means of protection, such as self-closing doors with self-latching devices, provided that the degree of protection afforded is not less than the protection afforded by Items 1 or 2.

**305.5 Pool structure as a barrier.** Where an onground *residential pool* structure is used as a *barrier* or where the *barrier* is mounted on top of the pool structure, the following shall apply:

1. An onground pool wall, itself, shall be permitted to be the *barrier* where the pool structure is on grade and the wall is at least 48 inches (1219 mm) above grade for the entire perimeter of the pool and complies with the requirements of Section 305.2.
2. Where the means of access is a *ladder* or steps, the *ladder* or steps shall be capable of being secured, locked or removed to prevent access or the ladder or steps shall be surrounded by a *barrier* that meets the requirements of this section.
3. When the *ladder* or steps are secured, locked or removed, any opening created shall not allow the passage of a 4 inch (102 mm) diameter sphere.
4. The *barrier* shall be installed in accordance with the manufacturer's instructions.

**305.6 Natural barriers.** In the case where the vessel area abuts the edge of a lake or other natural body of water, public

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access is not permitted or allowed along the shoreline, and required *barriers* extend to and beyond the water's edge a minimum of 18 inches (457 mm), a *barrier* is not required between the natural body of water shoreline and the vessel.

**305.7 Natural topography.** Natural topography that prevents direct access to the *aquatic vessel* 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, 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 Stair treads and risers.** Stair riser heights shall be in accordance with the *International Residential Code* or the *International Building Code*, as applicable in accordance with Section 102.7.1.

**306.4 Slope.** The minimum slope of decks shall be in accordance with Table 306.4 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  $\frac{1}{2}$  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  $\frac{1}{4}$  inch per 1 foot (1 mm per 48 mm). Decks shall be sloped so that standing water will not be deeper than  $\frac{1}{8}$  inch (3.2 mm), 20 minutes after the cessation of the addition of water to the deck.

**306.5 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.

**306.5.1 Maximum gap.** The open gap between pool decks and adjoining decks or walkways, including joint material, shall be not greater than  $\frac{3}{4}$  inch (19.1 mm). The difference

in vertical elevation between the pool deck and the adjoining sidewalk shall be not greater than  $\frac{1}{4}$  inch (6.4 mm).

**306.6 Concrete joints.** Isolation joints that occur where the pool coping meets the concrete deck shall be watertight.

**306.6.1 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.

**306.6.2 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.

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

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

**306.8 Valves under decks.** Valves installed in or under any deck shall be provided with access for operation, service, and maintenance as required by the *International Plumbing Code* or *International Residential Code*, as applicable in accordance with Section 102.7.1. Access covers shall be provided.

**306.8.1 Hose bibbs.** Hose bibbs shall be provided for rinsing down the entire deck and shall be installed in accordance with the *International Plumbing Code* or *International Residential Code*, as applicable in accordance with Section 102.7.1, and shall be located not more than 150 feet (45 720 mm) apart. Water-powered devices, such as water-powered lifts, shall have a dedicated hose bibb water source.

**Exception:** *Residential pools* and spas shall not be required to have hose bibbs located at 150-foot (45 720 mm) intervals, or have a dedicated hose bibb for water-powered devices.

### SECTION 307 GENERAL DESIGN

**307.1 General.** The provisions of this section apply to all *aquatic vessels*.

**Exception:** The provisions of Sections 307.3 through 307.6 do not apply to *listed* and *labeled portable residential spas* and *listed* and *labeled portable residential exercise spas*.

TABLE 306.4  
MINIMUM DRAINAGE SLOPES

| SURFACE                          | TYPICAL MINIMUM DRAINAGE SLOPE<br>(INCH PER FOOT) |
|----------------------------------|---------------------------------------------------|
| Brick and heavy textured finish  | $\frac{3}{8}$ inch                                |
| Carpet                           | $\frac{1}{2}$ inch                                |
| Exposed aggregate                | $\frac{1}{4}$ inch                                |
| Textured, hand-finished concrete | $\frac{1}{8}$ inch                                |
| Wood                             | $\frac{1}{8}$ inch                                |
| Wood/plastic composite           | $\frac{1}{8}$ inch                                |

For SI: 1 inch per foot = 83.3 mm per m.



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**307.2 Glazing in hazardous locations.** Glazing in hazardous locations for *residential pools* and spas shall comply with the *International Residential Code*. Glazing in hazardous locations in all other occupancies shall comply with the *International Building Code*.

**307.3 Materials.** *Aquatic vessels* and appurtenances thereto shall be constructed of materials that are nontoxic to humans and the environment; that are generally or commonly regarded to be impervious and enduring; that will withstand the design stresses; and that will provide a watertight structure with a smooth and easily cleanable surface without cracks or joints, excluding structural joints, or that will provide a watertight structure to which a smooth, easily cleaned surface/finish is applied or attached. Material surfaces that come in contact with the user shall be finished, so that they do not constitute a cutting, pinching, puncturing or abrasion hazard under casual contact and intended use.

**307.3.1 Beach pools.** Clean sand or similar material, where used in a beach pool environment, shall be used over an impervious surface. The sand area shall be designed and controlled so that the *circulation system*, maintenance, safety, sanitation, and operation of the pool are not adversely affected.

**307.3.2 Compatibility.** Assemblies of different materials shall be chemically and mechanically compatible for their intended use and environment.

**307.4 Structural design.** The structural design of *aquatic vessels* shall be in accordance with the *International Building Code* or *International Residential Code*, as applicable in accordance with Section 102.7.1.

**307.4.1 Installation.** Equipment for *aquatic vessels* shall be supported to prevent damage from misalignment and settling and located so as to allow access for inspection, servicing, removal and *repair* of component parts.

**307.5 Freeze protection.** In climates subject to freezing temperatures, outdoor *aquatic vessel* shells and appurtenances, piping, filter systems, pumps and motors, and other components shall be designed and constructed to provide protection from damage from freezing.

**307.6 Surface condition.** The surfaces within public *aquatic vessels* intended to provide footing for users shall be slip *resistant* and shall not cause injury during normal use.

**307.7 Colors and finishes.** The colors, patterns, or finishes of the vessel interior shall not obscure objects or surfaces within the vessel.

**Exception:** *Residential pools and spas*.

**307.8 Roofs or canopies.** Roofs or canopies over *aquatic vessels* shall be in accordance with the *International Building Code* or *International Residential Code*, as applicable in accordance with Section 102.7.1 and shall be constructed so as to prevent water runoff into the *aquatic vessel*.

**307.9 Accessibility.** An accessible route to the public *aquatic vessel* shall be provided in accordance with the *International Building Code*. Accessibility within the public *aquatic vessel* shall be provided as required by the accessible recreational

facilities provisions of the *International Building Code*. Accessibility for *aquatic vessels* accessory to detached one- and two-family dwellings and townhouses not more than three stories in height shall be provided where required by the *International Residential Code*.

## SECTION 308 DIMENSIONAL DESIGN

**308.1 Floor slope.** The slope of the floor from the point of the first slope change to the deep area shall not exceed one unit vertical in three units horizontal.

**Exception:** *Portable residential spas* and *portable residential exercise spas*.

**308.2 Walls.** Walls shall intersect with the floor at an angle or a transition profile. Where a transitional profile is provided at water depths of 3 feet (914 mm) or less, a transitional radius shall not exceed 6 inches (150 mm) and shall be tangent to the wall and is permitted to be tangent to or intersect the floor.

**Exceptions:**

1. *Portable residential spas* and *portable residential exercise spas*.
2. *Onground storable pools*.

**308.3 Shape.** This code is not intended to regulate the shape of *aquatic vessels* other than to take into account the effect that a given shape will have on the safety of the occupants and to maintain the minimum required level of circulation to ensure sanitation.

**308.4 Waterline.** The design waterline shall have a maximum construction tolerance at the time of completion of the work of plus or minus  $\frac{1}{4}$  inch (6.35 mm) for *aquatic vessels* with adjustable weir surface skimming systems, and plus or minus  $\frac{1}{8}$  inch (3.175 mm) for aquatic vessels with nonadjustable surface skimming systems.

## SECTION 309 EQUIPMENT

**309.1 General.** Electrically operated equipment shall be *listed* and *labeled* in accordance with applicable product standards. Treatment and *circulation system* equipment for public *aquatic vessels* shall be *listed* and *labeled* in accordance with NSF 50 and other applicable standards.

**Exception:** *Portable residential spas* and *portable residential exercise spas* listed and labeled in accordance with UL 1563 or CSA C22.2 No. 218.1.

## SECTION 310 SUCTION ENTRAPMENT AVOIDANCE

**310.1 General.** Suction entrapment avoidance for aquatic vessels shall be provided in accordance with APSP 7.

**Exception:** *Portable residential spas* and *portable residential exercise spas* listed and labeled in accordance with UL 1563 or CSA C22.2 No. 218.1.



## SECTION 311 CIRCULATION SYSTEMS

**311.1 General.** The provisions of this section apply to *circulation systems* for aquatic vessels.

**Exception:** *Portable residential spas and portable residential exercise spas.*

**311.2 System design.** A *circulation system* consisting of pumps, piping, *return inlets* and outlets, *filters*, and other necessary equipment shall be provided for the complete circulation of water. Wading pools and spas shall have separate dedicated filtering systems.

**Exception:** Separate filtering systems are not required for *residential aquatic vessels*.

**311.2.1 Turnover rate.** The equipment shall be sized to turn over the volume of water that the *aquatic vessel* is capable of containing as specified in this code for the specific installation.

**311.2.2 Servicing.** *Circulation system* components that require replacement or servicing shall be provided with access for inspection, *repair*, or replacement and shall be installed in accordance with the manufacturer's specifications.

**311.2.3 Equipment anchorage.** *Aquatic vessel* equipment and related piping shall be designed and installed in accordance with the manufacturer's installation instructions.

**311.3 Water velocity.** The *water velocity* in return lines shall not exceed 8 feet (2.4 m) per second. The water velocity in suction piping shall be as required by Section 310.

**311.4 Piping and fittings.** Plastic pipe and fittings used in *circulation systems* shall be nontoxic and shall be able to withstand the design operating pressures and conditions of the *aquatic vessel*. Plastic pipe shall be *listed* and *labeled* as

complying with NSF 14. *Circulation system* piping shall be *listed* and *labeled* as complying with one of the standards in Table 311.4.

**311.4.1 Fittings.** Fittings used in *circulation systems* shall be *listed* and *labeled* as complying with one of the standards in Table 311.4.1.

### Exceptions:

1. *Suction outlet fitting* assemblies and manufacturer-provided components certified in accordance with APSP 16.
2. *Skimmers* and manufacturer-provided components.
3. *Gutter* overflow grates and fittings installed above or outside of the overflow point of the pool or *spa*.

**311.4.2 Joints.** Joints shall be made in accordance with manufacturer's instructions.

**311.4.3 Piping subject to freezing.** Piping subject to damage by freezing shall have a uniform slope in one direction and shall be equipped with valves for drainage or shall be capable of being evacuated to remove the water.

**311.5 System draining.** Equipment shall be designed and fabricated to drain the water from the equipment, together with exposed face piping, by removal of drain plugs, manipulating valves, or by other methods. Drainage shall be in accordance with manufacturer's specifications.

**311.6 Pressure or vacuum gauge.** Gauges shall be provided for *public pools* in the *circulation system*. Gauges shall be provided with ready access.

1. A pressure gauge shall be located downstream of the pump and between the pump and *filter*.

TABLE 311.4  
CIRCULATION SYSTEM PIPE MATERIAL STANDARD

| MATERIAL                                                      | STANDARD                                          |
|---------------------------------------------------------------|---------------------------------------------------|
| Acrylonitrile butadiene styrene (ABS) plastic pipe            | ASTM D 1527                                       |
| Chlorinated polyvinyl chloride (CPVC) plastic pipe and tubing | ASTM D 2846; CSA B137.6                           |
| Copper or copper-alloy tubing                                 | ASTM B 88; ASTM B 447                             |
| Polyvinyl chloride (PVC) hose                                 | ASTM D 1785; ASTM D 2241; ASTM D 2672; CSA B137.3 |
| Polyvinyl chloride (PVC) plastic pipe                         | ASTM D 1785; CSA B137.3                           |
| Stainless steel pipe, Types 304, 304L, 316, 316L              | ASTM A 312                                        |

TABLE 311.4.1  
CIRCULATION SYSTEM FITTINGS

| MATERIAL                                                      | STANDARD                                                         |
|---------------------------------------------------------------|------------------------------------------------------------------|
| Acrylonitrile butadiene styrene (ABS) plastic pipe            | ASTM D 1527                                                      |
| Chlorinated polyvinyl chloride (CPVC) plastic pipe and tubing | ASTM D 2846; ASTM F 437;<br>ASTM F 438; ASTM F 439; CSA B137.6   |
| Copper or copper-alloy tubing                                 | ASME B 16.15                                                     |
| Polyvinyl chloride (PVC) plastic pipe                         | ASTM D 2464; ASTM D 2466;<br>ASTM D 2467; CSA B137.2; CSA B137.3 |
| Stainless steel pipe, Types 304, 304L, 316, 316L              | ASTM A 182; ASTM A 403                                           |

2. A vacuum gauge shall be located between the pump and *filter* and upstream of the pump.

**311.7 Flow measurement.** Public swimming pools and wading pools shall be equipped with a flow-measuring device that indicates the rate of flow through the *filter* system. The flow rate measuring device shall indicate gallons per minute and shall be selected and installed to be accurate within plus or minus 10 percent of actual flow.

**311.8 Instructions.** Written operation and maintenance instructions shall be provided for the *circulation system* of *public pools*.

**311.9 Hydrostatic pressure test.** Circulation system piping, other than that integrally included in the manufacture of the *aquatic vessel*, shall be subjected to a hydrostatic pressure test of 25 pounds per square inch (psi) (172.4 kPa). This pressure shall be held for not less than 15 minutes.

## SECTION 312 FILTERS

**312.1 General.** The provisions of this section apply to *filters* for all *aquatic vessels*.

**Exception:** *Portable residential spas* and *portable residential exercise spas*.

**312.2 Design.** *Filters* shall have a flow rating equal to or greater than the design flow rate of the system. *Filters* shall be installed in accordance with the manufacturer's instructions. *Filters* shall be designed so that *filtration* surfaces can be inspected and serviced.

**312.3 Internal pressure.** For pressure-type *filters*, a means shall be provided to permit the release of internal pressure.

**312.3.1 Air release.** *Filters* incorporating an automatic means of internal air release as the principal means of air release shall have one or more lids that provide a slow and safe release of pressure as a part of the design and shall have an manual air release in addition to an automatic release.

**312.3.2 Separation tanks.** A separation tank used in conjunction with a filter tank shall have a manual method of air release or a lid that provides for a slow and safe release of pressure as it is opened.

## SECTION 313 PUMPS AND MOTORS

**313.1 General.** The provisions of this section apply to pumps and motors for *aquatic vessels*.

**Exception:** *Portable residential spas* and *portable residential exercise spas*.

**313.2 Performance.** A pump shall be provided for circulation of the pool water. The pump shall be capable of providing the flow required for filtering the pool water and filter cleaning, if applicable, against the total dynamic head developed by the complete system.

**313.3 Intake protection.** A cleanable strainer, skimmer basket, or screen shall be provided for *aquatic vessels*, upstream

or as an integral part of circulation pumps, to remove solids, debris, hair, and lint on pressure filter systems.

**313.4 Location.** Pumps and motors shall be accessible for inspection and service in accordance with the manufacturer's specifications.

**313.5 Safety.** The design, construction, and installation of pumps and component parts shall be in accordance with the manufacturer's specifications.

**313.6 Isolation valves.** Shutoff valves shall be installed on the suction and discharge sides of pumps that are located below the *waterline*. Such valves shall be provided with access.

**313.7 Emergency shutoff switch.** An emergency shutoff switch shall be provided to disconnect all power to recirculation and jet system pumps and air blowers. Emergency shutoff switches shall be: provided with access; located within sight of the *aquatic vessel* and located not less than 5 feet (1524 mm) horizontally from the inside walls of the *aquatic vessel*.

**Exception:** Onground storable and permanent inground *residential swimming pools*.

**313.8 Motor performance.** Motors shall comply with UL 1004-1, UL 1081, CSA C22.2 No. 108 or the relevant motor requirements of UL 1563 or CSA C22.2 No. 218.1, as applicable.

## SECTION 314 RETURN AND SUCTION FITTINGS

**314.1 General.** The provisions of this section apply to return and suction fittings for *aquatic vessels*.

**Exception:** *Portable residential spas* and *portable residential exercise spas*.

**314.2 Entrapment avoidance.** Entrapment avoidance means shall be provided in accordance with Section 310.

**314.3. Flow distribution.** The *suction outlet fitting* assemblies, where installed, and the skimming systems shall each be designed to accommodate 100 percent of the circulation turnover rate.

**314.3.1 Multiple systems.** Where multiple systems are used in a single pool to meet this requirement, each subsystem shall proportionately be designed such that the maximum design flow rates cannot be exceeded during normal operation.

**314.4 Return inlets.** There shall be one *return inlet* for each 300 square feet (27.87 m<sup>2</sup>) of pool surface area, or fraction thereof.

**Exception:** *Onground storable pools*.

**314.4.1 Design.** Return and suction fittings for the *circulation system* shall be designed so as not to constitute a hazard to the bather.

**314.5 Vacuum fittings.** *Submerged vacuum fittings* shall be in accordance with Section 310.



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## GENERAL COMPLIANCE

### SECTION 315 SKIMMERS

**315.1 General.** The provisions of this section apply to *skimmers for aquatic vessels*.

**Exception:** *Portable residential spas and portable residential exercise spas.*

**315.2 Required.** A *surface skimming system* shall be provided for public aquatic vessels. Either a *surface skimming system* or *perimeter overflow system* shall be provided for permanent inground *residential pools*. The *surface skimming system* shall be designed and constructed to skim the surface when the water level is maintained within the operational parameters.

**Exception:** *Class D public pools* designed in accordance with Chapter 6.

**315.2.1 Circulation systems.** Circulation systems shall be designed to process a minimum of 100 percent of the turnover rate through *skimmers*.

**315.3 Skimmer sizing.** Where automatic *surface skimmers* are used as the sole overflow system, at least one *surface skimmer* shall be provided for the square foot (square meter) areas, or fractions thereof, noted in Table 315.3. *Skimmers* shall be located to maintain effective skimming action.

TABLE 315.3  
SKIMMER SIZING TABLE

| AQUATIC VESSEL   | AREA PER SKIMMER (SQ. FT) |
|------------------|---------------------------|
| Public pool      | 400                       |
| Residential pool | 800                       |
| Spas (all types) | 150                       |

For SI: 1 square foot = 0.09 m<sup>2</sup>.

**315.4 Perimeter coverage.** Where a perimeter-type *surface skimming system* is used as the sole surface skimming system, the system shall extend around not less than of 50 percent of the aquatic vessel perimeter.

**315.4.1 Surge capacity.** Where perimeter *surface skimming systems* are used, they shall be connected to a circulation system with a system surge capacity of not less than 1 gallon for each square foot (40.7 liters per square meter) of water surface. The capacity of the perimeter overflow system and related piping is permitted to be considered as a portion of the *surge capacity*.

**315.5 Equalizers.** Equalizers on *skimmers* shall be prohibited.

**315.6 Hazard.** Skimming devices shall be designed and installed so as not to create hazard to the user.

### SECTION 316 HEATERS

**316.1 General.** The provisions of this section apply to heaters for all *aquatic vessels*.

**Exception:** *Portable residential spas and portable residential exercise spas.*

**316.2 Listed and labeled.** Heaters shall be *listed* and *labeled* in accordance with the applicable standard listed in Table 316.2.

**316.3 Sizing.** Heaters shall be sized in accordance with the manufacturer's specifications.

**316.4 Installation.** Heaters shall be installed in accordance with the manufacturer's specifications and the *International Fuel Gas Code*, *International Mechanical Code*, *International Energy Conservation Code*, NFPA 70 or *International Residential Code*, as applicable in accordance with Section 102.7.1.

**316.4.1 Temperature.** A means shall be provided to monitor water temperature.

**316.4.2 Access prohibited.** For public *aquatic vessels*, public access to controls shall not be allowed.

**316.5 Heater circulation system.** Heater *circulation systems* shall comply with Sections 316.5.1 and 316.5.2.

**316.5.1 Water flow.** Water flow through the heater bypass piping, back-siphonage protection, and the use of heat sinks shall be in accordance with the heater manufacturer's specifications.

**316.5.2 Pump delay.** Where required by the manufacturer, heaters shall be installed with an automatic device that will ensure that the pump continues to run after the heater shuts off for the time period specified by the manufacturer.

### SECTION 317 AIR BLOWER AND AIR INDUCTION SYSTEM

**317.1 General.** This section applies to all devices and systems that induce or allow air to enter *aquatic vessels* either by means of a powered pump or passive design.

TABLE 316.2  
WATER HEATERS

| DEVICE                             | STANDARD                                |
|------------------------------------|-----------------------------------------|
| Electric water heater              | UL 1261, UL 1563 or CSA C22.2 No. 218.1 |
| Gas-fired water heater             | ANSI Z21.56a                            |
| Heat exchanger                     | NSF 50                                  |
| Heat pump water heater             | UL 1995, AHRI 1160, CSA C22.2 No. 236   |
| Photovoltaic solar water heaters   | NSF 50                                  |
| Thermal radiant solar water heater | NSF 50                                  |

**317.2 Backflow prevention.** Air blower systems shall be equipped with backflow protection as specified in UL 1563 or CSA C22.2 No. 218.1.

**317.3 Air intake source.** Air intake sources shall not induce water, dirt or contaminants.

**317.4 Sizing.** *Air induction systems* shall be sized in accordance with the manufacturer's specifications.

**317.5 Inspection and service.** Air blowers shall be provided with access for inspection and service.

## SECTION 318 WATER SUPPLY

**318.1 Makeup water.** Makeup water to maintain the water level and water used as a vehicle for sanitizers or other chemicals, for pump priming, or for other such additions, shall be from a potable water source.

**318.2 Protection of potable water supply.** Potable water supply systems shall be designed, installed and maintained so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross-connections or other piping connections to the system. Means of protection against backflow in the potable water supply shall be provided through an air gap complying with ASME A112.1.2 and the *International Residential Code* or the *International Plumbing Code*, as applicable in accordance with Section 102.7.1.

**318.3 Over-the-rim spouts.** Over-the-rim spouts shall be located under a *diving board*, adjacent to a *ladder*, or otherwise shielded so as not to create a hazard. The open end of such spouts shall not have sharp edges and shall not protrude more than 2 inches (51 mm) beyond the edge of the pool. The open end shall be separated from the water by an air gap of at least 1.5 pipe diameters measured from the pipe outlet to the rim.

## SECTION 319 SANITIZING EQUIPMENT

**319.1 Equipment standards.** Sanitizing equipment installed in public *aquatic vessels* shall be capable of introducing the quantity of sanitizer necessary to maintain the appropriate levels under all conditions of intended use.

**319.2 Chemical feeders.** Where installed, chemical feed systems shall be installed in accordance with the manufacturer's specifications. Chemical feed pumps shall be wired so that they cannot operate unless there is adequate return flow to disburse the chemical throughout the vessel as designed.

## SECTION 320 WASTE WATER DISPOSAL

**320.1 Backwash water or draining water.** Backwash water and draining water shall be discharged to the sanitary or storm sewer, or into an *approved* disposal system on the premise, or shall be disposed of by other means approved by

the state or local authority. Direct connections shall not be made between the end of the backwash line and the disposal system. Drains shall discharge through an air gap.

**320.2 Water salvage.** *Filter* backwash water shall not be returned to the vessel except where the backwash water has been filtered to remove particulates, treated to eliminate coli form bacteria and waterborne pathogens, and such return has been *approved* by the state or local authority.

**320.3 Waste post treatment.** Where necessary, *filter* backwash water and drainage water shall be treated chemically or through the use of settling tanks to eliminate or neutralize chemicals, diatomaceous earth, and contaminants in the water that exceed the limits set by the state or local effluent discharge requirements.

## SECTION 321 LIGHTING

**321.1 General.** The provisions of Sections 321.2 and 321.3 apply to lighting for public *aquatic vessels*. The provisions of Section 321.4 shall apply to *lighting* for *residential aquatic vessels*.

**321.2 Artificial lighting required.** When a pool is open during periods of low natural illumination, artificial lighting shall be provided so that all areas of the pool, including the bottom *main drains*, will be visible.

**321.2.1 Pool and deck illumination.** Overhead or underwater lighting shall be provided to illuminate the pool and adjacent deck areas. Such lighting shall be *listed*, *labeled* and installed in accordance with NFPA 70 or the *International Residential Code*, as applicable in accordance with Section 102.7.1.

**321.2.2 Illumination intensity.** For outdoor pools, the combination of overhead and underwater lighting shall provide not less than 3 foot-candles of illumination at the pool water surface. For indoor pools, the combination of overhead and underwater lighting shall provide not less than of 10 foot-candles at the pool water surface.

**321.2.3 Underwater lighting.** Underwater lighting shall provide a minimum of 8 lumens per square foot of pool water surface area.

**Exception:** Where overhead lighting provides not less than 15 foot-candles of illumination at the pool surface and all areas of the pool are visible without glare.

**321.3 Emergency illumination.** *Public pools* and pool areas that operate during periods of low illumination shall be provided with sufficient emergency lighting to permit evacuation of the pool and securing of the area in the event of power failure. The emergency lighting intensity shall be not less than 1 foot-candle at the water surface and the walking surface of the deck.

**321.4 Residential pool and deck illumination.** Where installed in *residential pools* and *permanent residential spas*, lighting shall be installed in accordance with NFPA 70 or the *International Residential Code*, as applicable in accordance with Section 102.7.1.