

**TOWN OF ORO VALLEY**

**POOL  
AND  
SPA  
CODE**

**2012**

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## CHAPTER 1 ADMINISTRATION

### SECTION 101 GENERAL

**101.1 Title.** These regulations shall be known as the *Pool and Spa Code* of the Town of Oro Valley, hereinafter referred to as “this code.”

**101.2 Scope.** The provisions of this code shall apply to the erection, installation, alteration, addition, repair, relocation, replacement, maintenance or use of any spa/swimming pool system except as otherwise provided for in this code. Where this code is in conflict with any other local code, ordinance, or law, the most restrictive shall govern.

**101.2.1 Appendices.** Wherever in this code reference is made to the appendix, the provisions in Appendix A, Diagrams and Tables shall be part of this code.

**101.3 Intent.** The purpose of this code is to provide minimum standards to protect the public health, safety and welfare by regulating and controlling the design, construction maintenance and energy efficiency of spas, swimming pools and associated equipment, enclosures and barriers in the Town of Oro Valley, hereinafter referred to as “the Town.”

**101.4 Referenced codes.** Other codes listed in Sections 101.4.1 through 101.4.4 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

**101.4.1 Electrical.** The provisions of the *National Electrical Code*, as adopted and amended by the Town of Oro Valley, shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

**101.4.2 Gas.** The provisions of the *International Fuel Gas Code*, as adopted and amended by the Town of Oro Valley, shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code.

**101.4.3 Plumbing.** The provisions of the *International Plumbing Code*, as adopted and amended by the Town of Oro Valley, shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a potable water system.

**101.4.4 Mechanical.** The provisions of the *International Mechanical Code*, as adopted and amended by the Town of Oro Valley, shall apply to the installation, alteration, repair and replacement of mechanical equipment, appliances, fixtures, fittings and appurtenances.

**101.4.5 Property maintenance.** The provisions of the *International Property Maintenance Code*, as adopted and amended by the Town of Oro Valley, shall apply to existing structures and premises; equipment and facilities; life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.

**101.4.5 Energy.** The provisions of the *International Energy Conservation Code*, as adopted and amended by the Town of Oro Valley, shall apply to all new and replacement equipment and appurtenances.

### SECTION 102 APPLICABILITY

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

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

**102.3 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.

**102.4 Referenced codes and standards.** The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

**102.5 Partial invalidity.** Any provision of this code that deems to nullify any provisions of local, state, or federal law will not be considered valid.

### **SECTION 103 DUTIES AND POWERS OF BUILDING OFFICIAL**

**103.1 General.** The building official as defined in Oro Valley Town Code, Section 6-6-1 is authorized to enforce the provisions of this code. The building 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 and shall not have the effect of waiving requirements specifically provided for in this code. The building official is authorized to engage such expert opinion as deemed necessary to assist in making qualified determinations related to unusual technical issues.

**103.2 Applications and permits.** The building official shall receive applications, review construction documents and issue permits for the installation, alteration, demolition, repair or replacement of any spa/swimming pool, barrier, enclosure, or part thereof, to verify compliance with this code.

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

**103.4 Inspections.** The building official shall make all of the required inspections and shall also have the authority to accept reports of inspection by previously approved agencies or individuals. Reports of such inspections shall be in writing and certified by individuals deemed qualified.

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

**103.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the building 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 building 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 building 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 building official shall have recourse to the remedies provided by law to secure entry.

**103.7 Department records.** The building 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.

**103.8 Liability.** The building official or any employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of duties required by this code or other pertinent law or ordinance, shall not be rendered liable personally and is 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. Legal action instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties shall be defended by the jurisdiction until final termination of the proceedings. The building official or employee shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

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

Requests for modification shall be appealed to the building official as follows:

1. The applicant shall file a written appeal on the form provided by the building official
2. Adequate information shall be provided by the applicant to fully describe the conditions in question
3. The appeal will be considered by the building official within a reasonable time period

## **SECTION 104 PERMITS**

**104.1 Required.** Any owner or authorized agent who intends to construct, enlarge, install, alter, repair, replace, move, demolish, or change any spa/swimming pool, barrier, enclosure, or part thereof, or appurtenances thereto, in or at a building or premise shall first make application to the building official and obtain the required permit.

**104.2 Work exempt from permit.** Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. Permits shall not be required for the following:

1. Repairs which involve only the replacement of component parts of existing work with similar materials and do not affect any structural, electrical, mechanical or plumbing installation.
2. Prefabricated swimming pools accessory to a Group R-3 occupancies that are less than 24 inches (610 mm) deep, and do not exceed 2,500 gallons (18,925 L) capacity.

**104.2.1 Existing Installations.** Any swimming pool system lawfully installed prior to the effective date of this code may have its existing use or maintenance continued if the use or maintenance is in accordance with the original design and location, and no hazard to the public health, safety, or welfare has been created by such system. The owner or their designated agent shall be responsible to maintain the spa/swimming pool system in a safe and sanitary condition.

**104.3 Application for permit.** To obtain a permit, the applicant shall first file an application therefore in writing on a form furnished by the Department of Building Safety for that purpose. Such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.
2. Provide the street address or similar description that will readily identify and definitely locate the building or work proposed.
3. Indicate the use for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required by Section 105 of this code.
5. State the valuation of the proposed work.
6. Give such other data and information as required by the building official.
7. Be signed by the applicant, or the applicant's authorized agent.
8. Identify the name of the person or contractor who will perform the work.

**104.3.1 Action on application.** The building official shall examine or cause to be examined applications for permits and amendments thereto. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing, stating the reasons therefore. If the building official is satisfied that the proposed work conforms to the requirements of this code and applicable ordinances, a permit therefor shall be issued.

**104.3.2 Time limitation of application.** An application for a permit for any proposed work shall be deemed to

have been abandoned and shall be expired 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued. The building 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. Requests for extension shall be made prior to expiration. An extension may not be granted if this code or any other pertinent laws or ordinances have been amended subsequent to the date of application. In order to renew action on an application after expiration, the applicant shall re-submit plans and pay a new plan review fee.

**104.4 Validity of permit.** The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors after issuance. The building official is authorized to prevent occupancy or use of a structure found to be in violation of this code or of any other ordinances of this jurisdiction.

**104.5 Expiration.** Permits issued shall become invalid unless the work authorized by such permit is commenced within 180 days of 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. Work is considered commenced when verified by inspection. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each on unexpired permits. The extension shall be requested in writing and justifiable cause demonstrated. Before work deemed to have expired can be recommenced, a new permit shall be first obtained to do so, and the fee therefore shall be one half the amount required for a new permit for such work; provided no changes have been made to the originally approved construction documents for such work; and provided further that such suspension or abandonment has not exceeded one year. If the permit has been expired or abandoned for a period of one year or more, the cost for renewal shall be as required for a new permit.

**104.6 Suspension or revocation.** The building official is authorized to suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation, or any of the provisions of this code.

**104.7 Placement of permit.** The building permit or copy shall be kept on the site of the work until the completion of the project.

## SECTION 105 CONSTRUCTION DOCUMENTS

**105.1 Submittal documents.** Applications for permits for new construction shall be accompanied by plans and technical data as required by the building official, and in sufficient detail. Documents shall include, at a minimum, the following information:

**105.1.1. Plot plan.** Plot plans shall be dimensioned and drawn to 1"=20' minimum scale. Information shall include but not be limited to the following:

1. Property lines, easements, right-of-way of record, and overhead utilities adjacent to spa/pool area or over the property.
2. Existing structures, fencing, retaining walls, irregular grades, and other relevant characteristics adjacent to the spa/pool area.
3. The proposed spa/pool shape and type, dimensioned and located to show setbacks from property lines, side yards, and clearances from existing structures adjacent to spa/pool area.
4. The proposed mechanical equipment location as to setbacks from the property lines, structures, and side yards, and any proposed equipment screening.
5. Any diving boards, slides, or other deck equipment items.
6. The proposed deck configuration showing its anticipated drainage.
7. The anticipated overall drainage of the spa/pool site.
8. The proposed or existing spa/pool barrier/enclosure.



9. Other data sufficient to show the correctness of the plan, such as the grades adjacent to walls, wall heights, gates, windows and doors along any proposed barrier/enclosure or in near proximity to any pools or spas.

**105.1.2 Structural plan.** Structural plans should include but not be limited to the following:

1. The type of construction.
2. The spa/pool dimensions, including the depth, surface area, and adequate cross-sections drawn to scale.
3. Computation, stress diagrams, and other data sufficient to show the correctness of the plans; including the reinforcing steel schedule and detail as applicable. Documents shall be prepared by a structural engineer registered to practice in the State of Arizona.
4. The interior finish details.
5. The spa/pool edge details.

**105.1.3 Mechanical, Plumbing and Electrical plan.** Mechanical plumbing and electrical plans shall include, but not be limited to, the following:

1. The volume, system flow rate in gallons per minute (gpm), and turnover in hours.
2. The type and size of filtration system and means of waste disposal.
3. The type and size of spa/pool heater, including the method of venting and the location of openings into adjacent buildings, if applicable.
4. The piping layout with all sizes shown, types of material to be used, location of the main outlet and any suction drains, surface skimmers, and inlets.
5. The rated capacity of the pump in gallons per minute (gpm), at the design head with the size and type of motor indicated and identified as to type of pump.
6. The means of adding makeup water, including location and type of backflow device.
7. The gas line size, meter location, developed length from the gas meter to gas appliances, and routing of gas lines, as applicable.
8. The size, location, and capacity of the electrical service proposed for use.
9. Circuit and conductor sizes needed to power the pool / spa, new circuit, if applicable, and panel schedule.

**105.1.4** All plans and documents submitted shall be on substantial paper and shall show the name and address of the person under whose supervision the documents were prepared.

**105.2 Examination of documents.** The building official shall examine or cause to be examined the construction documents provided and shall ascertain by such examination whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

**105.2.1 Approval of construction documents.** When the building official issues a permit, the construction documents shall be approved, in writing or by stamp, as "Reviewed for Code Compliance." One set of construction documents shall be retained by the building official. The other set shall be returned to the applicant, shall be kept at the site of work, and shall be provided for inspection by the building official.

**105.3 Amended construction documents.** Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be submitted for review and approval.

**105.4 Retention of construction documents.** One set of approved construction documents shall be retained by the building official for a period of time determined by the State of Arizona for records retention.

## SECTION 106

## FEES

**106.1 Payment of fees.** A permit shall not be valid until the permit and plan review fees have been paid, nor shall an amendment to a permit be released until any additional fees have been paid.

**106.2 Schedule of permit fees.** For pools, spas, barriers, structures, electrical, gas, mechanical, and plumbing systems, or alterations requiring a permit, a fee for each permit shall be paid in accordance with the Town of Oro Valley Building Valuation Data Schedule and Construction Permit Fee Schedule. Final building permit valuation shall be set by the building official.

**106.3 Work commencing before permit issuance.** Any person who commences any work on a pool, spa, barrier, structure, electrical, mechanical or plumbing system before obtaining the necessary permits shall be subject to a fee established by the building official that shall be in addition to the required permit fees. This fee shall be equal to the amount of the permit fee required by the adopted fee schedule. Payment of such fee shall not exempt an applicant from compliance with the provisions of this code or other ordinances and requirements, or from penalties prescribed by law.

**106.4 Refunds.** The building official shall be permitted to authorize refunding of a fee paid hereunder which was erroneously paid or collected. The building official shall be permitted to authorize refunding of not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code and the permit has not expired. The building official shall be permitted to authorize refunding of not more than 80 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 cancelled before any examination of plans has been expended. The building official shall not authorize refunding of any fee paid except upon written request of the applicant.

## SECTION 107 INSPECTIONS

**107.1 General.** All spa/swimming pool installations or alterations thereto including related equipment, piping and appliances shall be subject to inspection by the building 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 to violate any provisions of this code or of other codes or 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 building official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

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

**107.3 Inspection requests.** It shall be the duty of the person doing the work authorized by the permit, to assure that the work will withstand any test prescribed by this code before requesting an inspection. It shall be the duty of the permit holder or their duly authorized agent to notify the building official when work is ready for inspection and to provide access to and means for inspections of such work.

**107.4 Re-inspections.** A re-inspection fee may be assessed for each inspection or re-inspection when the portion of work for which inspection is requested is incomplete, or when corrections to previously noted items have not been made. This section shall not be interpreted as requiring re-inspection fees the first time inspections requested fail to comply with the requirements of the applicable codes, but is intended to control the practice of requesting inspections before they are ready for such inspection.

Re-inspection fees may be assessed when the permit card is not conspicuously located on the work site; when the approved construction plans are not readily available for inspection; for failure to provide access on the date for which inspection is requested; for deviating from plans requiring the approval of the building official; or for failing to make corrections prior to a re-inspection.

To obtain a re-inspection, the applicant shall take the rejection notice to the Administrative Office where permits are issued and pay the fees in accordance with the fee schedule adopted by the Town of Oro Valley. The stamped receipt 2012 Town of Oro Valley Pool and Spa Code

shall be on site with the inspection permit card for the re-inspection to occur. No additional inspection of work will be performed until the required fees have been paid.

**107.5 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. Upon notification by the permit holder, the building official shall perform the requested inspection(s) and shall provide notification of the results of the inspection performed. This may consist of all, or of any portion of the inspection(s) requested. Any portion that does not comply shall be corrected and shall not be concealed until approved by the building official.

**107.5.1 Filling Pool / Spa.** Approval for the Final Barrier inspection is required prior to filling the pool / spa. It is a violation to fill the pool/spa prior to obtaining approval and is subject to a violation fee of \$250.

**107.6 Revocation.** The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever issued in error, on the basis of incorrect information supplied, or where it is determined that the structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code. Written notification of such action shall be provided to the permit holder.

## **SECTION 108 SERVICE UTILITIES**

**108.1 Connection of service utilities.** No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until approved by the building official.

**108.2 Temporary connection.** The building official shall have the authority to authorize the temporary connection of the building or system to the utility source of energy, fuel or power.

**108.3 Authority to disconnect service utilities.** The building official is authorized to order disconnection of utility service to any structure or system regulated by this code and the codes referenced, where an emergency exists and it is necessary to eliminate an immediate hazard to life or property; or when connected without proper authorization. The building official shall notify the serving utility, and wherever possible the owner and/or occupant of the building, structure or service system, of the decision to disconnect prior to taking such action. If the owner or occupant of the building, structure or service system is unable to be notified prior to disconnecting, they shall be notified in writing as soon as practical thereafter.

## **SECTION 109 BOARD OF APPEALS**

**109.1 General.** The Board of Appeals as defined in Oro Valley Town Code, Article 6-9, has the authority to hear and decide appeals of orders, decisions, or determinations made by the building official.

## **SECTION 110 VIOLATIONS**

**110.1 Unlawful acts.** It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish, utilize, or occupy any pool, spa, structure, or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code or of other applicable codes.

**110.2 Notice of violation.** The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition, use or occupancy of a structure in violation of the provisions of this code, or of other applicable codes; or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of any illegal action or condition, and the abatement of the violation.

**110.3 Prosecution of violation.** If a notice of violation is not complied with promptly, the building official is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law to restrain,

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correct or abate such violation, or to require the removal or termination of the unlawful occupancy or use of the pool, spa, structure, or equipment in violation of the provisions of this code.

**110.4 Violation penalties.** Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a pool, spa, structure, or equipment in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

### **SECTION 111 STOP WORK ORDER**

**111.1 Authority.** Whenever the building official finds any work regulated by this code being performed in a manner either contrary to the provisions of this code or other applicable codes, to be dangerous or unsafe, or construction or maintenance being performed without a valid permit, the building official is authorized to issue a stop work order.

**111.2 Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, the owner's agent, to the person performing the work, or posted on the site of such work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume.

**111.3 Unlawful continuance.** Any person who shall continue any work 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 subject to penalties as prescribed by law.

### **SECTION 112 UNSAFE STRUCTURES AND EQUIPMENT**

**112.1 Conditions.** Any portion of a spa, swimming pool, or associated features, such as barriers, enclosures, and equipment, found by the building official to be unsafe or unsanitary, or otherwise dangerous to human life or the public welfare, shall be deemed an unsafe condition, and are hereby declared a nuisance.

**112.2 Record.** The building official shall cause a violation report to be filed on an unsafe condition. The violation report shall state the nature of the unsafe condition.

**112.3 Notice.** If an unsafe condition is found, the building official shall serve on the owner, agent or person in control of the structure, a written notice that describes the condition deemed unsafe and specify the required repairs or improvements to be made to abate the condition; or require that the unsafe structure be demolished within a stipulated time.

**112.4 Method of service.** Such notice shall be deemed properly served if a copy thereof is delivered to the owner in person; received by certified or registered mail; or delivered in any other manner as allowed by law.

**112.5 Remedy.** The structure or equipment determined to be unsafe by the building official is permitted to be restored to a safe condition upon receipt of an applicable building permit. If the unsafe condition is not remedied as specified by the building official, the jurisdiction shall proceed with the prosecution of the violation as delineated in Section 110 above.

## **CHAPTER 2**

## DEFINITIONS

### SECTION 201 GENERAL

For the purpose of this code, certain terms, phrases, words and their derivatives shall be constructed as specified in this chapter. Words used in the singular include the plural and the plural the singular. Words used in the masculine gender include the feminine and the feminine include the masculine.

Where terms are not defined, they shall have their ordinary accepted meanings within the context with which they are used. Merriam Webster's Collegiate Dictionary, 11<sup>th</sup> edition shall be considered as providing ordinarily accepted meanings.

### SECTION 202 DEFINITIONS

**ABRASION HAZARD.** A sharp or rough surface that would scrape the skin upon casual contact.

**ACCESSIBLE.** Easily exposed for inspection and the replacement of materials and/or parts with the use of simple tools such as a screwdriver, pliers or wrench.

**AIR INDUCTION SYSTEM.** A system activated by a separate air power unit whereby air is induced into hollow ducting built into or affixed on a spa/swimming pool floor, bench or other location.

**APPURTENANCE.** A subordinate part or accessory object.

**APPROVED.** Deemed as acceptable by the building official.

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

**BACKWASH CYCLE.** The time required to thoroughly backwash the filter medium and/or elements and the contents of the filter vessel.

**BACKWASH PIPING.** The pipe or hose going from the backwash outlet of a filter system to a point of disposal.

**BACKWASH RATE.** The rate of flow of water through a filter during the backwash cycle, normally expressed in U.S. gallons per minute per square foot of effective filter area.

**BARRIER.** An object or structure which separates a swimming pool or spa from a building.

**BATHER/SWIMMER.** Any person using a spa/pool and adjoining deck area for the purpose of related recreational activities.

**BEGINNERS AREA.** Water area in pools which is three (3) feet or less in depth.

**BROMINATOR.** A device to apply or to deliver a bromine disinfectant to water at a controlled rate.

**BROMINE.** A chemical element that exists as a liquid in its elemental form or as a part of a chemical compound which is an oxidant and biological agent used to disinfect pool water.

**CARTRIDGE.** A replaceable porous element, used as a filtering medium.

**DEPTH-TYPE CARTRIDGE.** A filter cartridge with a medium relying on penetration of particles into the medium for removal, which provides adequate holding capacity for such particles.

**SURFACE-TYPE CARTRIDGE.** A filter cartridge with a medium relying on retention of particles on the surface of the cartridge.

**CASUAL CONTACT.** Contact of any human body part occurring by normal use.  
2012 Town of Oro Valley Pool and Spa Code

**CHEMICAL FEEDER.** A device for applying chemicals to pool/spa water.

**CHLORINE.** A chemical element that exists as a gas in its elemental form or as a part of a chemical compound which is an oxidant and biological agent used in pool water disinfection.

**CHLORINE GENERATOR.** Equipment that generates chlorine, hypochlorous acid, or hypochlorite on site for disinfection and oxidation of water contaminants.

**COVE.** The radius between the wall and the floor of a pool or spa.

**COVER, POOL/SPA SAFETY.** A cover that uses an electric motor to open and close a retractable barrier over the entire water surface.

**COVER, SECURABLE SPA.** A cover that completely covers the spa, and is equipped with hardware that requires special tools such as keys or an Allen wrench for removal.

**DECK.** The area immediately adjacent to a spa/pool that is specifically constructed or installed for use by bathers.

**DECK, ABOVE GROUND.** Any structure that is on top or adjacent to the outer edges of the spa/pool that is elevated, and is specifically constructed or installed for the use of bathers.

**DEEP AREA.** The portion of a pool having water depths in excess of five (5) feet.

**DISINFECTANT.** The application of energy or chemicals to kill undesirable or pathogenic (disease-causing) organisms.

**DIVING EQUIPMENT, COMPETITIVE.** Equipment that shall include diving boards and fulcrum-setting diving stands intended to provide adjustment for competitive diving.

**DIVING UNIT.** Any permanently installed natural or man made object used for the purpose of diving or jumping into the water and is further defined as follows:

**DIVING BOARD.** A recreational mechanism for entering a swimming pool, consisting of a semi rigid board that derives its elasticity through the use of a fulcrum mounted below the board.

**DIVING EQUIPMENT, MANUFACTURED.** Equipment that shall include diving boards, jump boards, spring boards and starting platforms. Architectural features such as decorative rocks and elevated bond beams are not considered to be manufactured diving equipment.

**JUMP BOARD.** A recreational mechanism that has a coil spring, leaf spring or comparable device located beneath the board which is activated by the force exerted by jumping on the board.

**EDGE GUARDS.** Shields designed to cover sharp edges in above-ground swimming pools.

**EFFECTIVE FILTER AREA.** The total surface area through which the designed flow rate will be maintained during filtration.

**PERMANENT MEDIUM TYPE FILTER SURFACE.** The filter surface that is perpendicular to the direction of flow.

**CARTRIDGE TYPE FILTER SURFACE.** The cartridge area exposed to the direct flow of water. This excludes cartridge ends, seals, supports and other areas where flow is restricted.

**ENCLOSURE.** An object or structure which surrounds a swimming pool. An enclosure may also serve as a barrier.

**EXISTING POOL/SPA.** A spa or pool in existence or for which a lawful permit to construct has been obtained and construction commenced on or before the effective date of this code.

**FACTOR OF SAFETY.** The ultimate load divided by the safe load or the ultimate strength divided by the 2012 Town of Oro Valley Pool and Spa Code

allowable stress.

**FILTER.** A device that removes particles from water by re-circulating the water through a filter medium or element.

**FILTER AID.** A type of finely divided medium used to coat a septum type filter, usually diatomaceous earth, processed perlite or similar material.

**PERMANENT MEDIUM FILTER.** A filter that utilizes a medium, such as sand, that under normal use will not have to be replaced.

**DIATOMACEOUS EARTH FILTER.** A filter that utilizes a thin coating of diatomaceous earth over a porous fabric as its filter medium, that must be replaced periodically.

**CARTRIDGE FILTER.** A filter that utilizes a porous element that acts as a filter medium.

**FILTER CYCLE.** The operating time between cleaning and/or backwash cycles.

**FILTER ELEMENT.** A device within a filter tank designed to trap solids and conduct water to a manifold, collection header, pipe, or similar conduit and return it to the pool. A filter element usually consists of a septum and septum support, or a cartridge.

**FILTER MEDIUM.** A finely graded material such as sand, diatomaceous earth, polyester fabric, or anthracite, that removes filterable particles from a pump section.

**FILTER, PRESSURE-TYPE.** A filter that operates under pressure generated by a pump.

**FILTER, VACUUM (OR SUCTION).** A filter that operates under a vacuum from the suction of a pump.

**FILTRATION FLOW.** The design rate of flow, in gallons per minute (gpm) or gallons per hour (gph) through the filter system with a new, clean filter medium.

**FILTRATION RATE.** The rate of filtration of water through a filter during the filter cycle expressed in gallons per minute, per square foot of effective filter area.

**FLOOR.** The bottom surface of a spa/pool ranging from a horizontal plane up to a maximum of a forty five (45) degree slope.

**FOOTHOLD/HANDHOLD.** A protrusion or indentation with any portion one and one-half inches (1-1/2") or greater from the vertical surface of a barrier or enclosure; having openings where a sphere of one and one-half inches (1-1/2") in diameter can penetrate to a depth greater than one and one-half inches (1-1/2") from the vertical surface.

**GATE.** A removable framework or solid structure that swings, hinges, or slides horizontally, to control exit or entrance through a fence or wall.

**GATE, DOUBLE.** A gate with two panels, one of which is normally active, and the other of which is normally fixed.

**HANDRAIL/GRABRAIL.** A device that can be gripped by a bather for the purpose of resting or steadying, which is typically located within or without the spa/pool or as part of a set of steps or deck-installed equipment.

**HEALTH DEPARTMENT.** Pima County or Arizona State Department of Health.

**HOT TUB.** A spa constructed of wood with sides and bottom formed separately, which joins together by pressure from the surrounding hoops, bands or rods.

**HYDROJET.** A fitting that blends air with water to create a high velocity, turbulent stream of air-enriched

water.

**HYDROTHERAPY SPA OR HOT TUB.** A unit intended for therapeutic use which is not required to be drained, cleaned or refilled for each individual. It may include hydro jet circulation, hot water, cold water mineral baths, air induction bubbles, or any combination thereof. Industry terms include, “therapeutic pool”, “hydrotherapy pool”, “whirlpool”, “hot spa”, etc. NSPI standards exclude facilities used or under the direct supervision and control of licensed medical personnel.

**INLET, RETURN.** The aperture or fitting through which water under positive pressure return(s) to the pool.

**JUMP BOARD.** A recreational mechanism that has a coil spring, leaf spring, or comparable device located beneath the board, which is activated by the force exerted by jumping on the board.

**LADDER.** A series of vertically separated treads or rungs connected by vertical rail members independently connected to a pool wall.

**DECK LADDER.** A ladder which provides access to the deck from outside the pool.

**IN-POOL LADDER.** A ladder which provides ingress and egress to a pool from the deck area.

**LIMITED ACCESS LADDER.** A ladder designed to restrict entry when a pool is not in use

**PORTABLE LADDER.** A ladder that is intended to be removed simply and by other than mechanical means when a pool is not in use.

**LIFEGUARD.** A person expert and certified to perform rescue and resuscitation.

**LINER.** A membrane that acts as a container for the water.

**LOWER DISTRIBUTION SYSTEM (UNDER DRAIN).** Used in the bottom of a permanent media filter to collect water uniformly during filtering, and which distributes backwash uniformly during backwashing.

**MAKE-UP WATER.** Fresh water used to fill or refill the pool. (See also SOURCE WATER).

**NEW POOL CONSTRUCTION.** The activity of building or installing a pool structure and its component parts, where no such structure has previously existed.

**NON-SWIMMING AREA.** Any portion of a pool where water depth, offset ledges, swim outs, or other irregularities which would prevent normal swimming activities.

**OUTLET, SUCTION.** The aperture or fitting through which water under negative pressure is drawn from a pool or spa.

**OVERFLOW SYSTEM.** A system that removes pool surface water through the use of overflows, surface skimmers, and surface water collection systems.

**OZONE EQUIPMENT, LOW OUTPUT GENERATING.** Units which produce ozone in air at a concentration of less than five hundred (500) parts per million (ppm).

**PINCHING HAZARD.** Any configuration of components which would pinch or entrap the fingers or toes of a child or adult.

**POOL, DIVING.** A pool dimensionally designed as suitable for use with diving equipment.

**POOL, PERMANENTLY INSTALLED.** A pool that is constructed in the ground or in a building in a manner that it cannot be disassembled.

**ABOVE GROUND POOL.** A pool that has a constant depth of more than twenty four inches (24”), or 2012 Town of Oro Valley Pool and Spa Code



holds more than twenty five hundred (2500) gallons of water, or has a water surface area in excess of one hundred fifty (150) square feet, installed entirely above ground. For the purpose of the National Electric Code, see also NEC Article 680 and the definition of Storable Swimming or Wading Pools.

**IN-GROUND SWIMMING POOL.** A pool with sides which rest in partial or full contact with the earth.

**POOL PUBLIC.** A pool, other than a residential pool, which 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. References within the standard to various types of public pools are defined by the following categories:

**CLASS A: COMPETITION POOL.** A pool primarily intended for competitive aquatic events, which may also be used for recreation purposes.

**CLASS B: PUBLIC POOL.** A pool intended for general use by the public.

**CLASS C, SEMI-PUBLIC POOL.** A pool for use in conjunction with lodging, such as with hotels, apartments, and neighborhood associations.

**TYPE VI THROUGH TYPE IX.** A semi-public/public pool suitable for the installation of diving equipment.

**TYPE N.** A semi-public/public pool where the installation of diving equipment is prohibited.

**CLASS D: OTHER POOL.** A pool intended for medical treatment, therapy, exercise, lap swimming, recreational play, and other special purposes; including wave or surf-action pools, activity pools, splash pools, and kiddie-pools.

**POOL, RESIDENTIAL.** A swimming pool constructed within a residential property which is intended for non-commercial use by not more than one owner family and their guests, and which is over twenty-four (24) inches in depth, or has a surface area exceeding one hundred fifty (150) square feet, or a volume greater than twenty-five hundred (2500) gallons.

Residential pools shall be further classified into types as an indication of the suitability of the pool for use with diving equipment.

**TYPE O.** A residential pool not suitable for the installation of diving equipment.

**TYPE I THROUGH TYPE V.** A residential pool suitable for the installation of diving equipment.

**POOL, WADING.** A pool with a depth that does not exceed twelve (12) inches.

**PSI.** The abbreviation for pound per square inch.

**PUMP.** A mechanical device which causes hydraulic flow and pressure for the purpose of filtration, heating, and circulation of pool water.

**PUNCTURE HAZARD.** A surface or protrusion that would puncture a bather's skin under casual contact.

**REHABILITATION.** The activity of restoring all or part of a pool structure and its component parts into working condition.

**REMOVABLE.** The capability of being disassembled by use of simple tools such as a screwdriver, pliers or wrenches.

**RETURN PIPING.** Piping which carries water from the filter to the spa/pool.

**ROPE AND FLOAT LINE.** A continuous line not less than one quarter (1/4) inch in diameter, which is supported by buoys and attached to opposite sides of a pool to separate the deep and shallow ends.

**SAFETY COVER.** A dome shaped cover placed over a suction inlet that is intended to prevent entrapment.

**SHALLOW AREA.** A portion of a pool with water depths less than five (5) feet.

**SKIMMING SYSTEM.** An overflow system which encompasses perimeter type overflows, surface skimmers and surface water collection systems.

**SLIP RESISTENT.** A surface that has been constructed, treated, or designed to reduce the chance of slipping.

**SLOPE.** An inclined surface of one percent (1%) or greater.

**SOURCE WATER.** Fresh water used to fill or refill the pool (see also make-up water).

**SPA** (see **HYDROTHERAPY SPA** or **HOT TUB**). A hydrotherapy unit of irregular or geometric shell design.

**PORTABLE SPA, RESIDENTIAL.** A spa in which all control, water heating, and water-circulating equipment is an integral part of the spa. Portable residential spas may be permanently wired or cord-connected. The spa shall be moveable and above ground.

**PERMANENT SPA.** A spa in which the water-heating and water circulating equipment is not an integral part of the spa. Permanent spas may employ separate components such as individual filters, pumps, heaters, and controls, or they may employ assembled combinations of various components.

**PUBLIC SPA.** Any spa, other than a residential spa, which is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use.

**SEMI-PUBLIC SPA.** Any spa for use in conjunction with lodging, such as with hotels, apartments, and neighborhood associations.

**STEPS, RECESSED STEPS, AND RECESSED TREADS.** A means of pool ingress and egress that may be used independently or in conjunction with one another.

**STEPS.** A riser/tread or series of risers/treads extending down from the deck and terminating at the pool wall or floor. They may be recessed so that all risers are located outside of swimming areas.

**RECESSED TREADS.** A series of vertically spaced cavities in the pool wall creating tread areas for steps.

**SUCTION PIPING.** Piping which moves water from the spa/pool to the filter.

**SURFACE SKIMMING SYSTEM.** Encompasses perimeter-type overflows, surface skimmers, and surface water collection systems of various designs.

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

**TAMPER-PROOF.** Means that tools are required to alter or remove portions of the equipment.

**TOXIC.** A substance which has an adverse physiological effect on mankind or other living organisms.

**TREAD CONTACT SURFACE.** An area that describes the surface of a ladder, step, stair or ramp.

**TURNOVER.** The period of time required to circulate a volume of water equal to the spa/pool capacity.

**UNDERWATER LUMINAIRE.** A fixture designed to illuminate a pool or spa beneath the water surface.

**DRY-NICHE LUMINAIRE.** A luminaire intended for installation in the floor or wall of a pool or spa structure, where the niche is sealed against the entry of water.

**WET-NICHE LUMINAIRE.** A luminaire intended for installation in a forming shell mounted in a pool or

spa structure, where the luminaire will be completely surrounded by water.

**VERTICAL.** A wall up to a positive eleven (11) degree angle toward the spa/pool's interior from plumb.

**VINYL LINER.** A membrane that acts as a container for water.

**WALL.** The interior spa or pool surface consisting of surfaces from the plumb, to a forty five (45) degree slope.

**WATERLINE.** A term defined in one of the following ways:

**SKIMMER SYSTEM.** The water line shall be at midpoint of the operating range of the skimmers.

**OVERFLOW SYSTEM.** The water line shall be located at the top of the overflow rim.

**WINTERIZING.** The procedure for preparing spa/pools from freezing weather including chemical treatment of the water, plus physical and chemical protection of the pool and its equipment.

## CHAPTER 3 GENERAL POOL AND SPA REQUIREMENTS

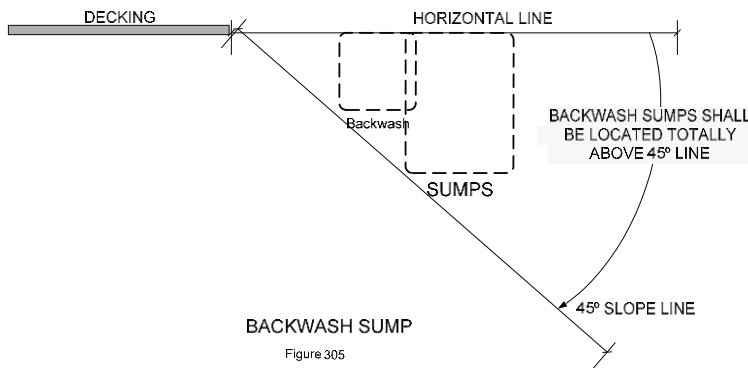
### SECTION 301 DECKS AND DECK EQUIPMENT

**Sec. 301.1 General.** The following minimum requirements are applicable to decks and deck equipment used by bathers and shall apply at the time of construction:

1. Deck(s) shall be designed and installed in accordance with generally accepted engineering practices. This includes the design and quality of sub-base when required, concrete mix design, reinforcing, joints, etc.
2. Decks, ramps, coping and similar surfaces shall be designed to resist slipping and shall be easily cleaned.
3. Special features in or on decks such as markers, brand insignias or similar shall conform to this section.
4. Risers for steps placed in a deck shall be uniform and have a maximum height of seven and three quarter (7-3/4) inches. The minimum tread depth shall be ten (10) inches.
5. Excavated areas shall be adequately compacted and designed to support deck(s) constructed thereon.
6. Deck(s) shall be sloped to effectively drain to perimeter areas or to deck drains. Existing site drainage shall be considered and accounted for and the general drainage design shall be retained. As an alternate, a design by a registrant proficient in the discipline of civil design may be submitted for review and approval.
  - a. The minimum slope of decks shall be one-eighth (1/8) unit vertical per twelve (12) units horizontal (1/8:12) for textured, concrete decks and one-quarter (1/4) units vertical per twelve (12) units horizontal (1/4:12) for carpeted decks, unless an alternate drainage method is provided.
  - b. The maximum slope of decks shall be one (1) unit vertical per twelve (12) units horizontal (1:12) for concrete decks; and one-half (1/2) unit vertical per twelve (12) units horizontal (1/2:12) for carpeted decks, unless an alternate drainage method is provided.
7. The maximum void between adjoining concrete slabs and/or between concrete slabs and expansion joint material shall be three-sixteenths (3/16) inches with a maximum difference in vertical elevation of one-quarter (1/4) inch.
8. Construction joints where pool coping meets concrete decks shall be watertight and shall not allow water to pass to the ground beneath.
9. Areas where the decks join pool coping shall be designed and installed to protect the coping and its mortar bed from damage as a result of normal movement of adjoining decks.
10. Joints in decks shall be provided to minimize the potential for cracks due to changes in elevations, separation of surfaces or movement of the slab.
11. In areas where decks adjoin concrete, expansion joints shall be installed to protect the pool from the pressures of relative movements.
12. Decks shall be edged, have a radius, or be otherwise relieved to eliminate sharp corners.
13. Site drainage shall be provided to direct all perimeter deck drainage as well as general site and roof drainage away from the pool.
14. If used, an open pit, or leaching design for backwash sump purposes, shall be located so that it falls completely below adjacent decks and fully outside of the angle of repose (a line projected forty five (45) degrees downward and away from such decks), and the volume of backwash shall not create an adverse condition due to soil type (see Figure 305).
15. Circulation system piping, other than that integrally included in the manufacture of the pool/spa, shall be subjected to an induced static hydraulic pressure test (sealed system) of not less than twenty-five (25) pound per square inch for thirty (30) minutes. This test shall be performed before the deck is poured or gunite is placed, and the pressure shall be maintained until final connection to the circulation equipment.

**Note:** For pre-molded spas, a normal operational running test may be provided in lieu of a pressure test.

16. Valves installed in or under any deck(s) shall be provided with a minimum ten (10) inch diameter access cover and valve pit to facilitate servicing.
17. At Semi-public and Public Pools and Spas a hose bib equipped with a vacuum breaker shall be provided for washing the deck area.



**301.2 Pool entry/exiting.** All pools shall have at least two (2) means of entry/exit located to serve both ends of the pool. The entries/exits shall consist of ladders, stairs, recessed treads, or underwater seat benches or swimouts. Where two or more entries/exits are used, ladders, stairs, or recessed treads may be used in combination. All treads shall have slip-resistant surfaces.

1. Where water depths are twenty-four (24) inches or less at the pool wall, such areas shall be considered as providing a natural means for entry/exit.
2. For pools over thirty (30) feet in width, both sides of the deep portion of the pool shall be provided with entries/exits.
3. A means of entry/exit for the shallow end shall be located between the shallow end and the cross section at point "D", while a means of entry/exit for the deep end shall be between the deep end wall and the cross section at point "B", as shown in Appendix A, Figure 1.
4. A means of entry/exit shall be provided at intervals not to exceed seventy-five (75) linear feet of pool wall or fraction thereof.
5. Ladders, stairs, recessed treads, or underwater seat benches/swimouts shall be provided at the deep end of the pool, and for public pools shall be located in a manner to not interfere with racing lanes (as applicable).

**301.3 Pool Stairs.** The design and construction of protruding and recessed pool stairs shall conform to this section.

**301.3.1 Treads.** Step treads shall have a minimum unobstructed horizontal depth of ten (10) inches and a minimum unobstructed surface area of two hundred forty (240) square inches.

**301.3.2 Risers.** Risers, at the centerline of treads, shall have a maximum uniform height not to exceed twelve (12) inches. The bottom riser height shall be allowed to vary plus or minus two (+/- 2) inches from the uniform riser height.

1. The vertical distance between the pool coping edge, deck or step surface, and the uppermost step tread shall not exceed twelve (12) inches.

**301.3.3 Handrails.** If handrails are used with stairs, they shall comply with the following:

1. Removable handrails shall be installed in a manner that will not allow removal without the use of tools.

2. The leading edge of handrails facilitating stairs and pool entry/exits shall not exceed eighteen (18) inches plus or minus three (3) inches horizontally from the vertical plane of the bottom riser.
3. The outside diameter of handrails shall be not less than one (1) inch and shall not exceed two and one quarter (2-1/4) inches in cross-sectional dimension.
4. Underwater seats, benches, or swim-outs may be provided as part of the stairs or recessed treads.

**301.4 Pool Ladders.** The design and construction of pool ladders shall comply with the following:

1. Ladders shall be made entirely of corrosion-resistant materials.
2. Ladders shall be provided with two (2) handholds or handrails.
3. Below water level, there shall be a clearance of not to exceed six (6) inches and not less than three (3) inches between any ladder tread edge, measured from the pool wall side of the tread and the pool wall.
4. The clear distance between ladders and handrails shall be not less than seventeen (17) inches and shall not exceed twenty-four (24) inches.
5. The uniform height between ladder treads shall be not less than (7) inches and not greater than twelve (12) inches.
6. Ladder treads shall have a minimum horizontal depth of one and one-half (1-1/2) inches.
7. The vertical distance between the top tread and pool coping or deck shall not exceed twelve (12) inches.

**301.5 Recessed Treads.** The design and construction of recessed treads shall comply with the following:

1. Recessed treads at the centerline shall have a uniform vertical spacing of not less than seven (7) inches and not greater than twelve (12) inches.
2. The vertical distance between the pool coping edge, deck or step surface and the uppermost recessed tread shall not exceed twelve (12) inches.
3. Recessed treads shall have a minimum depth of five (5) inches and a minimum width of twelve (12) inches.
4. Recessed treads shall slope toward the pool to prevent accumulation of dirt.
5. Recessed treads shall be provided with a set of handrails/grabrails to serve all treads and risers.

**301.6 Manufactured diving equipment.** Manufactured diving equipment shall be listed and labeled for swimming pool use and shall be installed in accordance with the manufacturer's recommendations.

1. Diving equipment manufacturers shall provide installation instructions and specifications.
2. A label shall be permanently affixed to the manufactured diving equipment or jump board and shall include:
  - a. Manufacturer's name and address.
  - b. Board and equipment length.
  - c. Fulcrum setting specifications (if applicable).
  - d. Reference to the current year of the applicable section and NSPI standard.
3. Manufactured diving equipment suitable for installation on a lower pool type may be installed on any higher pool type providing the water envelope from the tip of the board is provided as specified for lower type. Manufactured diving equipment of a greater type (e.g.-Type III) shall not be installed on a pool of lesser type (e.g.-Type II). Water surface area and geometry shall be provided for the type of pool which

permits board installation at the height specified.

4. Manufactured diving equipment shall have slip-resistant tread surfaces.
5. Manufactured diving equipment shall be permanently anchored to the pool deck. The edge of the board at the diving end shall be generally level with the water surface. The diving end of the board may be higher than the butt end of the board when allowed by the equipment manufacturer's recommendations.

**301.6.1 Supports, platforms, stairs and ladders.** Manufactured diving equipment supports, platforms, stairs and ladders shall be designed to carry the anticipated loads. Stairs and ladders shall be of corrosion-resistant material, easily cleanable, and be provided with slip-resistant treads. All manufactured diving stands higher than twenty-one (21) inches measured from the deck to the top butt end of the board shall be provided with stairs and a ladder. Step treads shall be self-draining.

1. All platforms or diving equipment higher than one (1) meter (39.37 inches) shall have guard rails which are not less than thirty-six (36) inches above the diving board or platform and shall extend to or beyond the edge of the pool wall.

**301.7 Swimming Pool Slides.** The requirements of the U.S. Consumer Product Safety Commission (CPSC) Standard for Swimming Pool Slides as published in the Code of Federal Regulations shall be used for standards relating to swimming pool slides. Installation and use instructions shall be provided with each unit by the manufacturer.

## **SECTION 302 FILTERS**

**302.1 General.** Filters shall be designed in a manner that system cleaning will provide water clarity as required for each pool and spa type identified by this code.

**302.1.1 Filter design.** Filters shall be designed to allow inspection and servicing of filtration surfaces.

**302.2 Pressure filters.** For pressure-type filters, a means shall be provided to permit release of internal pressure.

**302.2.1 Automatic air release.** Filters which incorporate an automatic internal air release as the principle means of air release shall be designed with lids which provide a slow and safe release of pressure.

**302.2.2 Manual air release.** When separation tanks are used in conjunction with a filter tank they shall have a manual means of air release or have a lid designed to provide a slow and safe release of pressure as it is opened.

**302.3 Operation and maintenance.** Pressure filters and separation tanks shall have operation and maintenance instructions permanently installed on the filter or separation tank and shall include a precautionary warning to not start the system until air release and proper reassembly of the filter and separation tank has occurred. The statement shall be clearly visible within the area where air release would occur.

**302.4 Filter Piping.** Piping furnished with the filter shall be constructed of material capable of withstanding not less than one and one half (1-1/2) times the working pressure. Suction piping shall be designed to withstand collapse when there is a complete shut off of flow on the suction side of the pump.

## **SECTION 303 PUMPS AND MOTORS**

**303.1. General.** A pump and motor shall be provided for circulation of the pool water. Performance of all pumps shall meet or exceed the conditions of flow required for filtering or cleaning the filters against the total dynamic head development by the complete system.

**303.1.1. Strainer or screen.** A cleanable strainer or screen designed to remove solids shall be provided upstream of any circulation pump for pressure filter systems.

**303.1.2. Accessibility.** Pumps and motors shall be accessible for inspection and service.

**303.2. Pumps.** The design and construction of pumps and component parts shall not create a hazard to the operator or maintenance personnel.

**303.2.1. Pump Seal.** Where a mechanical pump seal is provided, components of the seal shall be corrosion-resistant and capable of operating under normal conditions of use.

**303.2.2. Valves.** Where pumps are located below the waterline, valves shall be installed on permanently connected suction and discharge lines, shall be accessible at a location outside the walls of the pool, and shall be readily accessible for maintenance or removal.

**303.3. Motors.** All motors shall have an open drip-proof enclosure and be constructed electrically and mechanically to perform satisfactorily and safely under the conditions of the load environment normally encountered in swimming pool installations.

**303.3.1. Motor operation.** Motors shall be capable of operating pumps under full load with a voltage variation of plus or minus ten percent (+/- 10%) of the nameplate rating. If the maximum service factor of the motor is exceeded (at full voltage), the manufacturer shall indicate this on the pump curve.

**303.3.2. Motor protection.** All motors shall have built in thermal or current overload protection, or an in-line starter to provide locked rotor and running protection.

**303.4 Motor Energy Efficiency.** Motors with a total horsepower of one (1) or more, for pools and in-ground spas which are permanently installed, shall have the capability of operating at multiple speeds, with a low speed rotation rating no greater than one-half (1/2) of the motor's maximum rotation rate, and with a pump control capable of operating the pump at multiple speeds.

## SECTION 304 SURFACE SKIMMER SYSTEMS

**304.1 General.** A surface skimming system shall be provided on all residential swimming pools and spas, and shall be designed and constructed to skim the water surface area when the level of the water is maintained within the operational parameters of the system's rim or weir device.

**304.2. Design.** The design or installation of pool/spa skimming devices shall not constitute a hazard to the bather.

**304.3. Pool/Spa over-flow system.** Where automatic surface skimmers are used as the sole overflow system, not less than one surface skimmer shall be provided as follows:

1. Residential Pool; one for each eight hundred (800) square feet of water surface area, or fraction thereof
2. Semi-public and Public Pools; one for each five hundred (500) square feet of water surface area, or fraction thereof
3. Residential, Semi-public and Public Spas; one for each one hundred fifty (150) square feet of water surface area, or fraction thereof

**Note:** Nominal recessed areas such as stairs and swim-outs are not required to be included in the calculation.

**304.4. Spa surge capacity.** Where perimeter surface skimmers are used, they shall be connected to the circulation system with a system surge capacity as follows:

1. **Residential Spa.** Not less than one (1) gallon for each square foot of spa surface area
2. **Semi-public and Public Spa.** Not less than two and one half (2-1/2) gallons for each square foot of spa surface area.



**304.5 Spa hydraulic capacity.** The hydraulic capacity of the overflow system shall be capable of handling one hundred percent (100%) of the circulation flow.

### **SECTION 305 ELECTRICAL REQUIREMENTS**

**305.1 General.** The requirements of the National Electrical Code (NEC), as published by the National Fire Protection Association, as adopted and amended by the Town of Oro Valley, shall be utilized for the design and installation of electrical components and systems.

### **SECTION 306 HEATERS**

**306.1 General.** Swimming pool/spa heaters shall be tested by a nationally recognized testing agency and comply with nationally recognized standards.

**306.2 Installation.** Heaters shall be installed according to the manufacturer's recommendations and the requirements of the International Mechanical Code (IMC) as adopted and amended by the Town of Oro Valley.

**306.2.1 Base.** Heaters shall be installed on a concrete or other non-combustible base, not less than three (3) inches above the adjacent finish grade. Installation on combustible surfaces may be allowed if installed in accordance with the appliance manufacturer's listing.

**306.2.2 Clearances.** Clearances shall be maintained in accordance with the manufacturer's installation instructions.

**306.2.3 Ventilation.** Fuel-fired heaters shall be provided with an air supply that will assure adequate ventilation and sufficient combustion.

**306.2.4 Indoor installation.** Heaters installed within enclosed spaces shall be provided with combustion air openings in accordance with the International Mechanical Code.

**306.3 Devices.** Draft induced or power venting devices shall be installed in accordance with the manufacturer's installation instructions.

**306.4 Propane fueled heaters.** Heaters using liquid petroleum (LP) gas shall not be installed in a pit or basement. Installation of heaters with use of LP gas shall be in accordance with the manufacturer's installation instructions and the requirements of the International Fuel Gas Code (IFGC) as adopted and amended by the Town of Oro Valley.

**306.5 Heater piping system.** Heater gas supply piping shall comply with the International Fuel Gas Code. Heater circulation and water piping systems shall comply with the manufacturer's installation instructions.

**306.5.1 Installation.** When installing a heater and a filter system, adequate provisions shall be made to prevent excessive pressure drop to the filter system. Refer to the manufacturer's requirements and/or recommendations for installation of bypass valves.

### **SECTION 307 WATER SUPPLY**

**307.1 Mechanical connection.** Direct mechanical connections shall not be made between a potable water supply and the swimming pool/spa chlorinating equipment or the system of piping for the pool, unless effectively protected against backflow and back-siphon in accordance with the International Plumbing Code.

**307.2 Pool/Spa over-the rim spout.** If an over-the-rim spout is utilized it shall be effectively shielded and shall not protrude more than two (2) inches beyond the waters edge of the pool or spa.

**307.2.1 Location.** The over-the-rim spout in a pool shall be located under a diving board, adjacent to a ladder, or otherwise properly shielded.

**SECTION 308  
WASTE WATER DISPOSAL**

**308.1 Backwash water.** All backwash water shall be disposed of and contained on site. Discharges of backwash water shall comply with applicable Town ordinances and the Arizona Department of Environmental Quality (ADEQ) Engineering Bulletins.

**SECTION 309  
DISINFECTANT EQUIPMENT, OXIDATION EQUIPMENT AND CHEMICAL FEEDERS**

**309.1 General.** Disinfectant equipment, oxidation equipment, and chemical feeders, hereafter referred to jointly as "equipment" shall comply with nationally recognized standards. Equipment shall be capable of precisely introducing a specified quantity of disinfecting agent.

**309.2 Chemical feeders.** Generally accepted engineering practices and manufacturer's instructions shall be used for the installation of chemical feeders.

**309.3 Low ozone output generating equipment.** Installation of ozone generating equipment shall be limited to low ozone output equipment. The installation and use of ozone generating equipment shall comply with the following:

1. Installation of ozone generating equipment shall allow for indications of operations or malfunction to be readily observed. Equipment shall be installed in a manner that will not endanger pool users if a malfunction were to occur.
2. Ozone generating equipment shall be used in conjunction with other chemical treatments. Normal maintenance and monitoring of water chemistry shall be followed.
3. Generally accepted engineering practices and manufacturer's recommendations shall be used to determine where and how ozone shall be injected.

## CHAPTER 4 BARRIERS AND ENCLOSURES

### SECTION 401 SWIMMING POOL AND SPA BARRIERS/ENCLOSURES

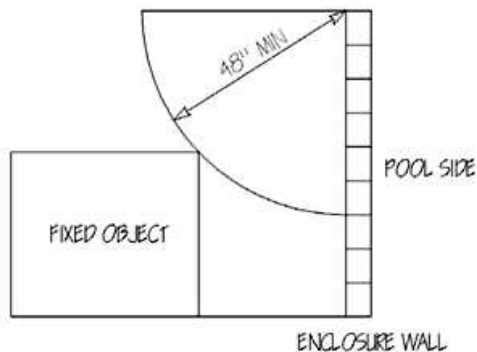
**401.1 General.** Outdoor residential, semi-public and public swimming pools and spas shall be provided with an enclosure and barrier which meet the following requirements:

1. The minimum height for barriers and enclosures above finished grade or other walking surface, measured on the side, opposite the swimming pool/spa, shall be as follows:

|                         |                |
|-------------------------|----------------|
| Residential pool or spa | -four (4) feet |
| Pools, Class A and B    | -six (6) feet  |
| Pools, Class C and D    | -five (5) feet |
| Semi-public spas        | -five (5) feet |
| Public spas             | -six (6) feet  |

2. No opening in a barrier or enclosure shall allow passage of a sphere larger than four (4) inches in diameter.
3. The vertical distance between the bottom of a barrier or enclosure and the solidly compacted finished grade or walking surface shall not exceed four (4) inches.
4. The barrier or enclosure shall be constructed to prevent opportunity for climbing into the pool/spa area.
  - 4.1. Footholds and/or handholds shall be not less than forty-eight (48) inches from the top of the enclosure or forty eight (48) inches from the finished grade, or other walking surface, measured on the side opposite the swimming pool. Openings in chain-link fences, exceeding one (1) inch, shall be slatted or other wise effectively closed.
  - 4.2. For wrought iron, wood, or similar barriers or enclosures, the vertical distance between the top surfaces of horizontal members shall be not less than forty-eight (48) inches.
 

Exception: Horizontal surfaces not meeting the definition of a handhold or foothold
  - 4.3. Where the protrusion, indentation, or top surface is at a continuous angle of inclination greater than forty five (45) degrees above horizontal and does not otherwise provide a handhold or foothold, it shall be deemed as not providing an opportunity for climbing.
  - 4.4. Any space encompassed within the area described by a forty-eight (48) inch radius measured from the top of the barrier/enclosure, must be maintained free of natural or man-made objects which may create opportunity for climbing, or allow access to a pool/spa area (see figure 401(A) below).



**Figure 401 (A)**

4.5 Owners of adjoining properties, or their representatives, shall not install equipment, landscaping, or other objects that have the effect of reducing the effectiveness of an approved pool enclosure.

4.6 Enclosures for semi-public and public pools and spas may be limited to the pool area, or may include the pool's ancillary facilities as part of the enclosure. Doors or gates entering these facilities from outside the enclosure shall be designed as described in Section 401.1, Sub-sections 1-4. General offices, recreation rooms, laundry rooms, and similar spaces are not considered to be ancillary to the pool.

**Exception.** The building official may grant an exception to the requirements of enclosing a swimming pool if by examination, it is determined that there is a barrier or enclosure existing on the premises, by reason of thorny/spiny vegetation, or topography, suitable to prevent access to the pool area.

**401.2 Gates.** Gates constructed as part of an enclosure or barrier shall comply with all general requirements of Section 401.1. Gates shall be constructed to the minimum height required by Section 401.1, item 1, for the type of pool or spa. Gates shall have a device that will cause them to self-close and shall also self-latch upon closing. The operable portion of gate latches shall be located not less than fifty four (54) inches above the walking surface and not less than fifty (50) inches above a foothold. Latches may be installed on the pool side of the gate, not less than forty two (42) inches above the walking surface, when the gate has no opening greater than one (1) inch located within eighteen (18) inches of the latch. Gates in an enclosure shall be installed to swing outward, and away from the enclosed pool area.

**401.2.1 Double gates.** Double gates constructed as part of an enclosure shall comply with all requirements of Section 401.1 and 401.2. The normally active side shall meet all the requirements of 401.2. The normally inactive side shall be equipped with a bolt device that slides into a permanent steel or concrete sleeve, which can be padlocked in the closed position. The padlock shall be in place at time of inspection, and shall remain in place during normal usage.

**401.3 Safety covers.** A pool/spa safety cover may be used for a barrier or enclosure for residential applications when each of the following minimum conditions is adhered to:

1. When secured in place, a sphere four (4) inches in diameter is prevented from reaching the water surface.
2. The cover is designed to support a static load on a four (4) inch diameter area of not less than four hundred eighty five (485) pounds for a pool and one hundred (100) pounds for a spa.
3. The electric motor switch shall be key-operated or locked and there shall be an additional power disconnect located not less than forty eight (48) inches above the finished grade, deck or other walking surfaces.

**401.4 Securable space cover.** A securable space cover may be used for a spa barrier or enclosure for residential applications if each of the following minimum conditions is adhered to:

1. When secured in place, a sphere four (4) inches in diameter is prevented from reaching the water surface.
2. The cover is designed to support a static load on a four (4) inch diameter area of not less than one hundred (100) pounds.
3. The spa width/diameter does not exceed eight (8) feet.

**401.5 Wall barriers.** In residential applications, a wall of a dwelling or other building may be used as part of an enclosure or barrier if each of the following minimum conditions is adhered to:

1. Windows leading to the swimming pool/spa area shall be provided with a latching device located not less than forty two (42) inches above the floor. Alternately, windows with latches located below forty two (42) inches, may be secured with irreversible fasteners that will restrict the window from fully opening and that will not allow a four (4) inch sphere to pass through the remaining opening.

**Note:** This option is not allowed for windows intended to provide egress from, or ventilation to, rooms.

2. Doors leading to the swimming pool/spa area shall be self-closing/self-latching with the latch located not less than forty two (42) inches above the finished floor or other walking surface, measured on the side opposite the swimming pool/spa. Screen doors, when used as a barrier, shall be equally protected and shall be provided with a security screen or substantial grill on the pool side, extending from the bottom of the door to not less than thirty six (36) inches in height.
3. Pet doors (doggie doors) shall not be located within a wall barrier.

**401.6. Alternative for residential alarms.** When it is determined that the prescriptive requirements for barriers cannot reasonably be achieved, an appeal may be made to the building official for use of an alarm system barrier. If approval is granted an alarm system shall be designed in accordance with the following requirements:

1. The alarm shall receive its power from the primary power source of the residence (hardwired to the electrical service panel or to a sub-panel).
2. The alarm must produce a unique audible warning when the door or window is opened which is not similar to the sound of smoke detectors or other alarms.
3. Alarms shall sound continuously for not less than thirty (30) seconds, and shall be capable of being heard from any location within the house during normal household activities (minimum eighty five (85) decibels at ten (10) feet).
4. The alarm system shall be equipped with a manual means of deactivation, such as a switch or touchpad, on the interior and exterior sides of all doors providing direct access to the pool. This device shall be designed to temporarily deactivate the alarm system (for no longer than fifteen (15) seconds). Deactivation devices shall be located not less than fifty four (54) inches above the threshold of the door it serves and within six (6) horizontal feet of door the opening.
5. The alarm shall automatically reset under all conditions.
6. If designed as part of a home security alarm system, the door alarm shall not be able to be deactivated when the security system is deactivated.

**Note:** At no time will an alarm system be allowed for window wall locations. A window wall is defined as an area that contains more than one active (operable) panel without interruption by a fixed (inoperable) panel in any one wall or combination of walls, that also provides direct access to the pool area.

## CHAPTER 5 RESIDENTIAL SWIMMING POOLS

### SECTION 501 SCOPE

**501.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of permanently installed in-ground residential pools used for swimming.

### SECTION 502 MATERIALS OF CONSTRUCTION

**502.1 General.** Swimming pools and all appurtenances thereto shall be constructed of materials which are nontoxic and shall be impervious and enduring, which shall be able to withstand design stresses, and which shall provide a watertight structure with a smooth and easily cleaned surface without cracks or joints, excluding structural joints, or to which a smooth, easily cleaned surface finish is applied or attached.

### SECTION 503 STRUCTURAL DESIGN

**503.1 General.** The structural design and materials used shall be in accordance with generally accepted engineering practices.

**503.2 Interior finish material.** Sand or earth shall not be permitted as the interior finish of a swimming pool.

**503.3 Climate protection.** In climates subject to freezing temperatures, the pool shell and appurtenances, piping, filter system, pump and motor, and other components shall be designed and constructed to facilitate protection from damage due to freezing.

**503.4 Slip resistant surface.** All surfaces intended to provide footing for bathers shall be designed as slip-resistant. The roughness or irregularity of such surfaces shall not cause injury or discomfort to bathers during normal use.

**503.5 Visibility.** The colors, patterns, or finish of the pool interior shall not obscure the existence or presence of objects or surfaces within the pool (i.e. - swim-outs or steps).

### SECTION 504 DIMENSIONAL DESIGN

**504.1 General.** Other than for diving pools, no limits are specified for shape or size, except that consideration shall be given for safety, and for circulation of the swimming pool water.

**504.1.1 Obstructions.** There shall be no protrusions, extensions, means of entanglement, or other obstructions in the swimming area which can cause entrapment or injury to the bather.

**504.1.2 Construction tolerances.** There shall be construction tolerances allowed on all dimensional designs. Overall length, width, and depth in the deep end may vary plus or minus three (3) inches. All other overall dimensions may vary plus or minus two (2) inches unless otherwise specified.

**504.2 Walls.** Walls shall not exceed eleven (11) degrees from plumb, as shown in Appendix A, Figure 5, for a depth of not less than thirty-three (33) inches from the waterline in deep areas, and not less than twenty-seven (27) inches in shallow areas.

**504.3 Floors.** Floors shall be constructed as follows:

1. All slopes shall be uniform.
2. The slope of the floor from the shallow end wall toward the deep end shall not exceed one (1) unit vertical in seven (7) units horizontal (1:7) to the point of the first slope change.

3. The point of the first slope change shall be defined as the point at which the floor slope exceeds one (1) unit vertical in seven (7) units horizontal (1:7) and located not less than six (6) feet from the shallow end wall.
4. The slope of the floor from the point of the first slope change to the deep end wall shall not exceed one (1) unit vertical in three (3) units horizontal (1:3).

**504.4 Water depth.** Water depths at the shallow end of swimming pools shall be not less than thirty-three (33) inches and no greater than forty two (42) inches, except for special purpose pools.

1. No minimum water depth shall be specified in a non-swimming area. All non-swimming areas shall be visually set apart.

**504.5 Diving unit depth.** Pools designed to be used with manufactured diving equipment shall have profiles for area and depth of water in accordance with the illustrations for Type VI through IX pools as identified in Appendix A, Figure 7.

1. The tip of the manufactured diving units shall be located at Point "A", which is the reference point for all other dimensions.
2. The minimum unobstructed head room from the top of manufactured diving units shall be provided in accordance with the following table unless greater dimensions are required by the equipment manufacturer.

| POOL TYPE | HEAD ROOM |
|-----------|-----------|
| VI        | 12 FEET   |
| VII       | 12 FEET   |
| VIII      | 13 FEET   |
| IX        | 14 FEET   |

3. The minimum allowable underwater cross sections for Types VI through IX pools at areas B, C, and D shall be as identified in Appendix A, Figure 7.
4. Stationary diving platforms built on site shall be located in the diving area of the pool and shall be free of obstructions as shown in Appendix A, Figure 3, and provide the minimum dimensions as shown in Appendix A, Figure 7, at a maximum height of three (3) feet. Point "A" shall be eighteen (18) inches in front of the wall at the platform centerline. Stationary diving device platforms shall not extend more than eighteen (18) inches horizontally over the water from the pool wall.

**504.6 Underwater seat benches.** Where provided, underwater seat benches shall have a maximum horizontal depth of twenty (20) inches, be visually set apart, have a slip resistant surface, and shall be located fully outside of the required minimum diving water envelope if the pool is designed for use with a manufactured diving unit.

**504.6.1 Deep end location.** Underwater seat benches shall be permitted in the deep end of the pool only if they are either completely recessed, shaped to be compatible with the contour of the pool wall or in a pool corner.

## SECTION 505 CIRCULATION SYSTEMS

**505.1 General.** A circulation system consisting of pumps, piping, return inlets and suction outlets, filters, and other equipment shall be provided for complete circulation of water through all parts of the pool.

**505.1.1 Water circulation.** Equipment shall be of adequate size to re-circulate the full volume of pool water within a twelve (12) hour time period. All designs shall assure that water clarity is maintained.

**505.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible for inspection, repair, or replacement.

**505.1.3 Equipment placement.** Equipment shall be effectively supported to prevent damage from misalignment or settlement and shall be located to minimize the potential for the accumulation of debris and moisture, and otherwise installed in accordance with the manufacturer's installation instructions.

**505.2 Water velocity.** The water velocity in the pool piping shall not exceed ten (10) feet per second for discharge piping and eight (8) feet per second for suction piping, unless calculations are provided to show that the pump and piping provided are rated to withstand a greater velocity.

**505.3 Pipe and fitting material.** The circulation system piping and fittings shall be nontoxic, shall be considered to be process piping, and shall be of material able to withstand operating pressures and conditions.

**505.3.1 Drainage.** Equipment shall be designed and constructed to drain the pool water from the equipment, by removal of drain plugs, manipulating valves, or by other approved methods. Refer to the manufacturer's recommendations for specific information on draining the system.

**505.4 System condition gauge.** A pressure or vacuum gauge or other means of indicating system condition shall be provided in the circulation system and located in an easily readable location.

**505.5 Water clarity maintenance.** The circulation system shall be capable of maintaining water clarity and water chemistry requirements. Time clocks may be used to set the operating period. When time clocks are used, they shall also govern the operating time of appurtenant devices such as chemical/disinfectant feeders, slurry feeders, heaters, etc., that are dependent upon circulation pump flow.

**505.6 Operation and maintenance manual.** Written operation and maintenance instructions shall be provided for the circulation system.

## **SECTION 506 RETURN INLETS AND SUCTION OUTLETS**

**506.1 General.** Return inlets and suction outlets shall be provided and arranged to produce a uniform disinfectant residual throughout the entire pool. Where skimmers are used, return inlets shall be located so that floating particles will be brought within range of skimmers. Return inlets from the circulation system shall be designed in a manner that will not constitute a hazard to bathers.

**506.2 Return inlets.** There shall be not less than one (1) return inlet per six hundred (600) square feet of pool surface area, or fraction thereof. Return inlet fittings shall be of sufficient pipe size and quantity to allow a full volume turnover rate of the pool water in accordance with Section 505.1.1.

**506.3 Standards for suction outlets.** If the suction outlet system, such as a filtration system, automatic cleaning system, solar system etc., has a single suction outlet, or multiple suction outlets which can be isolated by valves, each suction outlet shall conform to ANSI/APSP-7 "*standards for suction entrapment avoidance*".

**506.3.1 Suction outlet grate.** A pool shall not be operated if the suction outlet grate is missing, broken, and the grate shall be secured in a way that it cannot be removed without the use of tools.

**506.4 Suction outlets and drains.** Suction outlet covers/grates shall be tested by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8 and shall be installed in accordance with ANSI/APSP-7. Pools may be designed to have multiple drains, single unblockable drains, or no drains. The following minimum design criteria shall be adhered to for design and installation of pool drains:



### Pool Drains

| Drain Type  | Allowable Means of Protection  |
|---|--|
| No Drain  | Allowed with listed Suction Vacuum Release device (SVRS)   |
| Single Unblockable Outlet                         | The following are approved single unblockable suction outlets: <ul style="list-style-type: none"> <li>• Channel outlet (as specified)</li> <li>• Unblockable outlets 18 inches x 23 inches or larger</li> <li>• Swim jet system that complies with ASME/ANSI A112.19.8</li> <li>• Venturi-driven system that complies with ASME/ANSI A112.19.8 or ASTM F2387-04</li> <li>• Gravity flow system</li> <li>• Sumps in Series</li> </ul> |
| Single Blockable Outlet                           | Not allowed  |
| Two suction outlets (placed 3 or more feet apart) | Yes  |
| Three or more outlets                             | Yes  |

**506.5 Vacuum cleaner fittings.** Where provided, vacuum cleaner fittings with safety covers shall be located in an accessible position between three (3) inches and eighteen (18) inches below the minimum operating water level or as an attachment to the skimmer(s). Wall fittings shall be approved by a nationally recognized testing agency.

**506.6 Heater and filter system.** Filter systems with heaters shall be designed so that the heater does not cause an excessive pressure drop in the filter system. Reference shall be made to the manufacturer's requirements and/or recommendations for installation of bypass valves.

### SECTION 507 SAFETY

**507.1 General.** A residential pool shall be provided with a suitable handhold around its perimeter in areas where depths exceed forty two (42) inches. Handholds shall be provided no further apart than four (4) feet and shall consist of any one (1) or a combination of the following:

1. Coping, ledge, or deck along the immediate top edge of the pool which provides a slip-resistant surface of at least four (4) inches minimum horizontal width and located at or not more than twelve (12) inches above the waterline.

**Note:** Rolled beams or negative edge surfaces do not meet the intent of this requirement.

2. Ladders, stairs, or seat ledges.
3. A secured rope or railing placed between the water line, to not more than twelve (12) inches above the water line. Ropes must be capable of withstanding the environmental conditions.

## CHAPTER 6 PERMANENTLY INSTALLED RESIDENTIAL SPAS

### SECTION 601 SCOPE

**601.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of permanently installed residential spas and hydrotherapy units of irregular or geometric shell design, which are intended to be used for bathing. This chapter does not cover spas such as those operated for medical treatment, physical therapy, or other special purposes.

### SECTION 602 MATERIALS OF CONSTRUCTION

**602.1 General.** Materials, components, and accessories used shall comply with the standards identified in Appendix A, Table 2. Materials shall be compatible with the installation and intended use requirements in these standards.

1. Materials for components and accessories with external surfaces and edges, where used in and around spas, that may come in contact with the user; shall be finished in a manner that they will not constitute a cutting, pinching, puncturing, or abrasion hazard under casual contact and intended use.
2. Materials used in components and accessories where intended to be installed in and around spas shall not be toxic or harmful to the environment under the use intended.
3. Materials for components and accessories to be used in and around spas shall be chemically compatible with other materials and the environment in which they are installed.

### SECTION 603 STRUCTURAL DESIGN

**603.1 General.** The structural design and materials used shall be in accordance with generally accepted engineering practices.

**603.2 Interior finish material.** Sand or earth shall not be permitted as an interior finish in a residential spa.

**603.3 Climate protection.** In climates subject to freezing temperatures, a means shall be provided to protect the spa shell and appurtenances, piping, filter system, pump, motor, and other components from damage due to freezing.

**603.4 Slip resistant surface.** The surfaces within the spa intended to provide footing for users shall be designed to provide a slip-resistant surface. The roughness or irregularity of such surfaces shall not cause injury or discomfort during normal use.

**603.5 Visibility.** The colors, patterns, or finishes of the spa interior shall not obscure the existence or presence of objects or surfaces within the spa.

**603.6 Roofs or canopies.** Roofs or canopies shall be constructed so that water run-off does not drain into the spa.

### SECTION 604 DIMENSIONAL DESIGN

**604.1 General.** No limits are specified for the shape and size of spas except that consideration shall be given to shape from the standpoint of safety and circulation of the spa water.

**604.1.1 Obstructions.** There shall be no protrusions, extensions, means of entanglement, or other obstructions in the bathing area which can cause entrapment or injury to the user.

**604.1.2 Construction tolerances.** The designed waterline shall have a maximum construction tolerance at the time of completion of the work of plus or minus one-quarter (1/4) inch for spas with adjustable weir surface skimming systems, and plus or minus one-eighth (1/8) inch for spas with nonadjustable surface skimming system.

**604.1.2.1 Construction tolerance on all other dimensional designs.** Overall dimensions may vary plus or minus two (2) inches, unless otherwise specified.

**604.2 Water depth.** The maximum water depth shall be four (4) feet measured from the waterline.

**604.2.1 Depth at seating.** The maximum water depth of any seat or bench shall be thirty (30) inches measured from the waterline.

**604.3 Handhold.** Spas shall be provided with a handhold around their perimeter in areas where the water depth exceeds forty-two (42) inches. Perimeter rims of spas may serve as a suitable handhold. Handholds shall be provided no further apart than four (4) feet and may consist of one or a combination of the following:

1. Coping, ledge, or deck along the immediate top edge of the spa which provides a slip-resistant surface of at least four (4) inches minimum horizontal width and located at or not more than twelve (12) inches above the waterline.
2. A secured rope or railing placed between the water line, to not more than twelve (12) inches above the water line. Ropes must be capable of withstanding the environmental conditions.

**604.4 Floor Slope.** The slope of the floor shall not exceed one (1) unit vertical per twelve (12) units horizontal (1:12).

**604.5 Entry.** Steps, seats, ladders or recessed treads shall be provided for entry/exit where water depths exceed twenty-four (24) inches.

**604.6 Ladders.** The design and construction of ladders shall conform to the following when provided:

1. Ladders shall be made entirely of corrosion-resistant materials.
2. Ladder treads shall have slip-resistant surfaces.
3. Ladders shall be constructed with handholds/handrails on each side.
4. The cross-section diameter of a ladder rails shall be not less than one (1) inch and not greater than two and one quarter (2-1/4) inches.
5. Where ladders extend below the water level, there shall be a clearance of not less than three (3) inches or greater than six (6) inches, between any ladder tread edge, measured from the spa wall side of the tread, and the spa wall.
6. The clear distance between ladder handrails shall be not less than seventeen (17) inches or greater than twenty-four (24) inches.

**604.7 Recessed Treads.** Design and construction of recessed treads, where provided, shall conform to the following:

1. Recessed treads at the centerline shall have a uniform vertical spacing not to exceed twelve (12) inches but not less than seven (7) inches.
2. The vertical distance between the spa coping edge, deck, or adjacent step surface and the uppermost tread shall not exceed twelve (12) inches.
3. Recessed treads shall have a minimum depth of five (5) inches and a minimum width of twelve (12) inches.
4. Recessed treads shall slope toward the spa to prevent accumulation of dirt, and shall be slip-resistant.
5. Each set of recessed treads shall be provided with a set of handrails/handholds to serve all treads and risers.

## SECTION 605 CIRCULATION SYSTEM

**605.1 General.** A circulation system consisting of pumps, piping, return inlets and suction outlets, filters, and other necessary equipment shall be provided for complete circulation of water through all parts of the spa.

**605.1.1 Water circulation.** The circulation system equipment shall be designed to turn over the entire spa water capacity at a minimum of once per hour.

**605.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible and shall be installed according to the manufacturer's instructions.

**605.1.3 Standards for suction outlets.** If the suction outlet system, such as a filtration system, automatic cleaning system, solar system etc., has a single suction outlet, or multiple suction outlets which can be isolated by valves, each suction outlet shall conform to ANSI/APSP-7 "*standards for suction entrapment avoidance*".

**605.1.4 Equipment placement.** Spa equipment shall be properly supported to prevent damage from misalignment, settlement and operational movement, etc. The equipment shall be mounted to minimize the potential for the accumulation of debris and moisture, following manufacturer's instructions.

**605.2 Water velocity.** The water velocity in the piping shall not exceed ten (10) feet per second for discharge piping, except for copper pipe where the velocity for piping shall not exceed eight (8) feet per second, and six (6) feet per second for suction piping, unless summary calculations are provided to show that greater flow is possible with the pump and piping provided.

**605.2.1 Pump sizing.** The pump shall be sized to deliver the required flow rate against the total system head involved.

**605.3 Pipe and fitting material.** The circulation system piping and fittings shall be of material able to withstand operating pressures and operating conditions.

**605.3.1 Drainage.** Equipment shall be designed and fabricated to drain the spa water from the equipment by removal of drain plugs, manipulating valves or by other methods. Refer to manufacturer's recommendations for specific information on draining the system.

**605.4 System condition gauge.** A pressure gauge (located downstream from the pump on a pressure system), or vacuum gauge (located before the pump on the vacuum system), or other means of indicating system condition shall be provided in the circulation system in an easily readable location.

**605.5 Water clarity maintenance.** The circulation system shall be capable of maintaining water clarity. Time clocks may be used to set the operating period. When time clocks are used, they shall also govern the operating time of appurtenant devices such as chemical disinfectant feeders, heaters, etc. that are dependent upon circulation pump flow.

**605.6 Operation and maintenance manual.** Written operation and maintenance instructions shall be provided for the circulation system.

## SECTION 606 RETURN INLETS AND SUCTION OUTLETS

**606.1 General.** Return inlets and suction outlets shall be provided and arranged to produce circulation throughout the spa.

**606.2 Standards.** If the suction outlet system, such as a filtration system, automatic cleaning system, solar system etc., has a single suction outlet, or multiple suction outlets which can be isolated by valves, each suction outlet shall conform to ANSI/APSP-7 standards for suction entrapment avoidance.

**606.3 Suction outlets and drains.** Suction outlet covers/grates shall be tested by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8. Spas may be designed to have multiple drains, single unblockable drains, or no drains. The following minimum design criteria shall be adhered to for design and installation of spa drains:

**Spa Drains**

| <b>Drain Type</b>                                 | <b>Allowable Means of Protection</b>   |
|---|--|
| No Drain  | Allowed with listed Suction Vacuum Release device (SVRS)   |
| Single Unblockable Outlet                         | The following are approved single unblockable suction outlets: <ul style="list-style-type: none"> <li>• Channel outlet (as specified)</li> <li>• Unblockable outlets 18 inches x 23 inches or larger</li> <li>• Swim jet system that complies with ASME/ANSI A112.19.8</li> <li>• Venturi-driven system that complies with ASME/ANSI A112.19.8 or ASTM F2387-04</li> <li>• Gravity flow system</li> <li>• Sumps in Series</li> </ul> |
| Single Blockable Outlet                           | Not allowed  |
| Two suction outlets (placed 3 or more feet apart) | As designed  |
| Three or more outlets                             | As designed  |

**606.4 Vacuum cleaner fitting.** Where provided, the vacuum cleaner fittings with safety covers shall be located in an accessible position not less than three (3) inches and not greater than eighteen (18) inches below the minimum operating water level, or as an attachment to the skimmers. All wall fitting and safety covers shall be approved by a nationally recognized testing agency.

**SECTION 607  
AIR INDUCTION SYSTEM**

**607.1 General.** Any air induction system shall prevent water back-up that could cause electrical shock hazards.

**607.2 Air intake source.** Air intake sources shall not introduce water, dirt, or contaminants into the spa.

**607.3 Integral air passage.** Integral air passages shall be pressure tested at time of manufacture to provide structural integrity for a value of one and one-half (1-1/2) times the intended working pressure.

**607.4 Installation.** Air induction systems shall be installed in accordance with manufacturer's instructions.

## CHAPTER 7 RESIDENTIAL PORTABLE SPAS

### SECTION 701 SCOPE

**701.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of portable residential spas, and hydrotherapy units of irregular or geometric shell design, which are used for bathing. This chapter does not cover public/commercial spas, permanently installed residential spas, and other spas such as those operated for medical treatment, physical therapy, or other special purposes.

### SECTION 702 MATERIAL OF MANUFACTURE

**702.1 General.** The materials, components, and accessories used in portable spas shall comply with the Standards identified in Appendix A, Table 2. These materials shall be capable of fulfilling the design, installation and intended use requirements in this standard.

**702.2 Surfaces.** All material surfaces that may 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.

**702.2.1 Maintenance.** Products shall be maintained in accordance with manufacturer's instructions.

**702.3 Material compatibility.** Assemblies of different materials shall be chemically and mechanically compatible for the intended use and environment.

### SECTION 703 STRUCTURAL DESIGN

**703.1 General.** The structural design and materials used shall be in accordance with generally accepted structural engineering practices.

**703.2 Weather protection.** A means shall be provided to protect the spa shell and appurtenances, piping, filter system, pump and motor, and other components from damage due to freezing.

**703.3 Surfaces.** The surfaces within the spa intended to provide footing for users shall be designed to provide a slip-resistant surface.

**703.4 Spa Equipment.** Spa equipment shall be properly supported to prevent damage from misalignment, settling, etc. The equipment shall be located to minimize the potential for the accumulation of debris and moisture.

### SECTION 704 DIMENSIONAL DESIGN

**704.1 General.** The shape of spas shall not be limited except from the standpoint of safety and/or circulation of the spa water.

**704.1.1 Obstructions.** There shall be no protrusions, extensions, means of entanglement, or other obstructions in the bathing area which can cause the entrapment or injury to the user.

**704.2 Water depth.** The maximum water depth shall be four (4) feet measured from the waterline. Exceptions may be made for spas designed for a special purpose when approved by the Building Official.

**704.2.1 Multi-level seating.** Multi-level seating may be provided, but the maximum water depth of any seat or sitting bench shall be thirty (30) inches measured from the waterline.

**704.3 Floors.** The slope of the floor shall not exceed one (1) unit vertical per twelve (12) units horizontal (1:12).

**704.4 Entry/exit requirements.** Steps, seats, ladders or recessed treads shall be provided for entry and exit where water depths are greater than twenty-four (24) inches.

**704.5 Steps and benches.** The design and construction of spa steps, recessed steps, and seat benches, where used, shall conform to sections 604.7., notes 1. through 5.

1. Step treads shall have a minimum unobstructed horizontal depth of ten (10) inches for a minimum continuous width of twelve (12) inches.
2. Riser heights shall not be less than seven (7) inches nor greater than twelve (12) inches. Where the bottom tread serves as a bench or seat, the bottom riser may be a maximum of fourteen (14) inches above the spa floor.
3. Handrails, if used, shall be installed in such a way that they shall be removable only with tools.
4. Portable spas are intended for entry and exit from the surface supporting the spa. If the spa rim of a portable spa is intended for use as a step, a handrail shall be provided.

## **SECTION 705 CIRCULATION SYSTEMS**

**705.1 General.** A circulation system consisting of piping, inlets, suction outlets, and circulation equipment (pump, heater, filter and connecting piping) shall be provided for complete circulation of water through all parts of the spa.

**705.1.1 Circulation turn over.** The circulation system equipment shall be designed to turn over the entire spa water capacity at a minimum of once every hour.

**705.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible for inspection, repair, or replacement and shall be installed according to the manufacturer's instructions.

**705.2 Drainage.** The circulation system shall be designed and fabricated to provide drainage from the spa and circulation equipment.

**705.3 Water clarity maintenance.** The circulation system shall be capable of maintaining water clarity. Time clocks may be used to set the operating period. When time clocks are used, they shall also govern the operating time of appurtenant devices such as chemical/disinfectant feeders, etc. that are dependent upon circulation pump flow.

## **SECTION 706 HEATERS**

**706.1 General.** Reference Chapter 3, "General Pool and Spa Requirements", Section 306 "Heaters" for all general requirements.

**706.2 Automatic thermostatic limiting device.** The maximum temperature of the spa shall be limited to one hundred and four (104) degrees. An automatic thermostatic limiting device to control water temperature shall be required.

## CHAPTER 8 ABOVEGROUND SWIMMING POOLS

### SECTION 801 SCOPE

**801.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of residential above ground swimming pools. This chapter is not meant to cover semi-public pools, public pools, or in-ground residential pools.

### SECTION 802 MATERIALS OF CONSTRUCTION

**802.1 General.** The materials of components and accessories used in and around aboveground pools shall be non-toxic and shall be compatible with the environment in which they are installed. These materials shall be capable of fulfilling the design, installation, and intended use requirements in this chapter.

**802.2 Surfaces.** The selection of all materials for components and accessories to be used in and around aboveground pools shall be such that all parts with external surfaces and edges that may come in contact with the user are assembled, arranged, and/or finished (deburred, polished, etc.) so that they will not constitute a cutting, pinching, puncturing, or abrasion hazard under casual contact and use.

### SECTION 803 STRUCTURAL DESIGN

**803.1 General.** The structural design and materials used shall be used in accordance with generally accepted engineering practices.

**803.1.1 Safety factor.** The primary structure shall be designed for a factor of safety that conforms to accepted engineering structural standards based on the total static water pressure of the pool.

1. Steel shall have a factor of safety of at least 1.7, and aluminum shall have a factor of safety of at least 1.85.
2. The secondary structure(s) shall be designed for a factor of safety of 1.5, based on the static load without permanent deformation.

**803.2 Climate protection.** In climates subject to freezing temperatures, the pool shell and appurtenances, piping, hoses, filter system, pump, motor, and other components shall be designed and constructed to facilitate protection from damage due to freezing.

**803.3 Slip resistant surface.** The surfaces intended to provide footing for users shall be designed to provide a slip-resistant surface. The roughness or irregularity of such surfaces shall not cause injury or discomfort to bathers during normal use.

**803.4 Slope.** The slope adjacent to the shallow area shall have a maximum slope of three (3) units horizontal to one (1) unit vertical (3:1), and the slope adjacent to the side walls shall have a maximum slope of one (1) unit horizontal to one (1) unit vertical (1:1).

### SECTION 804 DIMENSIONAL DESIGN

**804.1 General.** No limits are specified for the shape of aboveground swimming pools except that consideration shall be given to shape from the stand-point of safety and circulation of the swimming pool water.

**804.1.1 Construction tolerances.** There shall be construction tolerances allowed on all dimensional designs. Overall length, width, and depth may vary plus or minus two inches (+/- 2") unless otherwise specified.

**804.2 Pool liners.** Aboveground pool liners shall conform to the following:

1. Liners shall be sealed to produce a membrane to contain the water in a watertight envelope.



2. A winterized liner shall not physically crack when tested at minus twenty (-20) degrees Fahrenheit.
3. A standard grade liner shall not physically crack when tested at zero (0) degrees Fahrenheit.
4. Normal liner thickness shall be plus or minus 10 percent of the thickness given by the manufacturer.
5. Liners shall be so installed that a method is provided to prevent the liner from slipping from the retainer and the sidewalls.

**804.3 Walls.** Aboveground pool walls shall conform to the following:

1. Closure of walls shall be accomplished by mechanical joining which is capable of withstanding the maximum stress applied to the wall. The means of closure shall be described in easy-to-understand diagrams and/or language in the assembly instructions.
2. Maintenance of the wall shall be described in the instruction manual.

#### **SECTION 805 ASSEMBLY, SAFETY AND MAINTENANCE**

**805.1 General.** Each new swimming pool shall be supplied with a clear self-explanatory, illustrated set of instructions for installation, assembly and operation. Instructions shall include the following:

1. All caution warnings shall be written in bold type; a minimum of twice the size of the normal type used in the instructions and shall be contained in a bordered area.
2. A prominently displayed, permanent and tamper-proof warning label with lettering not less than one quarter (1/4) inch (0.6 cm) in height shall warn bathers that there will be "No Diving".
3. A notice shall be included advising that the swimming pool, like any other item of equipment is subject to wear and deterioration and that certain types of excessive deterioration can lead to failure of the swimming pool structure, which might release large quantities of water that could cause bodily harm and property damage.
4. The instructions shall clearly list the manufacturer's name and address or that of an agent.
5. The instructions shall advise the owner of some of the more important features related to safety concerning its ownership, operation and maintenance.

#### **SECTION 806 LADDERS / STAIRS**

**806.1 General.** All pools shall have a means of entry/exit consisting of not less than one ladder or stairs. Ladders/stairs shall conform to the following:

1. All ladder/stair treads shall have slip-resistant surfaces which are integral to or permanently attached to the tread surface.
2. Ladders/stairs shall provide two (2) handrails/handholds that serve all treads.
3. Written instructions for proper assembly and use of all ladders shall include the following:
  - a. "Locate ladder on a solid base".
  - b. "One person on the ladder at a time".
  - c. "The ladder shall be installed per manufacturer's instructions".
  - d. "Warning: No Diving-No Jumping". Follow manufacturer's instructions.
  - e. Manufacturer shall provide instructions on which way to face when using the ladder.
  - f. Portable ladders, "Warning: Remove ladder when not in use". When a limited access ladder is used, a sign shall be provided which states "When not in use – remove or swing up and latch."

## SECTION 807 DECKS AND DECK EQUIPMENT

**807.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 301 “Decks and Deck Equipment” for all general requirements.

**807.2 Support.** Decks shall not depend upon the pool for support.

**807.3 Deck surface.** The deck walking surface shall be:

1. A maximum of six (6) inches above the pool top rail.
2. Extend no more than three (3) inches beyond the inside of the top rail of the pool, and be parallel to the top rail of the pool.
3. Decks that are installed flush with the top rail shall have the gaps filled in or coped.
4. The deck surface shall be manufactured from materials that will be slip-resistant. The deck owner instruction manual shall provide any finishing instructions necessary to meet this requirement.

**807.4 Rail.** The top rail of the pool fence, deck fence, patio fence and walk-around fence shall be a minimum of thirty six (36) inches from the deck surface.

**807.4.1 Height.** Where provided, the height of the fence from the top horizontal bar to the top of the rail of the pool shall be a minimum of thirty six (36) inches.

**807.4.2 Spacing.** Open-air spacing between pickets shall be a maximum of four (4) inches between pickets and support posts.

**807.4.3 Openings.** Where a picket-type fence is provided, maximum openings between the top rail of the pool and the lower horizontal bottom rail of the fence shall not exceed four (4) inches.

**807.5 Decal information.** The deck package shall have affixed at point of entry a permanent weather resistant load capacity decal or plate containing the following information:

1. Warning
2. Maximum load capacity (person and equipment)

**807.6 Safety sign.** The deck package shall have affixed at the point of entry “Danger Do Not Dive or Jump” safety signs in accordance with standard specifications.

**807.7 Width.** Walk-around (patio) decks shall be a minimum of fifteen (15) inches wide, measured from the inside perimeter of the pool to the outside of the pool walk-around.

## SECTION 808 CIRCULATION SYSTEMS

**808.1 General.** A circulation system consisting of pumps, hoses, tubing, piping, return inlets and suction outlets, skimmers, filters and other necessary equipment shall be provided for complete and continuous circulation of water through all parts of the pool

**808.1.1 Circulation turn over.** The equipment shall be of adequate size to turn over the entire pool water capacity at least once every eight (8) hours.

**808.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible for inspection, repair, or replacement, and shall be installed according to the manufacturer’s instructions.

**808.1.3 Equipment placement.** Pool equipment shall be properly supported to prevent damage from misalignment, settlement, etc. The equipment shall be mounted to minimize the potential for the accumulation of debris and moisture, following manufacturer’s instructions.

**808.2 Water velocity.** The water velocity in the pool pressure and suction lines shall not exceed ten (10) feet per second for pressure lines, and eight (8) feet per second for suction lines. Pool recirculation systems shall be sized to permit the rated flows for filtering and cleaning without exceeding the maximum head of the pump.

**808.3 Pipe and fitting material.** Circulation system piping and fittings shall be of nontoxic material, shall be considered to be process piping, and be able to withstand operating pressures and operating conditions.

**808.3.1 Drainage.** Equipment shall be designed and fabricated to drain the pool water from the equipment by removal of drain plugs and manipulating valves, or by other methods. Refer to manufacturer's recommendations for specific information on draining the system.

**808.4 System condition gauge.** A pressure or vacuum gauge or other means of indicating system condition shall be provided in the circulation system in an easily readable location.

**808.5 Operation and maintenance manual.** Written operation and maintenance instructions shall be provided for the circulation system.

### **SECTION 809 RETURN INLETS AND SUCTION OUTLETS**

**809.1 General.** Return inlets and suction outlets shall be provided and arranged to produce a uniform disinfectant residual throughout the entire pool. Where skimmers are used, the return inlets shall be located to help bring floating particles within the range of the skimmers. Return inlets from the circulation system shall be designed to not constitute a hazard to the user.

**809.2 Suction outlets and drains.** Suction outlet covers/grates shall be tested by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8 and shall be installed in accordance with ANSI/APSP-7. Pools may be designed to have multiple drains, single unblockable drains, or no drains. The following minimum design criteria shall be adhered to for design and installation of pool drains:

#### **Pool Drains**

| <b>Drain Type</b>                                 | <b>Allowable Means of Protection</b>   |
|---|--|
| No Drain  | Allowed with listed Suction Vacuum Release device (SVRS)   |
| Single Unblockable Outlet                         | The following are approved single unblockable suction outlets: <ul style="list-style-type: none"> <li>• Channel outlet (as specified)</li> <li>• Unblockable outlets 18 inches x 23 inches or larger</li> <li>• Swim jet system that complies with ASME/ANSI A112.19.8</li> <li>• Venturi-driven system that complies with ASME/ANSI A112.19.8 or ASTM F2387-04</li> <li>• Gravity flow system</li> <li>• Sumps in Series</li> </ul> |
| Single Blockable Outlet                           | Not allowed  |
| Two suction outlets (placed 3 or more feet apart) | By design  |
| Three or more outlets                             | By design  |

**809.2.1 Suction outlet grate.** The pool shall not be operated if the suction outlet grate is missing, broken or secured in such a way that it can be removed without the use of tools.

**809.3 Vacuum cleaner fittings.** Where provided, the vacuum cleaner fitting(s) with safety covers, shall be located in an accessible position at least three (3) inches, and no greater than eighteen (18) inches below the minimum operating water level, or as an attachment to the skimmers. Wall fittings and safety covers shall be approved by a nationally recognized testing agency.

**SECTION 810  
HEATERS**

**810.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 306 “Heaters” for all general requirements.

**810.2 Automatic thermostatic limiting device.** The maximum temperature of the spa shall be limited to one hundred and four (104) degrees. An automatic thermostatic limiting device to control water temperature shall be required.

## CHAPTER 9 PUBLIC AND SEMI-PUBLIC SWIMMING POOLS

### SECTION 901 SCOPE

**901.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of public and semi-public pools to be used for swimming which are operated by an owner, licensee, or concessionaire, regardless of whether a fee is charged for use. This chapter does not cover hot tubs, permanently installed residential pools, portable spas, aboveground pools, or other pools or spas, such as those operated for medical treatment, physical therapy, or other special purposes.

### SECTION 902 MATERIALS OF CONSTRUCTION

**902.1 General.** Swimming pools and all appurtenances thereto shall be constructed of materials which are nontoxic, impervious and enduring, able to withstand the design stresses and which will provide a watertight structure with a smooth and easily cleaned surface without cracks or joints, excluding structural joints, or to which a smooth easily cleaned surface finish is applied or attached.

### SECTION 903 STRUCTURAL DESIGN

**903.1 General.** The structural design and materials used shall be in accordance with generally accepted structural engineering practices.

**903.2 Interior finish material.** Sand or earth shall not be permitted as an interior finish in a swimming pool.

**903.3 Climate protection.** In climates subjects to freezing temperatures, the pool shell and appurtenances, piping, filter system, pump and motor, and other components shall be so designed and constructed to facilitate protection from damage due to freezing.

**903.4 Slip resistant surface.** The surfaces within the pool intended to provide footing for users shall be slip-resistant. The roughness or irregularity of such surfaces shall not cause injury or discomfort to bathers during normal use.

**903.5 Visibility.** The colors, patterns, or finishes of the pool interior shall not obscure the existence or presence of objects or surfaces within the pool.

### SECTION 904 DIMENSIONAL DESIGN

**904.1 General.** No limits are specified for the shape of swimming pools except that consideration shall be given to shape from the standpoint of safety and circulation of the swimming pool water.

**904.1.1 Obstructions.** There shall be no protrusions, extensions, means of entanglement, or other obstructions in the swimming area which can cause the entrapment or injury to the user.

**904.1.2 Construction tolerances.** There shall be construction tolerances allowed on all dimensional designs. Overall length, width, and depth in the deep end may vary plus or minus three (+/-3) inches. All other overall dimensions may vary plus or minus two (+/-2) inches unless otherwise specified (such as in a Class A pool). The designed waterline shall have a maximum construction tolerance at the time of completion of the work of plus or minus one-quarter (+/-1/4) inch for pools with adjustable weir surface skimming systems, and of plus or minus one-eighth (+/-1/8) inch for pools with nonadjustable surface skimming systems.

**904.1.3 Class A or D sizing.** The size of Class A or D pools shall be governed by the requirements of the activities for which the installation is intended.

**904.2 Walls.** Walls in Class B and C pools shall not be greater than eleven (11) degrees from plumb (see Appendix A, figure 2) for a minimum depth of thirty three (33) inches from the waterline in deep areas, or twenty seven (27) inches in the shallow areas. Below these depths, the wall may be a radius to join the floor. Class A pools, where racing lanes terminate, shall have plumb walls.

**904.3 Floors.** Floor slopes shall be constructed as follows:

1. All slopes shall be uniform.
2. The slope of the floor from the shallow end wall towards the deep end shall not exceed one (1) unit vertical per twelve (12) units horizontal (1:12) to the point of the first slope change for Class A and B pools, or one (1) unit vertical per ten (10) units horizontal (1:10) for Class C pools.
3. The point of the first slope change shall be defined as the point at which the floor slope exceeds one (1) unit vertical per twelve (12) units horizontal (1:12) for Class A and B pools, or one (1) unit vertical per ten (10) units horizontal (1:10) for Class C pools.
4. The slope of the floor from the point of the first slope change to the deep end shall not exceed one (1) unit vertical per three (3) units horizontal (1:3). Such slopes are not intended to provide any less water depth than those specified if the pool is intended for diving.
5. Transitional radius from wall to floor where floor slopes join the wall shall comply with the following:
  - a. The radius shall have its center no less than thirty three (33) inches below the waterline in deep areas or thirty (30) inches in the shallow area.
  - b. The radius shall be tangent at the points where the radius meets the wall and the floor.
  - c. The radius shall be equal to, or greater than, the depth of the pool minus the vertical wall depth measured from the waterline (or tolerance allowed in Section 904.1.2, minus three (3) inches to allow draining to the main drain).

**904.4 Water depth.** Water depths at the shallow end of the swimming area shall be three (3) feet minimum, and forty two (42) inches minimum for racing pools. Exceptions may be made in a recessed area of the main swimming pool, outside the competitive and/or swimming course, when the pool is an irregular shape with the permission of the building official.

1. The beginners' area of the pool shall be visually set apart from, but may be adjoined to, the shallow area and shall not adjoin the deep area.
2. The transition point of the pool from the beginners' area to the shallow area and from the shallow to the deep area shall be visually set apart with a rope and float line, depth markers and a four (4) inch minimum width row of floor tile, pointed line, or similar means of color contrasting with the bottom. In diving pools with a constant slope, the shallow area shall be visually set apart from the deep area with a rope and float line, depth markers and a four (4) inch minimum width row of floor tile, painted line, or similar means of a color contrasting with the pool bottom.
3. Class A pools intended for competitive diving and swimming shall be designed and constructed to provide the water depths specified by Federation International de National Amateur (FINA) U.S. Swimming, and U.S. Diving.

**904.5 Diving unit depth.** Class B and C pools intended for diving shall conform to the minimum water depths, areas, slopes, and other dimensions shown in Appendix A, Figure 7. If a wall exists, then it shall conform to the three to one (3:1) slope in the Point D dimension and the L1-2-3-4 dimensions.

1. When diving equipment is installed, it shall conform to the specifications set forth in Section 301.6 and shall be located in the diving area of the pool to provide the minimum dimensions as shown in Appendix A, Figure 7. Competitive diving equipment shall not be installed on Class B and C pools.
2. The tip of the diving equipment shall be located at Point "A", which is the reference point of all other dimensions.
3. There shall be a completely unobstructed clear vertical distance of thirteen (13) feet above any diving board measured from the center of the front end of the board. This area shall extend horizontally at least eight (8) feet behind, eight (8) feet to each side, and sixteen (16) feet ahead of Point A.

4. Public pools with diving facilities in excess of three (3) meters (10 feet) in height, or pools designed for platform diving, shall comply with the dimensional design requirements of FINA, U.S. Diving, National Federation of State High School Associations (NFSHSA), etc.

**904.6 Offset ledges.** Offset ledges, as shown in Appendix A, figure 5, when provided, shall fall within eleven (11) degrees from plumb starting at the junction of the pool wall and waterline, and shall have a slip-resistant surface. Maximum width shall be eight (8) inches. The typical allowable dimensions are based on the depths shown

**904.7 Underwater seat benches.** Underwater seat benches, when provided, shall have a maximum horizontal seat bench depth of twenty (20) inches below the waterline, be visually set apart, have a slip-resistant surface, and shall be located fully outside of the required minimum diving water envelop if the pool is intended for use with diving equipment.

1. Underwater seat benches shall be permitted in the deep end of the pool only if they are either completely recessed, shaped to be compatible with the contour of the pool wall, or in a corner of the pool.

**904.8 Occupancy load.** Maximum occupancy load for pools shall be in accordance with the Building Code.

1. Consideration shall be taken by the designer/operator to make certain that there is adequate room for the users.

**904.9 Wading pools.** Wading pools shall be separated from public and semi-public swimming pools by a minimum four (4) foot height fence or partition with self-closing/self-latching gate to prevent the direct entrance of waders into the swimming pool areas. The gate and fence shall be designed and constructed in accordance with Section 401 and the gate shall be designed to swing toward the wading pool.

**904.9.1 Walls.** Walls in wading pools shall be vertical or within eleven (11) degrees of vertical except for the lower six (6) inches which shall be a radius to the floor. Walls shall not extend more than six (6) inches above the waterline at each point.

**904.9.2 Floors.** Floors of wading pools shall be uniform, sloped to drain with a maximum slope of one (1) unit vertical per twelve (12) units horizontal (1:12).

**904.9.3 Water depth.** Wading pools shall have a maximum water depth of twenty (20) inches. The water depth at the perimeter shall not exceed eighteen (18) inches. Water depths may be reduced from the above maximums and brought to zero (0) at the shallowest point.

## SECTION 905 DECKS AND DECK EQUIPMENT

**905.1 General.** Reference Chapter 3, "General Pool and Spa Requirements" Section 301 "Decks and Deck Equipment" for all general requirements.

**905.2 Accessible decks.** Accessible decks and deck equipment shall comply as follows:

1. Risers for steps for the deck shall be uniform and have a minimum height of four (4) inches and a maximum height of seven (7) inches. The minimum tread depth shall be eleven (11) inches.
2. The minimum continuous, unobstructed deck width, including the coping, shall conform to the following, as appropriate:
  - a. Class A pool-Four (4) feet minimum.
  - b. Class B pool-Ten (10) feet minimum.
  - c. Class C pool-Four (4) feet minimum.
  - d. Class D pool-Three (3) feet minimum.
  - e. A minimum four (4) foot deck width shall be provided on the sides and rear of any diving equipment.

A deck clearance of twenty-four (24) inches shall be provided around any other deck equipment that is thirty-six (36) inches or less in height above the deck. A deck clearance of thirty-six (36) inches shall be provided around all other deck equipment.

3. Deck(s) shall be sloped to effectively drain either to perimeter areas or to deck drains. Drainage shall remove pool splash water, deck cleaning water, and rain water without leaving standing water.

**905.3 Manufactured diving equipment.** Manufactured diving equipment shall be designed for swimming pool use and shall be installed in accordance with the manufacturers' recommendations.

1. Maximum board height over the water shall have a plus or minus three (+/-3) inch tolerance to allow for construction variances only on Class B and C pools.
2. The maximum construction tolerance of the tip of the board from Point "A" as shown in Appendix A, Figure 7, shall be plus or minus three (+/-3) inches on Class B and C pools. The diving equipment shall be in compliance with Section 904.5, item number 2.

## SECTION 906 CIRCULATION SYSTEM

**906.1 General.** A circulation system consisting of pumps, piping, return inlets and suction outlets, filters, and other equipment shall be provided for complete circulation of water through all parts of the pool. Materials and equipment used in the circulation system shall comply with nationally recognized standards.

**906.1.1 Circulation turnover.** Equipment shall be of adequate size to turn over the pool water capacity at least once every eight (8) hours. The system shall be designed to give the proper turnover rate based on the manufacturer's recommended maximum pressure flow of the filter, in clean media condition. Water clarity shall be maintained as required by the health department.

**906.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible for inspection, repair, or replacement and shall be installed according to the manufacturers' instructions.

**906.1.3 Equipment placement.** Pool equipment shall be properly supported to prevent damage from misalignment, settlement, etc. The equipment shall be mounted to minimize the potential for the accumulation of debris and moisture, following manufacturers' instructions.

**906.2 Water velocity.** The water velocity in the pool piping shall not exceed ten (10) feet per second for discharge piping (except for copper pipe where the velocity should not exceed eight (8) feet per second), and six (6) feet per second for suction piping, unless summary calculations are provided to show that the greater flow is possible with the pump and piping provided. Pool piping shall be sized to permit the rated flows for filtering and cleaning without exceeding the maximum head of the pump.

**906.2.1 Wading pool.** A wading pool shall have a separate circulation system of adequate size to turn over the entire pool water capacity at least once every two (2) hours.

**906.3 Pipe and fitting materials.** The circulation system piping and fittings shall be nontoxic, be considered to be process piping, and shall be of material able to withstand operating pressures and operating conditions. Pool piping subject to damage by freezing shall have a uniform slope in one (1) direction equipped with valves for adequate drainage. Pool piping shall be supported at sufficient intervals to prevent entrapment of air, water or dirt. Provisions shall be made for expansion or contraction of pipes.

**906.3.1 Drainage.** Equipment shall be designed and fabricated to drain the pool water from the equipment, together with exposed face piping, by removal of drain plugs and manipulating valves or by other means. Refer to manufacturers' recommendations for specific information on draining the system.

**906.4 System condition gauge.** A pressure or vacuum gauge or other means of indicating system conditions shall be provided in the circulation system in an easily readable location, as required in section 908.2.



**906.4.1 Class A, B and C requirements.** Class A, B, and C public pools shall be provided with an indicator measuring the rate of flow through the filter system with an appropriate range readable in gallons per minute (GPM) and accurate within ten (10) percent actual flow.

**906.5 Water clarity maintenance.** The circulation system shall be capable of maintaining water clarity and chemistry requirements. Time clocks may be used to set the operating period. When time clocks are used they shall also govern the operating time of appurtenant devices such as chemical/disinfectant feeders, slurry feeders, heaters, etc. that are dependent upon circulation pump flow.

**906.6 Operation and maintenance manual.** Operation and maintenance instructions shall be provided for the circulation system.

### **SECTION 907 FILTERS**

**907.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 302 “Filters” for all general requirements.

**907.2 Filters.** Filters shall be designed so that after cleaning per manufacturers’ instructions, the system can provide the water clarity noted in Section 906.1.1.

### **SECTION 908 PUMPS AND MOTORS**

**908.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 303 “Pumps and Motors” for all general requirements.

**908.2 Pressure and vacuum gauges.** Pressure and vacuum gauges shall be installed on all Semi-public and Public Pools / Spas.

1. The vacuum gauge shall be installed as close to the pump return inlet as possible and still maintain an accurate reading.
2. The pressure gauge shall be installed on the face piping ahead of the filter or on top of the filter in the area of greatest filter pressure.

### **SECTION 909 RETURN INLETS AND SUCTION OUTLETS**

**909.1 General.** Return inlets shall be provided and arranged to produce uniform circulation of water and maintain uniform disinfectant residual throughout the pool. Where skimmers are used, the return inlets shall be located to help bring floating particles within range of the skimmers.

**909.2 Return inlets.** Adjustable pool wall inlets shall be provided on all pools. Inlets shall be of sufficient number, properly designed, sized and installed to produce uniform circulation throughout the pool. There shall be a minimum of six inlets. Not less than one inlet shall be located within five (5) feet of each corner and in each step alcove. Inlets shall be on a closed loop piping system. Where the width of the pool exceeds thirty (30) feet, bottom returns will also be required. Bottom return inlets and wall inlets greater than thirty-six (36) inches below the water line shall be flush with the finish surface of the pool and designed to prevent injury to swimmers. Returns will be considered to have an area of influence described by a radius of fifteen (15) feet.

**909.3 Drains.** Pools shall be equipped with at least one (1) main drain located in the deepest portion. Drains shall be covered by grates, which are not readily removable by swimmers. Drains shall be spaced at intervals of not greater than one (1) for each twenty (20) feet of pool width in the deepest portion.

**909.4 Suction outlet and drain designs.** Suction outlet covers/grates shall be tested by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8 and shall be installed in accordance with ANSI/APSP-7. Pools may be designed to have multiple drains, single unblockable drains, or no drains. The following minimum design criteria shall be adhered to for design and installation of pool drains:

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### Pool Drains

| Drain Type  | Allowable Means of Protection  |
|---|--|
| Single Unblockable Outlet                         | The following are approved single unblockable suction outlets: <ul style="list-style-type: none"> <li>• Channel outlet (as specified)</li> <li>• Unblockable outlets 18 inches x 23 inches or larger</li> <li>• Swim jet system that complies with ASME/ANSI A112.19.8</li> <li>• Venturi-driven system that complies with ASME/ANSI A112.19.8 or ASTM F2387-04</li> <li>• Gravity flow system</li> <li>• Sumps in Series</li> </ul> |
| Single Blockable Outlet                           | Not allowed  |
| Two suction outlets (placed 3 or more feet apart) | By design  |
| Three or more outlets                             | By design  |

**909.4.1 Suction outlet grate.** The pool shall not be operated if the suction outlet grate is missing, broken or secured in such a way that it can be removed without the use of tools.

**909.5 Vacuum cleaning system.** A pool vacuum cleaning system shall be provided. In integral systems, connections shall be provided in sufficient number and location in the pool walls and should be located at least ten inches below the water line. In addition, automatic or self-cleaning systems may be installed if they are approved by the building official. Vacuum systems are to be installed with positive type shut off valves in the equipment area. Vacuum systems shall be operational only when the vacuum lines are attached during the cleaning process. Vacuum inlets are to be installed with approved safety covers.

### SECTION 910 SURFACE SKIMMER SYSTEM

**910.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 304, “Surface Skimmer Systems” for all general requirements.

**910.2 Perimeter skimmers.** Where a perimeter-type surface skimming system is used as the sole surface skimming system, this system shall extend around a minimum fifty percent (50%) of the perimeter of the pool.

1. Where perimeter surface skimming systems are used, they shall be calculated to provide the circulation system with a system surge capacity of not less than one (1) gallon for each square foot of pool surface.

### SECTION 911 DISINFECTANT EQUIPMENT, OXIDATION EQUIPMENT AND CHEMICAL FEEDERS

**911.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 309, “Disinfectant Equipment, Oxidation Equipment and Chemical Feeders” for all general requirements.

**911.2 Chemical testing.** Every public and semi-public pool shall be supplied with a chemical test kit for the determination of pH, chlorine or bromine residuals, cyanuric acid (if used), total alkalinity, and calcium hardness.

### SECTION 912 SAFETY

**912.1 General.** A public pool shall be provided with a suitable handhold around its perimeter in areas where depths exceed forty two (42) inches. Handholds shall consist of any one (1) or a combination of the items listed below:

1. Coping, ledge, or deck along the immediate top edge of the pool shall provide a slip-resistant surface of at least four (4) inches minimum horizontal width and located at or not more than twelve (12) inches above the waterline. Rolled beams or negative edge surfaces do not meet the intent of this requirement.
2. Ladders, stairs, or seat ledges.
3. A rope or railing placed at, or not greater than twelve (12) inches above the waterline and secured to the

wall of the pool at not more than four (4) foot intervals. Ropes must be capable of withstanding the environmental conditions.

**912.2 Depth markers.** Depth markers shall conform to the following:

1. The depth of water in feet shall be plainly and conspicuously marked at or above the waterline on the vertical pool wall and on the top of the coping or edge of the deck or walk next to the pool.
2. Depth markers on the vertical pool wall shall be positioned to be read from the water side.
3. Depth markers on the deck shall be within eighteen (18) inches of the water edge and positioned to be read while standing on the deck facing the water.
4. Depth markers in or on the deck surfaces shall be slip-resistant.
5. There shall be a minimum of two (2) depth markers per pool, regardless of pool size or shape, spaced at not more than twenty-five (25) foot intervals uniformly located around the perimeter of the pool.
6. Depth markers shall be installed at intermediate increments of water depth not to exceed two (2) feet, nor spaced at intervals greater than twenty-five (25) feet.
7. Depth markers shall have a four (4) inch minimum height. Numbers shall be of contrasting color to the background on which they are applied, and the color shall be of a permanent nature.

### **SECTION 913 VISITOR AND SPECTATOR AREA**

**913.1 General.** There shall be separation between the spaces used by visitors and spectators and those spaces used by bathers. The visitor and spectator area may be within the pool perimeter enclosure if it is in an area separated from the space used by bathers. The means of separation shall be equivalent to the required barrier/enclosure.

**913.1.1 Toilet facilities.** Separate toilets shall be provided for spectators. The quantity of fixtures shall be in accordance with the International Building Code.

### **SECTION 914 OPERATION AND MANAGEMENT**

**914.1 General.** Public pools shall be maintained under the supervision and direction of a properly trained operator who shall be responsible for the sanitation, safety, and maintenance of the pool, and all physical and mechanical equipment and records as required by the Health Department.

**914.1 Required postings.** Rules and regulations for users and the occupancy load shall be posted in a conspicuous place to inform pool patrons.

### **SECTION 915 OPERATING PERMITS**

**915.1 General.** A public pool shall not operate until the appropriate application has been submitted to the Health Department on the prescribed forms and a valid operating permit has been issued by the Health Department. The permit shall be renewed as required by the Health Department.

## CHAPTER 10 PUBLIC AND SEMI-PUBLIC SPAS

### SECTION 1001 SCOPE

**1001.1 General.** This chapter is intended to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of public and semi-public spas to be used for swimming and operated by an owner, licensee, or concessionaire, regardless of whether a fee is charged for use. This chapter does not cover spas operated for medical treatment, physical therapy, or other special purposes.

### SECTION 1002 MATERIALS OF CONSTRUCTION

**1002.1 General.** Spas and all appurtenances thereto shall be constructed of materials which are nontoxic, are impervious and enduring, can withstand the design stresses, and which will provide a watertight structure with a smooth and easily cleaned surface without cracks or joints, excluding structural joints, or to which a smooth easily cleaned surface finish is applied or attached.

### SECTION 1003 STRUCTURAL DESIGN

**1003.1 General.** The structural design and materials used shall be in accordance with generally accepted structural engineering practices.

**1003.2 Interior finish material.** Sand or earth shall not be permitted as an interior finish in a spa.

**1003.3 Climate protection.** In climates subject to freezing temperatures, the spa shell and appurtenances, piping, filter system, pump and motor, and other components shall be so designed and constructed to facilitate protection from damage due to freezing.

**1003.4 Slip resistant surface.** The surfaces within the spa intended to provide footing for users shall be designed to provide a slip-resistant surface. The roughness or irregularity of such surfaces shall not cause injury or discomfort to bathers during normal use.

**1003.5 Visibility.** The colors, patterns, or finishes of the spa interior shall not obscure the existence or presence of objects or surfaces within the spa.

### SECTION 1004 DIMENSIONAL DESIGN

**1004.1 General.** No limits are specified for the shape of spas except that consideration shall be given to shape from the standpoint of safety and circulation of the spa water.

**1004.1.1 Obstructions.** There shall be no protrusions, extensions, means of entanglement, or other obstructions in the bathing area which can cause entrapment or injury to the user.

**1004.1.2 Construction tolerances.** The designed waterline shall have a maximum construction tolerance at the time of completion of the work of plus or minus one-quarter (+/- 1/4) inch for spas with adjustable weir surface skimming systems, and plus or minus one-eighth (+/- 1/8) inch for spas with nonadjustable surface skimming systems.

1. There shall be a construction tolerance on all other dimensional designs. Overall dimensions may vary plus or minus two (+/- 2) inches unless otherwise specified.

**1004.2 Water depth.** The maximum water depth shall be four (4) feet measured from the waterline. Exceptions may be made for spas designed for a special purpose when approved by the Building Official.

**1004.2.1 Multi-level seating.** Multi-level seating may be provided, but the maximum water depth of any seat or sitting bench shall be thirty (30) inches measured from the waterline.

**1004.3 Floor.** The slope of the floor shall not exceed one (1) unit vertical per twelve (12) units horizontal (1:12).

**1004.4 Entry and exiting requirements.** Steps, seats, ladders or recessed treads shall be provided for entry and exit where water depths are greater than twenty-four (24) inches.

1. Spas shall be equipped with at least one handrail (or ladder equivalent) for each fifty (50) feet of perimeter, or portion thereof, to designate the point of entry and exit.

**1004.5 Steps and benches.** The design and construction of spa steps, recessed steps, and seat benches, where used, shall conform to the following:

1. Step treads shall have a minimum unobstructed horizontal depth of ten (10) inches for a minimum continuous width of twelve (12) inches. Step treads shall have slip-resistant surfaces.
2. Riser heights shall not be less than seven (7) inches nor greater than twelve (12) inches. Where the bottom tread serves as a bench or seat, the bottom riser may be a maximum of fourteen (14) inches above the spa floor.
3. The first and last risers required by 1004.4 above are not required to be uniform but shall comply with riser height requirements as noted above. The first (top) riser is measured from the finished deck.
4. Intermediate risers, those between the first and last risers, shall be uniform in height (to within three eighths (3/8) of an inch).
5. Each set of steps shall be provided with at least one (1) handrail to serve all treads and risers.
  - a. Handrails shall be installed in a way that they may be removed only with tools.
  - b. The leading edge of a handrail in the spa shall be no more than eighteen (18) inches plus or minus three (3) inches horizontally from the vertical plane of the bottom riser (where applicable).
6. Seats or benches may be provided as part of the steps.

**1004.6 Ladders.** The design and construction of spa ladder(s), where used, shall conform to the following:

1. Spa ladders shall be made entirely of corrosion-resistant material.
2. Ladder treads shall have slip-resistant surfaces.
3. Ladders shall provide two (2) handholds/handrails.
4. The outside diameter of a ladder rail shall be not less than one (1) inch and not great than two and one quarter (2-1/4) inches.
5. Below the water level, there shall be a clearance of not more than six (6) inches nor less than three (3) inches between any ladder tread edge, measured from the spa wall side of the tread to the spa wall.
6. The clear distance between ladder handrails shall be a minimum of seventeen (17) inches and a maximum of twenty-four (24) inches.

**1004.7 Treads.** The design and construction of recessed treads, where provided, shall conform to the following:

1. Recessed treads at the centerline shall have a uniform vertical spacing of twelve (12) inches maximum and seven (7) inches minimum.
2. The vertical distance between the spa coping edge, deck, or step surface and the uppermost recessed tread shall be a maximum of twelve (12) inches.
3. Recessed treads shall have a minimum depth of five (5) inches and a minimum width of twelve (12) inches.
4. Recessed treads shall drain into the spa to prevent the accumulation of dirt and shall be slip-resistant.
5. Each set of recessed treads shall be provided with a set of handrails/grabrails/handholds to serve all treads and risers.

## SECTION 1005 DECKS AND DECK EQUIPMENT

**1005.1 General.** Reference Chapter 3, Section 301, “Decks and Deck Equipment” for all general requirements.

**1005.2 Accessible decks.** Accessible decks and deck equipment and shall comply as follows:

1. Risers for steps for the deck shall be uniform and have a minimum height of four (4) inches and a maximum height of seven (7) inches. The minimum tread depth shall be eleven (11) inches.
2. The minimum slope of the deck(s) shall be one-eighth (1/8) unit vertical per twelve (12) units horizontal (1/8:12) for textured, hand-finished concrete decks; one-quarter (1/4) unit vertical per twelve (12) units horizontal (1/4:12) for exposed aggregate concrete decks; and one-half (1/2) unit vertical per twelve (12) units horizontal (1/2:12) for indoor/outdoor carpeting decks, unless an alternate drainage method is provided.
3. The maximum slope of all decks other than wood decks shall be one (1) unit vertical per twelve (12) units horizontal (1:12) except for ramps. The maximum slope for wood decks shall be one-eighth (1/8) unit vertical per twelve units horizontal (1/8:12). Gaps in wood decks shall be based on generally accepted engineering practices with respect to the type of wood used.
  - a. Deck(s) shall be sloped to effectively drain either to perimeter areas or to deck drains. Drainage shall remove spa splash water, deck cleaning water and rain water without leaving standing water.

## SECTION 1006 CIRCULATION SYSTEM

**1006.1 General.** A circulation system consisting of pumps, piping, return inlets and suction outlets, filters, and other equipment shall be provided for complete circulation of water through all parts of the spa. Materials and equipment used in the circulation system shall comply with nationally recognized standards.

**1006.1.1 Circulation turnover.** Equipment shall be of adequate size to turn over the spa water capacity at a rate of not less than once in thirty (30) minutes. The system shall be designed to give the proper turnover rate based on the manufacturer’s recommended maximum pressure flow of the filter, in clean media condition of the filter. Water clarity shall be maintained as required by the Health Department.

**1006.1.2 Component accessibility.** Circulation system components which require replacement or servicing shall be accessible for inspection, repair, or replacement and shall be installed according to the manufacturer’s instructions.

**1006.1.3 Equipment placement.** Spa equipment shall be properly supported to prevent damage from misalignment, settlement, etc. The equipment shall be mounted to minimize the potential for the accumulation of debris and moisture, and shall follow manufacturer’s instructions.

**1006.2 Water velocity.** The water velocity in the spa piping shall not exceed ten (10) feet per second for discharge piping (except for copper pipe where the velocity should not exceed eight (8) feet per second), and six (6) feet per second for suction piping, unless summary calculations are provided to show that greater flow is possible with the pump and piping provided. Spa piping shall be sized to permit the rated flows for filtering and cleaning without exceeding the maximum head of the pump.

**1006.3 Pipe and fitting materials.** The circulation system piping and fittings shall be nontoxic, be considered to be process piping, and shall be of material able to withstand operating pressures and conditions. Spa piping subject to damage by freezing shall have a uniform slope in one (1) direction equipped with valves for adequate drainage. Spa piping shall be supported at sufficient intervals to prevent entrapment of air, water or dirt. Provisions shall be made for expansion or contraction of pipes.

**1006.3.1 Drainage.** Equipment shall be designed and fabricated to drain the spa water from the equipment, together with exposed face piping, by removal of drain plugs and manipulating valves, or by other means. Refer to manufacturer’s recommendations for specific information on draining the system.

**1006.4 System condition gauge.** A pressure or vacuum gauge or other means of indicating system condition shall be provided in the circulation system in an easily readable location.

**1006.4.1 Indicator requirement.** Public spas shall be provided with an indicator measuring the rate of flow through the filter system with an appropriate range readable in gallons per minute (GPM) and accurate to within ten percent (10%) of actual flow.

**1006.5 Water clarity maintenance.** The circulation system shall be capable of maintaining water clarity and water chemistry requirements. Time clocks may be used to set the operating period. When time clocks are used, they shall also govern the operating time of appurtenant devices such as chemical/disinfectant feeders, slurry feeders, heaters, etc. that are dependent upon circulation pump flow.

**1006.6 Operations and maintenance manual.** Operation and maintenance instructions shall be provided for the circulation system.

### SECTION 1007 PUMPS AND MOTORS

**1007.1 General.** Reference Chapter 3, "General Pool and Spa Requirements", Section 303 "Pumps and Motors" for all general requirements.

**1007.2 Pressure and vacuum gauges.** Pressure and vacuum gauges shall be installed on all Semi-public and Public Pools / Spas.

1. The vacuum gauge shall be installed as close to the pump return inlet as possible and still maintain an accurate reading.
2. The pressure gauge shall be installed on the face piping ahead of the filter or on top of the filter in the area of greatest filter pressure.

### SECTION 1008 RETURN INLETS AND SUCTION OUTLETS

**1008.1 General.** Return inlet(s) and suction outlet(s) shall be provided and arranged to produce a uniform circulation of water and maintain a uniform disinfectant residual throughout the spa. Where skimmers are used, the return inlet(s) shall be located to help bring floating particles within range of the skimmers. Return inlet(s) from the circulation system shall be designed to not constitute a hazard to the bather.

**1008.2 Suction outlets and drains.** Suction outlet covers/grates shall be tested by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8 and shall be installed in accordance with ANSI/APSP-7. Spas may be designed to have multiple drains, single unblockable drains, or no drains. The following minimum design criteria shall be adhered to for design and installation of spa drains:

#### Spa Drains

| Drain Type  | Allowable Means of Protection  |
|---|--|
| No Drain  | Allowed with listed Suction Vacuum Release device (SVRS)   |
| Single Unblockable Outlet                         | The following are approved single unblockable suction outlets: <ul style="list-style-type: none"> <li>• Channel outlet (as specified)</li> <li>• Unblockable outlets 18 inches x 23 inches or larger</li> <li>• Swim jet system that complies with ASME/ANSI A112.19.8</li> <li>• Venturi-driven system that complies with ASME/ANSI A112.19.8 or ASTM F2387-04</li> <li>• Gravity flow system</li> <li>• Sumps in Series</li> </ul> |
| Single Blockable Outlet                           | Not allowed  |
| Two suction outlets (placed 3 or more feet apart) | As designed  |
| Three or more outlets                             | As designed  |

**1008.3 Suction outlet grate.** A spa shall not be operated if the outlet grate is missing, broken or secured in such a way that it can be removed without the use of tools.

**1008.4 Suction outlet plumbing.** When multiple suction outlets are used they shall be plumbed so that water is drawn through them simultaneously by means of a common line to the pump.

#### **SECTION 1009 SURFACE SKIMMER SYSTEM**

**1009.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 304, “Surface Skimmer Systems” for all general requirements.

**1009.2 Perimeter skimmers.** Where perimeter surface skimming systems are used, they shall be connected to provide the circulation system with a system surge capacity of not less than two and one half (2-1/2) gallons for each square foot of spa surface.

1. Where perimeter surface skimming systems are used, they shall be designed to provide the circulation system with a system surge capacity of not less than one (1) gallon for each square foot of spa surface.

#### **SECTION 1010 AIR INDUCTION SYSTEM**

**1010.1 General.** Any air induction system shall prevent water back-up that could cause electrical shock hazards.

**1010.2 Air intake source.** Air intake sources shall not introduce water, dirt, or contaminants into the spa.

**1010.3 Installation.** Air induction systems shall be installed in accordance with manufacturer’s instructions.

#### **SECTION 1011 WATER SUPPLY**

**1011.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 307, “Water Supply” for all general requirements.

**1011.1.1 Health department requirement.** The water supply serving the spa, shall meet the requirements of the Health Department before the spa is put in use.

#### **SECTION 1012 DISINFECTANT EQUIPMENT AND CHEMICAL FEEDERS**

**1012.1 General.** Reference Chapter 3, “General Pool and Spa Requirements”, Section 309 “Disinfectant Equipment, Oxidation Equipment and Chemical Feeders” for all general requirements.

**1012.1.1 Health department requirement.** Every spa shall be required to have disinfectant agent equipment in compliance with the requirements of the Health Department.

**1012.2 Chemical feeders.** The installation and use of chemical feeders shall conform to the following:

1. Chemical feeders shall be installed downstream from the filter and heater. Erosion-type feeders shall be allowed to feed solution to the suction side of the pump.
2. A Chemical feeder shall be installed to introduce the gas or solution downstream from the heater and, if possible, at a position lower than the heater outlet fitting.
3. Chemical feeders and pumps shall be wired to not operate unless the filter pump is running. If the chlorinator has an independent timer, the filter and chemical feed pump timers shall be interlocked.



### SECTION 1013 SAFETY

**1013.1 General.** A public spa shall be provided with a suitable handhold around its perimeter in areas where depths exceed Forty two (42) inches. Handholds shall consist of any one (1) or a combination of the items listed below:

1. Coping, ledge, or deck along the immediate top edge of the spa shall provide a slip-resistant surface of at least four (4) inches minimum horizontal width and located at or not more than twelve (12) inches above the waterline. Rolled beams or negative edge surfaces do not meet the intent of this requirement; or
2. Ladders, stairs, or seat ledges; or
3. A secured rope or railing placed at, or not more than twelve (12) inches above the waterline and secured at not more than four feet intervals to the wall of the spa. Ropes must be able to withstand the environmental conditions.

**1013.1 Depth markers.** Depth markers shall conform to the following:

1. The depth of the water in feet shall be plainly and conspicuously marked at or above the waterline on the vertical spa wall and on the top of the coping or edge of the deck or walk next to the spa.
  - a. Depth markers on the vertical spa wall shall be positioned to be read from the water side.
  - b. Depth markers on the deck shall be within eighteen (18) inches of the water edge and positioned to be read while standing on the deck facing the water.
2. Depth markers in or on the deck surfaces shall be slip-resistant.
3. There shall be a minimum of two (2) depth markers per spa, regardless of spa size or shape, spaced at no more than twenty five (25) foot intervals uniformly located around the perimeter of the spa.
4. Depth markers shall have a four (4) inch minimum height. Numbers shall be of contrasting color to the background on which they are applied, and the color shall be of a permanent nature.

### SECTION 1014 OPERATION AND MANAGEMENT

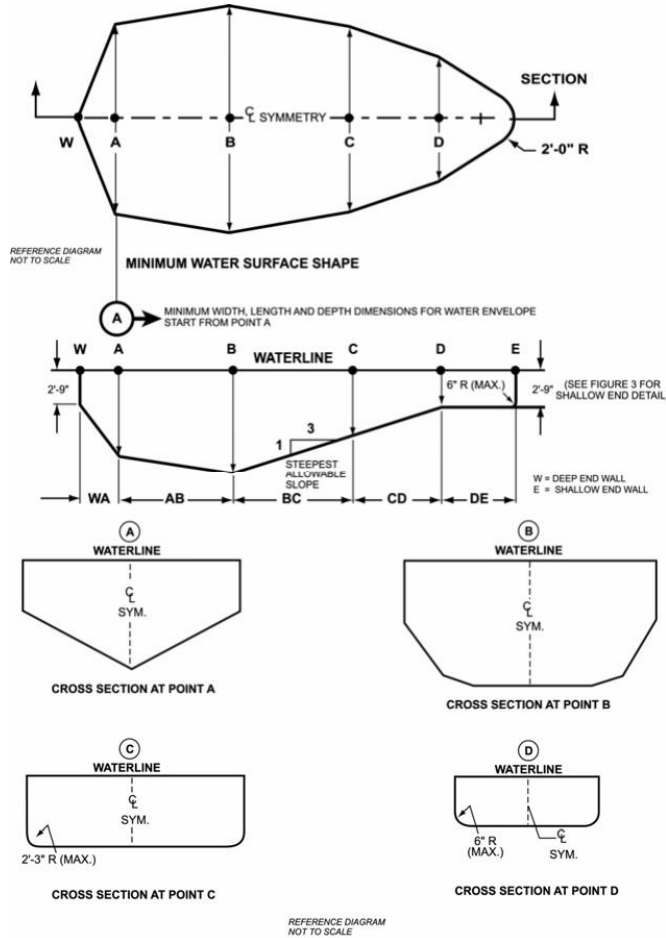
**1014.1 General.** Public spas shall be maintained under the supervision and direction of a properly trained operator who shall be responsible for the sanitation, safety, and maintenance of the spa, and all physical and mechanical equipment and records as required by the Health Department.

**1014.2 Required postings.** Rules and regulations for users and the occupancy load shall be posted in a conspicuous place.

### SECTION 1015 OPERATING PERMITS

**1015.1 General.** A public spa shall not operate until the appropriate application has been submitted to the Health Department on the prescribed forms and a valid operating permit has been issued by the Health Department. The permit shall be renewed as required by the Health Department.

## APPENDIX A DRAWINGS AND DIAGRAMS

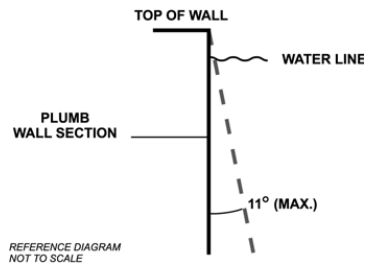


| Pool type | Minimum depths at point                     |       |       |       | Minimum widths at point |        |        |       | Minimum lengths between points |       |        |        |       |        |
|-----------|---|-------|-------|-------|-------------------------|--------|--------|-------|--------------------------------|-------|--------|--------|-------|--------|
|           | A   | B     | C     | D     | A                       | B      | C      | D     | WA                             | AB    | BC     | CD*    | DE    | WE     |
| O         | Manufactured diving equipment is prohibited |       |       |       |                         |        |        |       |                                |       |        |        |       |        |
| I         | 6'-0"                                       | 7'-6" | 5'-0" | 2'-9" | 10'-0"                  | 12'-0" | 10'-0" | 8'-0" | 1'-6"                          | 7'-0" | 7'-6"  | Varies | 6'-0" | 28'-9" |
| II        | 6'-0"                                       | 7'-6" | 5'-0" | 2'-9" | 12'-0"                  | 15'-0" | 12'-0" | 8'-0" | 1'-6"                          | 7'-0" | 7'-6"  | Varies | 6'-0" | 28'-9" |
| III       | 6'-10"                                      | 8'-0" | 5'-0" | 2'-9" | 12'-0"                  | 15'-0" | 12'-0" | 8'-0" | 2'-0"                          | 7'-6" | 9'-0"  | Varies | 6'-0" | 31'-3" |
| IV        | 7'-8"                                       | 8'-6" | 5'-0" | 2'-9" | 15'-0"                  | 18'-0" | 15'-0" | 9'-0" | 2'-6"                          | 8'-0" | 10'-6" | Varies | 6'-0" | 33'-9" |
| V         | 8'-6"                                       | 9'-0" | 5'-0" | 2'-9" | 15'-0"                  | 18'-0" | 15'-0" | 9'-0" | 3'-0"                          | 9'-0" | 12'-0" | Varies | 6'-0" | 36'-9" |

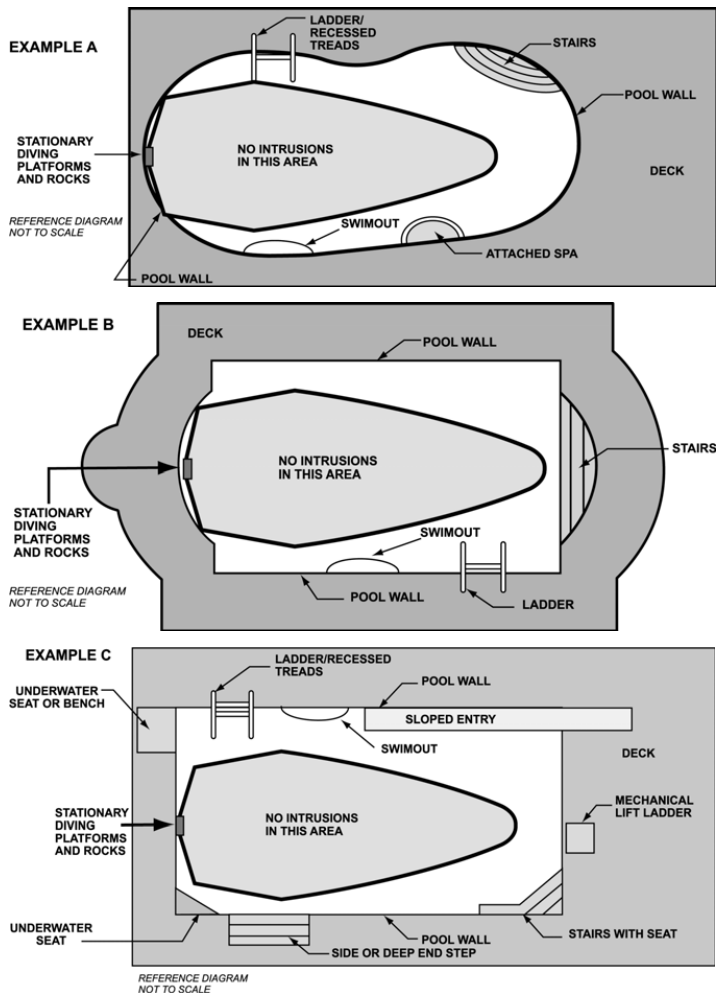
- \*Minimum length between points CD may vary based upon water depth at point D and the slope between points C & D.
- Figure 3 drawings are not to scale. (For pool types, see Glossary.)

**FIGURE 1**  
MINIMUM DIMENSIONS FOR RESIDENTIAL POOLS  
WITH MANUFACTURED DIVING EQUIPMENT

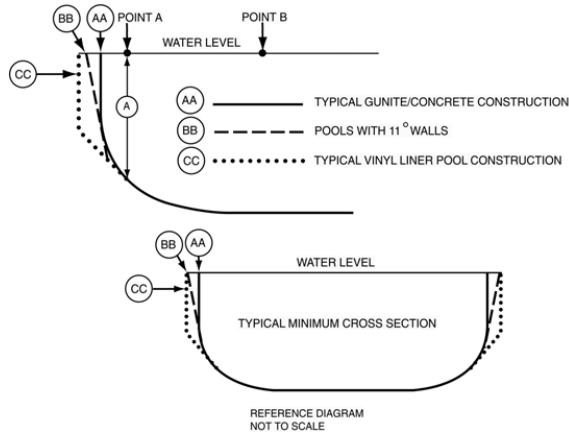
**Comment [CK1]:** We lost the right side of the table above & can you move the Note: portion away from the bottom line?



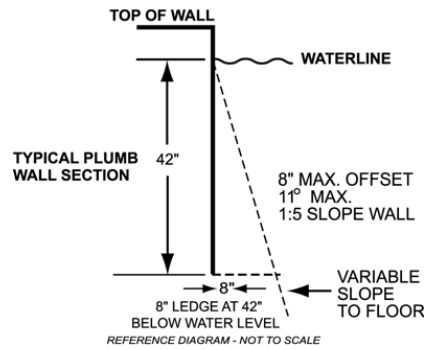
**FIGURE 2**  
MAXIMUM ALLOWABLE WALL SLOPE



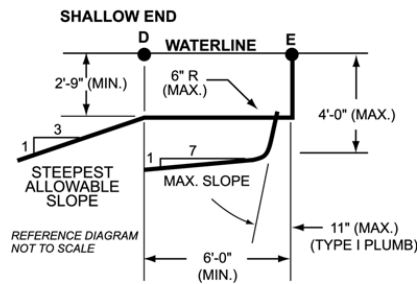
**FIGURE 3**  
TOP VIEW EXAMPLES OF ACCESSORY EQUIPMENT AND POOL FEATURES  
PROHIBITED IN THE WATER ENVELOPE FOR POOL TYPES I - V



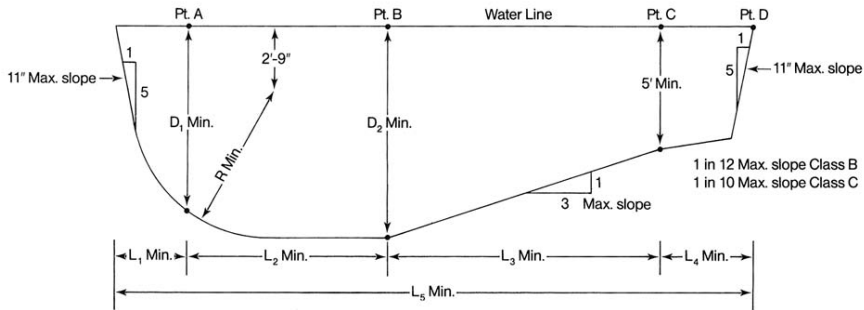
**FIGURE 4**  
TYPICAL POOL DESIGN CONFIGURATIONS FOR VINYL, GUNITE AND CONCRETE CONSTRUCTION FOR POOL TYPES I - V



**FIGURE 5**  
OFFSET LEDGES FOR POOL TYPE I - V POOLS



**FIGURE 6**  
SHALLOW END DEPTHS FOR TYPE I - V POOLS



| POOL TYPE | MINIMUM DIMENSIONS |                |       |                |                |                |                |                | MINIMUM WIDTH OF POOL AT: |        |        |
|-----------|--------------------|----------------|-------|----------------|----------------|----------------|----------------|----------------|---------------------------|--------|--------|
|           | D <sub>1</sub>     | D <sub>2</sub> | R     | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | PTA                       | PTB    | PTC    |
| VI        | 7'-0"              | 8'-6"          | 5'-6" | 2'-6"          | 8'-0"          | 10'-6"         | 7'-0"          | 28'-0"         | 16'-0"                    | 18'-0" | 18'-0" |
| VII       | 7'-6"              | 9'-0"          | 6'-0" | 3'-0"          | 9'-0"          | 12'-0"         | 4'-0"          | 28'-0"         | 18'-0"                    | 20'-0" | 20'-0" |
| VIII      | 8'-6"              | 10'-0"         | 7'-0" | 4'-0"          | 10'-0"         | 15'-0"         | 2'-0"          | 31'-0"         | 20'-0"                    | 22'-0" | 22'-0" |
| IX        | 11'-0"             | 12'-0"         | 8'-6" | 6'-0"          | 10'-6"         | 21'-0"         | 0              | 37'-6"         | 22'-0"                    | 24'-0" | 24'-0" |

**FIGURE 7**  
 MINIMUM DIMENSIONS FOR DIVING PORTION  
 OF CLASS B AND C POOLS

## APPENDIX A

### TABLE ONE

**NOTE:** Abbreviations used in this table refer to standards or specifications issued by the organizations identified below:

|       |  |
|-------|--|
| ACI   | American Concrete Institute<br>P.O. Box 9094<br>Farmington Hills, MI 48333-9094                              |
| ANSI  | American National Standards Institute<br>11 West 42 <sup>nd</sup> Street,<br>New York, NY 10036              |
| ASME  | American Society of Mechanical Engineers<br>345 East 47 <sup>th</sup> Street,<br>New York, NY 10017-2392     |
| ASTM  | American Society of Testing & Materials<br>100 Barr Harbor Drive<br>West Conshohocken, PA 19428-2959         |
| CPSC. | The Consumers Product Safety Commission<br>4330 East West Highway<br>Bethesda, MD 20814                      |
| IAPMO | International Association of Plumbing & Mechanical Officials<br>20001 South Walnut Drive<br>Walnut, CA 91789 |
| NEC   | National Electrical Code (see NFPA)  |
| NFPA  | National Fire Protection Association<br>One Batterymarch Park<br>Quincy, MA 02169-7471                       |
| NSF   | NSF International<br>3475 Plymouth Road<br>P.O. Box 130140<br>Ann Arbor, MI 48101-0140                       |
| NSPI  | National Spa & Pool Institute<br>2111 Eisenhower Avenue<br>Alexandria, VA 22314                              |
| NSPF  | National Swimming Pool Foundation<br>10803 Gulfdale, Suite 300<br>San Antonio, TX 78216                      |
| UL    | Underwriters Laboratories<br>333 Pfingsten Road<br>Northbrook, IL 60062-2096                                 |

**TABLE TWO**  
**MATERIALS AND STANDARDS**

| <u><b>MATERIALS &amp; APPLICATIONS</b></u> | <u><b>STANDARDS</b></u>  |
|--|--|
| Copper Tubing                              | ASTM B 88-03, Specification for Seamless Copper Tube   |
| Welded Copper Tubing                       | ASTM B 477-02, Specification for Welded Copper Tube  |
| ABS  | ASTM D 1527-99-01(2005), Specification for Acrylonitrile Butadiene Styrene (ABS) Plastic Pipe, Schedules 40 and 80<br><br>ASTM D 2235-01, Specification for Solvent Cements for Acrylonitrile Butadiene-Styrene (ABS) Plastic Pipe and Fittings                      |
| PVC  | ASTM 1785-04, Specification for Poly (vinyl chloride) (PVC) Plastic Pipe, Schedules 40, 80, 120<br><br>ASTM D 2564-02, Specifications for Solvent Cements for Poly (vinyl chloride) (PVC) Plastic Pipe and Fittings  |
| CPVC                                       | ASTM D 2846/D, Specification for Chlorinated Poly (vinyl chloride) (CPVC) Plastic and Hot and Cold Water Distribution System<br><br>ASTM D 2855-96 (2002), Specifications for Solvent Cements for Chlorinated Poly (vinyl chloride) (CPVC) Plastic Pipe and Fittings |
| PB   | ASTM D 3309-96a (2002), Specification for Polybutylene (PB) Plastic Hot Water Distribution Systems   |
| PEX  | F877-02-01, Specification for Cross-Linked Polyethelene (PEX) Plastic Hot and Cold Water Distribution Systems  |
| Steel Pipe Galvanized                      | ASTM 53/A, 53M-02, Specification for Pipe, Steel Black and Hot-Dipped, Zinc-Coated Welded and Seamless   |
| Soldered Joints                            | ASTM B 828-02 Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube  |
| Threaded Joints                            | ANSI/ASME B1.20.1-1983 (R2001), Pipe Threads, General Purpose (inch)   |

|                   |  |
|-------------------|--|
| Suction Fittings  | ANSI/ASME A112.19.9.8m-1987 (R1996), Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs and Whirlpool Bathtub Appliances |
| Couplings or Hose | ASTM 564-04a Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings   |
| Pump/Motors       | NEMA MG1-2005 Motors and Generators  |
| Pool/Spa Heaters  | UL1261 Electric Water Heaters for Pools and Tubs   |
| Equipment         | NSF Standard 50 Circulation System Components for Swimming Pools, Spas or Hot Tubs   |
| Water Supply      | ASME A 112.1.2-1991 (R2002) Air Gaps in Plumbing Systems   |