SECTION 454.1
PUBLIC SWIMMING POOLS AND BATHING PLACES

454.1 Public swimming pools and bathing places.
Public swimming pools and bathing places shall comply with the design and construction standards of this section.

Exceptions:

1. 1.A portable pool used exclusively for providing swimming lessons or related instruction in support of an established educational program sponsored or provided by a school district may not be regulated as a public pool. Such pool shall be regulated as a private swimming pool under Section 454.2.
2. 2.A temporary pool may not be regulated as a public pool. Such pool shall be regulated as a private swimming pool under Section 454.2.

454.1.1 Flood hazard areas.
Public swimming pools installed in flood hazard areas established in Section 1612.3 shall comply with Section 1612.

Note: Other administrative and programmatic provisions apply. See Department of Health (DOH) Rule 64E-9, *Florida Administrative Code* and Chapter 514, *Florida Statutes*. The regulation and enforcement of the initial and annual operation permit for public pools are preempted to the DOH. The construction permit holder is responsible for obtaining an operation permit issued by DOH, as a public swimming pool shall not be put into operation without an inspection and operation permit issued from the DOH. DOH may grant variances from the provisions of the *Florida Building Code* specifically pertaining to public swimming pools and bathing places as authorized by Section 514.0115, *Florida Statutes*. Building officials shall recognize and enforce variance orders issued by the Department of Health pursuant to Section 514.0115(5), *Florida Statutes* including any conditions attached to the granting of the variance.

- **"Bathing load"** means the maximum number of persons allowed in the pool or bathing place at one time.
- **"Collector tank"** means a reservoir, with a minimum of 2.25 square feet (0.2 m^2) water surface area, that is vented by piping and/or open to the atmosphere, from which the recirculation or feature pump takes suction, and which receives the gravity flow from the main drain line and surface overflow system or feature water source line. The vent shall measure a minimum of 12.56 square inches (8103 mm^2) in area. A vent cap assembly shall be installed to minimize rainwater entry into the tank while still allowing for adequate air movement. The vent cap assembly shall be designed to prohibit entry by animals. The vent opening, where connected to the tank, must be set above the static water surface elevation and crown of the overflow piping, if installed. Tanks with vented lids shall not be required to be equipped with a separate vent. Tanks not located in a room or enclosure shall have a lockable lid. Tanks shall be constructed of concrete or other impervious and structurally rigid material, with adequate access for maintenance and cleaning, shall be watertight, shall be free from structural cracks and shall have a nontoxic smooth finish.
- **"D.E."** is the Diatomaceous Earth that is used as a filter aid in D.E.-type filters. For the purpose of this rule, it also includes alternative filter aids that have been approved under NSF/ANSI Standard 50, and accepted by the filter manufacturer.
- **"Department"** means the permitting/inspection authority.

- **"Effective barrier"** is a barrier which consists of a building, or equivalent structure, plus a 48-inch (1219 mm) minimum height fence on the remaining sides or a continuous 48-inch (1219 mm) minimum height fence. All access through the barrier must have one or more of the following safety features: alarm, key lock or self-locking doors and gates. Safety covers that comply with the American Society for Test Materials standard F1346 may also be considered as an effective barrier.
- **"Elevated pool"** means any pool regulated under this section which is installed over a building (as defined in the *Florida Building Code*), including any associated troughs, gutters, or tanks.
- **"Epsom salt float tanks"** are special purpose pools leased by the public for a brief period of time to float quietly immersed in water with dissolved Epsom salt. *Florida Building Code* sections in 454.1 through 454.1.10 apply to these pools, and only the following code sections do not apply to these pools as these code requirements are not necessary for health or safety in these special purpose pools: 454.1.2.1 (a); 454.1.2.2.4, 454.1.3.1.2, 454.1.3.2, 454.1.4.2.2, 454.1.6.1, 454.1.6.5.10.5, 454.1.6.5.11, 454.1.6.5.14, 454.1.6.5.16.6(3), and 454.1.6.5.3.2.5.
- **"Interactive water features"** means a structure designed to allow for recreational activities with recirculated, filtered, and treated water; but having minimal standing water. Water from the interactive fountain type features is collected by gravity below grade in a collector tank or sump. The water is filtered, disinfected and then pumped to the feature spray discharge heads. The collector tank and water filtration features required make this structure a type of public swimming pool.
- **"Marking" or "Markings"** refers to the placement and installation of visual marking cues to help patrons identify step, bench and swimout outlines, slope break location, depth designations and NO ENTRY and NO DIVING warnings. When markings are specified by code to be dark, the term "dark" shall mean a Munsell color value from zero to four.
- **"Offset"** means set back into the deck from the normal pool wall perimeter (three sides must be surrounded by pool deck).
- **"Perimeter overflow gutter"** means a level trough or ledge around the inside perimeter of the pool containing drains to clean the pool water surface.
- **"Plunge pool"** means the receiving body of water located at the terminus of a recreational water slide and is dedicated solely for that purpose. Swimming pools that are not dedicated as plunge pools that include a recreational water slide as part of the design shall meet the requirements of Sections 454.1.1 through 454.1.6.5 and 454.1.9.2 with the exception of Sections 454.1.9.2.1.6.1 and 454.1.9.2.3.
- **"Pool floor"** means the interior pool bottom surface which consists of that area from a horizontal plane up to a maximum of a 45-degree slope.
- **"Pool wall"** means the interior pool side surfaces which consist of that area from a vertical plane to a 45-degree slope.
- **"Pool turnover"** means the circulation of the entire pool volume through the filter system. Pool volume shall be determined from the design water level which is the normal operating water level; for gutter-type pools it is the horizontal plane of the upper lip of the gutter and for skimmer pools it is the centerline of the skimmer opening.
- **"Portable pool"** means a pool or spa, and related equipment systems of any kind, which is designed or intended to be movable from location to location.

- **"Precoat pot"** means a container with a valved connection to the suction side of the recirculation pump of a pressure diatomaceous earth (D.E.) type filter system used for coating the filter with D. E. powder or NSF/ANSI Standard 50-2019 and manufacturer approved substitute filter aid.

  A **"public swimming pool"** or **"public pool"** means a single watertight structure of concrete, masonry or other approved materials that is located either indoors or outdoors, used for bathing or swimming by humans, and filled with a filtered and disinfected water supply, together with buildings, appurtenances and equipment used in connection therewith. A public swimming pool or public pool shall mean a conventional pool, spa-type pool, wading pool, special purpose pool, interactive water feature or water recreation attraction, to which admission may be gained with or without payment of a fee and includes, but is not limited to, pools operated by or serving camps, churches, cities, counties, day care centers, group home facilities for eight or more clients, health spas, institutions, parks, state agencies, schools, subdivisions, or the cooperative living-type projects of five or more living units, such as apartments, boardinghouses, hotels, mobile home parks, motels, recreational vehicle parks, and townhouses. The term does not include a swimming pool located on the grounds of a private residence.
- **"Recirculation system"** means the system of piping and mechanics designed to remove the water from the pool then filter, disinfect and return it to the pool.
- **"Recreational water slide"** means a flume that carries riders with more than 30 gallons per minute (113.55 L/m) of flow down the flume.
- **"Resistance exercise pools"** are special purpose pools used by bathers with or without supervision to perform low-impact exercises and physical therapy with circulated water resistance.
- **"Slip resistant"** means having a textured surface which is not conducive to slipping under contact of bare feet unlike glazed tile or masonry terrazzo and nontextured plastic materials. Manufactured surface products shall be designated by the manufacturer as suitable for walking surfaces in wet areas.
- **"Spa pool"** means a pool used in conjunction with high-velocity air or water coming from a nozzle in the back wall of a bench.
- **"Special purpose pool"** means a public pool used exclusively for a specific, supervised purpose, including springboard or platform diving training, SCUBA diving instruction, and aquatic programs for persons with disabilities, preschool or kindergarten children.
- **"Swimming pool slide"** is a slide designed by its manufacturer to discharge over the sidewall of a swimming pool, and which uses not more than 30 gallons per minute (113.55 L/m) of water to carry the riders.
- **"Swim spa"** is a pool used in conjunction with a directional flow of water against which one swims.
- **"Swim-up bar"** means a public swimming pool used for the consumption of food or beverage by people and may include a permanent bar or counter within the pool area from which food and beverage are served to people in the pool.
- **"Sun shelf"** means an area of a pool that adjoins the pool wall with a water depth less than 12 inches (305 mm), and is used for seating and play.
- **"Temporary pool"** means a pool intended to be used in conjunction with a sanctioned national or international swimming or diving competition event that does not exceed 30 consecutive days of use.

- **"Vanishing edge"** means a pool wall structure that is designed in such a way that the top of the pool wall and adjacent deck are not visible from certain vantage points in the pool or from the opposite side of the pool. Water from the pool flows over the edge and is captured and reused through the normal pool circulation system. Includes overflowing edge swimming pools with a lowered deck. Also referred to as an "infinity edge," "negative edge," "overflowing edge," or "zero edge."
- **"Wading pool"** means a shallow pool designed to be used by children.
- **"Water recreation attraction"** means a facility with design and operational features that provide patron recreational activity and purposefully involves immersion of the body partially or totally in the water. Water recreation attractions include water slides, river rides, water course rides, water activity pools, interactive water features, wave pools and any additional pool within the boundaries of the attraction.
- **"Water activity pool"** means a water recreation attraction which has water-related activities such as rope ladders, rope swings, cargo nets and other similar activities.
- **"Water slides"** means a water recreation attraction ride which is characterized by having trough-like or tubular flumes or chutes.
- **"Water theme park"** means a complex with controlled access, a fenced and gated attraction where guests enter through a limited number of entrances upon purchase of a ticket. These facilities are permanent and consist of multiple water recreation attractions. Lifeguards are present during all operating hours.
- **"Water therapy facilities,"** as that term is used in Section 514.0115, Item 1, *Florida Statutes*, are pools used exclusively for water therapy to treat a diagnosed injury, illness or medical condition, wherein the therapy is provided under the direct supervision of a Florida licensed physical therapist, occupational therapist or athletic trainer; pursuant to prescription by a physician or a physician's assistant (PA) licensed pursuant to Chapters 458 or 459, *Florida Statutes*, a podiatrist licensed pursuant to Chapter 461, *Florida Statutes*, or an advanced registered nurse practitioner (ARNP) licensed pursuant to Chapter 464, *Florida Statutes*; and the prescribing physician, PA, podiatrist or ARNP authorizes a plan of treatment justifying use of the pool for health care purposes.
- **"Wave pool"** means a water recreation attraction that is characterized by wave action.
- **"Wet deck area"** means the 4-foot-wide (1219 mm) unobstructed pool deck area around the outside of the pool water perimeter, curb, ladders, handrails, diving boards, diving towers, or pool slides, waterfalls, water features, starting blocks, planters or lifeguard chairs.
- **"Zero depth entry pool"** means a pool where the pool floor continues to slope upward to a point where it meets the surface of the water and the pool deck.

454.1.1.1 Sizing.

The public pools provided at a transient facility shall have a minimum 6 square feet (0.56 m^2) of surface area and a minimum of 1 gallon per minute (0.063 L/s) of recirculation flow per living unit. The public pools provided at nontransient facilities shall have a minimum 4.5 square feet (0.42 m^2) of surface area and a minimum of 0.75 gallon per minute (0.047 L/s) of recirculation flow per living unit. Recreational vehicle sites, campsites and boat slips designated for liveaboards shall be considered a transient living unit. For properties with multiple pools, this requirement includes the cumulative total surface area and recirculation rate of all swimming pools, spas, wading pools and interactive water features. If the only pools at a facility are spa pools or interactive water features, this requirement does not apply. The bathing load for conventional

swimming pools, wading pools, interactive water features, water activity pools and special purpose pools shall be computed on the basis of one person per 5 gpm (0.32 L/s) of recirculation flow. The bathing load for spa type pools shall be based on one person per each 10 square feet (0.9 m^2) of surface area.

454.1.2 Swimming pool construction standards.

454.1.2.1 Pool structure.

Pools shall be constructed of concrete or other impervious and structurally rigid material. All pools shall be watertight, shall be free from structural cracks and shall have a nontoxic smooth and slip-resistant finish. All elevated pools constructed of concrete shall have waterproofing integral to the mix, or applied over the surface prior to the final surface application. All materials shall be installed in accordance with manufacturer's specifications unless such specifications violate Chapter 64E-9, *Florida Administrative Code*, rule requirements or the approval criteria of NSF/ANSI Standard 50 or NSF/ANSI Standard 60.

1. (a)Tile used in less than 3 feet (914 mm) of water must be slip resistant. A minimum 4-inch (102 mm) tile line, each tile a minimum size of 1 inch (25 mm) on all sides, shall be installed at the water line, but shall not exceed 12 inches (305 mm) in height if a dark color is used. Gutter-type pools may substitute 2-inch (51 mm) tile, each a minimum size of 1 inch (25 mm) on all sides, along the pool wall edge of the gutter lip.
2. (b)One-inch (25 mm) square tile may be used if the manufacturer has specified the adhesive for use underwater to adhere the type of tile used [vitreous (glass) or ceramic]. Tiles shall not have sharp edges exposed that could cause bather injury.
3. (c)The grout line is allowed to be included when meeting the 1-inch (25 mm) square tile requirements, if the tile is sold and distributed as nominal or trade size tile.

454.1.2.2 Dimensions.

Any dimensional requirement given in Section 454.1 as a single dimension, with no range or tolerance specified, may have a final constructed tolerance of up to 3 inches (76 mm), or 5 percent of the specified dimension, whichever is less. All approved designs, plans and drawings must comply with all exact dimensional requirements specified in Section 454.1. This construction tolerance may be positive or negative, except negative construction tolerances shall not be applied to any part of a diving bowl. Construction tolerances shall not be applied to dimensional requirements affecting the accessibility of the swimming pool to disabled bathers.

454.1.2.2.1 Dimensional standards.

Dimensional standards for competition-type pools shall be those published by the National Collegiate Athletic Association, 2019-20 and 2020-21; Federation Internationale de Natation Amateur (FINA), 2021 Handbook; USA Swimming, 2022; and National Federation of State High School Associations, 2021-22, which are incorporated by reference in this code.

454.1.2.2.2 Walls and corners.

All pool walls shall have a clearance of 15 feet (4572 mm) perpendicular to the edge (as measured at design water level from gutter lip to gutter lip, or on skimmer pools, from vertical wall to vertical wall). Offset steps, spa pools and wading pools are exempt from this clearance requirement. Where interior steps or a sun shelf protrude into the pool, the remaining width from the junction of the step or shelf riser and the floor to the opposite wall shall be 10 feet (3048 mm) or more. The upper part of pool walls in areas 5 feet (1524 mm) deep or less shall be within 5 degrees vertical for a minimum depth of 2½ feet (762 mm) from which point the wall may join the floor with a maximum radius equal to the difference between the pool depth and 2½ feet. The upper part of pool walls in areas over 5 feet (1524 mm) deep shall be within 5 degrees vertical for a minimum depth equal to

the pool water depth minus 2½ feet (762 mm) from which point the wall may join the floor with a maximum radius of 2½ feet (762 mm). Corners shall be a minimum 90-degree angle. The corner intersections of walls which protrude or angle into the pool water area shall be rounded with a minimum radius of 2 inches (51 mm). This radius shall be continued through the top of the gutter edge; chamfering is allowed, and pool coping shall not overhang into the pool more than 1½ inches (38 mm).

454.1.2.2.3 Pool floor slope and slope transition.

The radius of curvature between the floor and walls is excluded from these requirements. Multiple floor levels in pools are prohibited, however, an area meeting all of the requirements of a sun shelf shall not be considered a violation of this requirement.

454.1.2.2.3.1 Floor slope shall be uniform.

The floor slope shall be a maximum 1 unit vertical in 10 units horizontal in areas 5 feet (1524 mm) deep or less. The floor slope shall be a maximum 1 unit vertical in 3 units horizontal in areas more than 5 feet (1524 mm) deep.

454.1.2.2.3.2

Any transition in floor slope shall occur at a minimum of 5 feet (1524 mm) of water depth. A slope transition must have a 2 to 6 inch (51 to 152 mm) wide dark contrasting tile marking across the bottom and must extend up both sides of the pool at the transition point. The marking shall be continuous except for recessing grouting. A slope transition must have a safety line mounted by use of recessed cup anchors, 2 feet (610 mm) before the contrasting marking, towards the shallow end. The safety line shall have visible floats at maximum 7-foot (2134 mm) intervals.

454.1.2.2.4 Pool depths.

Reserved.

454.1.2.3 Markings.

454.1.2.3.1 Depth and markings.

Depth and markings shall meet the following criteria:

1. 1. The minimum water depth shall be 3 feet (914 mm) except in sun shelves, wading pools, water-activity pools, and zero entry areas.
2. 2. Permanent depth markings followed by the appropriate full or abbreviated words "FEET," "FT," or "INCHES," "IN," shall be installed in minimum 4-inch-high (102 mm) numbers and letters on a contrasting background. Depth markers shall indicate the actual pool depth, within 3 inches (76 mm), at normal operating water level when measured 3 feet (914 mm) from the pool wall.
3. 3. At a minimum, the markings shall be located on both sides of the pool at the shallow end, slope break, deep-end wall and deep point (if located more than 5 feet (1524 mm) from the deep-end wall). Depth markings shall be legible from inside the pool and also from the pool deck. The maximum perimeter distance between depth markings is 25 feet (7620 mm). Pool size and geometry may necessitate additional depth marking placements about all sides of the pool to meet this requirement.
4. 4. When a curb is provided, the depth markings shall be installed on the inside and outside or top of the pool curb. When a pool curb is not provided, the depth markings shall be located on the inside vertical wall at or above the water level and on the edge of the deck within 2 feet (610 mm) of the pool water. When open type gutter designs are utilized, depth markers shall be located on the back of the gutter wall. When a coping stone with

curved or angled underside is provided, the depth markings may be installed on the curved or angled coping underside, and outside or top of the pool curb.

5. 5. When deck level perimeter overflow systems are utilized, additional depth marking signs shall be posted nearby or placed on adjacent fencing or walls and the size shall be increased so they are recognizable from inside the swimming pool. Alternatively, tile depth markers may be placed at the top of the pool wall just under the water level. Depth markers placed on the pool deck shall be within 3 feet (914 mm) of the water.
6. 6. Those areas of the pool that are not part of an approved diving bowl shall have dark contrasting tile, 4-inch-high (102 mm) "NO DIVING" markings installed along the perimeter of the pool on the top of the pool curb or deck within 2 feet (610 mm) of the pool water with a maximum perimeter distance of 25 feet (7620 mm) between markings. A 6-inch (152 mm) tile with a 4-inch (102 mm) or larger red, international "NO DIVING" symbol may be substituted for the "NO DIVING" markings. "NO DIVING" markings are not required within the swimming pool.
7. 7. All markings shall be tile, except that pools constructed of fiberglass, thermoplastic or stainless steel may substitute other type markings when it can be shown that said markings are permanent and will not fade over time. This exemption does not extend to concrete pools that are coated with fiberglass. Tile alternative examples include stone or manufactured plaques with engraved or sandblasted numbers and characters with permanent paint. Permanent appliqués may be used for fiberglass, thermoplastics or stainless steel pools. All markings installed on horizontal surfaces shall have a slip-resistant finish. Markings shall be flush with the surrounding area where placed and recessed if necessary to provide a smooth finish that will avoid creation of an injury hazard to bathers. Pools that are not conducive to tile can employ other equivalent markings as stated above.

454.1.2.3.2 Designs or logos.

Any design or logo on the pool floor or walls shall be such that it will not hinder the detection of a human in distress, algae, sediment, or other objects in the pool.

454.1.2.3.3 Lane markings.

Pools that are not intended to be utilized for officially sanctioned competition may install lap lane markings provided they meet the following criteria: the markings must be 2 to 6 inches (51 to 152 mm) wide, they must terminate 5 feet (1524 mm) from the end wall in a "T" with the "T" bar at least 18 inches (457.2 mm) long, they must be placed at 7-foot (2134 mm) minimum intervals on center and be no closer than 4 feet (1219 mm) from any side wall, steps or other obstructions. Floating rope lines associated with lap lanes must not obstruct the entrance or exit from the pool and are prohibited when the pool is open for general use.

454.1.2.3.4 Targets.

Pools that are not intended for officially sanctioned competition may have 2 to 6 inch (51 to 152 mm) wide 18-inch by 18-inch (457 mm by 457 mm) targets (+) installed on the pool wall.

454.1.2.3.5 Rules and regulations signage.

Rules and regulations for bathers shall be installed in minimum 1-inch (25.4 mm) letters that must be legible from the pool deck, and shall contain the following:

1. 1. No food or beverages in the pool or on pool wet deck. Commercially bottled water in plastic bottles is allowed on the pool wet deck for pool patron hydration.

Exception: Food and beverages served in accordance with swim-up bar requirements found in Department of Health (DOH) Rule 64E-9.004, *Florida Administrative Code.*

2. 2.No glass or animals in the fenced pool area (or 50 feet (15 240 mm) from unfenced pool).
   Exception: Service animals as defined in s. 413.08, *Florida Statutes* All animals are prohibited to enter the pool water or onto the drained area of an interactive water feature.
3. 3.Bathing load: ___ persons.
4. 4.Pool hours: __ a.m. to __ p.m.
5. 5.Shower before entering.
6. 6.Pools of 200 square feet (18.58 m^2) in area or greater without an approved diving well configuration shall have "NO DIVING", in 4 inch (102 mm) letters included with the above listed pool rules.
7. 7.Do not swallow the pool water. This statement shall be added to signs at pools that conduct alterations as that term is defined.
8. 8.If the pool includes a sun shelf, "WARNING: DROP OFF AT SUN SHELF EDGE IS ___ FEET DEEP" in 4-inch (102 mm) letters. Not required where sun shelves transition to steps.
9. 9.If the pool includes a sun shelf or a zero depth entry area, "DO NOT PLACE FURNITURE IN POOL." Not required when all movable furniture on the deck or in the pool is entirely made from UV-resistant, inert plastic.
10. 10.By January 1, 2022, all pools shall add: "POOL MAXIMUM DEPTH: ___ FEET," in 2-inch (51 mm) letters with the previously listed pool rules.

454.1.2.4 Color.

Pool floors and walls shall be white or light pastel in color and shall have the characteristic of reflecting rather than absorbing light. Floors and walls in slide landing areas, and in pools with a maximum depth of 24 inches (610 mm) or less, are exempt from this color requirement. The interior finish coating floors and walls shall be comprised of a nonpigmented white cementitious binder component together with a sand/aggregate component. The finish coating shall have a dry lightness level (CIE L value) of 80.0 or greater and a wet luminous reflectance value (CIE Y value) of 50.0 or greater, as determined by test results provided by the manufacturer, utilizing testing methodology from American Standard ASTM D4086, ASTM E1477, ASTM E1347. Pools constructed of fiberglass, thermoplastic, or stainless steel shall be subject to the same interior finish color requirements. A minimum 4-inch (102 mm) tile line, each tile a minimum size of 1 inch (25 mm) on all sides, shall be installed at the water line, but shall not exceed 12 inches (305 mm) in height if a dark color is used. Gutter-type pools may substitute a 2-inch (51 mm) tile line, each tile a minimum size of 1 inch (25 mm) on all sides, along the pool wall edge of the gutter lip.

454.1.2.5 Access.

All pools shall have a means of access every 75 feet (22 860 mm) of pool perimeter with a minimum of two, located so as to serve both ends of the pool, except for swimming pools with eight (8) or more lap lanes, which shall have means of access every 90 feet (27 432 mm) of pool perimeter in the lap lane area. In addition, an access point shall be provided at the deep portion, if the deep portion is not at one end of the pool. When the deep portion of the pool is over 30 feet (9144 mm) wide, both sides of this area shall have a means of access. Access shall consist of ladders, stairs, recessed treads, sun shelves or swimouts and may be used in combination. All treads shall have a slip-resistant surface.

454.1.2.5.1 Ladders.
Ladders shall be of the crossbraced type and shall be constructed of corrosion-resistant materials and be securely anchored into the pool deck. Clearance between the ladder and pool wall shall be between 3 to 6 inches (76 mm to 152 mm). Ladders shall extend at least 28 inches (711 mm) and no more than 40 inches (1016 mm) above the pool deck. Ladder bottom braces shall have intact end caps or bumpers that rest firmly against the pool wall. The top rung of the ladder shall be at or below the water level on open-gutter pools and not more than 12 inches (305 mm) below the deck or curb top on all other type pools.

454.1.2.5.2 Recessed treads.
Recessed treads shall be installed flush with the wall and shall be a minimum 5 inches (127 mm) wide, 10 inches (254 mm) long, with a maximum vertical distance of 12 inches (305 mm) between treads.

454.1.2.5.3 Stairs.
Stairs shall have a minimum tread width of 10 inches (254 mm) and a maximum width of 48 inches (1219 mm) for a minimum tread length of 24 inches (610 mm) and a maximum riser height of 10 inches (254 mm). Treads and risers between the top and bottom treads shall be uniform to within 1/2 inch (12.7 mm) in width and height. The riser heights shall be measured at the marked step edges and the differences in elevation shall be considered the riser heights. The front 3/4 to 2 inches (19.1 to 51 mm) of the tread and the top 2 inches (51 mm) of the riser shall be tile, dark in color, contrasting with the interior of the pool. Tile shall be slip resistant. Bullnose tile that is slip resistant may be used when the 3/4-inch (19 mm) segment is placed on the tread or horizontal surface and the 2-inch (51 mm) segment is placed on the riser or vertical surface. Where the gutter is used as the top step, the tile on the gutter for the width of the steps shall be slip resistant. Vinyl liner and fiberglass pools may use other material for the step edge marking, provided the material is permanent, permanently secured, dark in color, nonfading and slip resistant.
Exception: Where a gutter is used as a top step, the gutter's 2-inch slope from lip to the drain shall be continuous for the full length of the stairs, and the riser from the gutter to the next tread need not be uniform with the remaining risers and treads.

454.1.2.5.4 Swimouts.
Swimouts shall extend 18 (457 mm) to 24 inches (610 mm) back from the pool wall, shall be 4 to 5 feet (1219 mm to 1524 mm) wide, shall be a maximum of 12 inches (305 mm) below the deck, unless stairs are provided in the swimout, and shall be located only in areas of the pool greater than 5 feet (1524 mm) deep. Pools that do not utilize a continuous perimeter overflow system must provide a wall return inlet in the swimout for circulation. A permanent dark contrasting colored band of tile shall be installed at the intersection of the pool wall and the swimout and must extend 2 inches (51 mm) on the horizontal and vertical surfaces. Tile must be slip resistant. Bullnose tile may be substituted and installed in accordance with Section 454.1.2.5.3 above.

454.1.2.5.5 Handrails and grabrails.
Handrails shall be provided for all stairs, shall be anchored in the bottom step and the deck. Where "figure 4" deck-mounted-type handrails are used, they shall be anchored in the deck and extend laterally to any point vertically above the bottom step. Grabrails must be mounted in the pool deck at each side of recessed steps. Handrails and grabrails shall extend between 28 and 40 inches (711 mm and 1016 mm) above the step edge and deck. Where stairs are used as an access point between a sun shelf and pool area, a handrail shall be provided. The hand rail shall be anchored into the bottom step and the sun shelf floor. Where such stairs are inset into the sun shelf, a handrail shall be placed adjacent to each edge of the sun shelf.

454.1.2.5.6 Disabled access.

Permanent or portable steps, ramps, handrails, lifts or other devices designed to accommodate handicapped individuals in swimming pools may be provided. Excluding all ADA pool access area(s) and their clear deck area(s), the height of the pool wall above wet deck around the remainder of pool perimeter shall comply with Section 454.1.3.1.2 or 454.1.8.5. Lifts mounted into the pool deck shall have a minimum 4-foot-wide (1219 mm) deck behind the lift mount.

454.1.2.6 Obstructions.

The pool water area shall be unobstructed by any type structure unless justified by engineering design as a part of the recirculation system. Engineering design and material specifications shall show that such structures will not endanger the pool patron, can be maintained in a sanitary condition and will not create a problem for sanitary maintenance of any part of the pool, pool water, or pool facilities. Structures in accord with the above shall not be located in a diving bowl area or within 15 feet (4572 mm) of any pool wall.

Exceptions:

1. 1.Stairs, ladders and ramps, necessary for entrance/exit from the pool are not considered obstructions.
2. 2.Underwater seat benches may be installed in areas less than 5 feet (1524 mm) deep. Bench seats must be 14 to 18 inches (356 to 457 mm) wide and must have a dark contrasting tile marking on the seat edge extending 2 inches (51 mm) on the horizontal and vertical surface. Tile shall be slip resistant. Bullnose tile may be substituted and installed in accordance with Section 454.1.2.5.3. Vinyl liner, stainless steel and fiberglass pools may use other material for the bench edge marking as detailed in Section 454.1.2.3.1, Item 7, provided the material is permanently secured, dark in color, nonfading and slip resistant. Benches shall not protrude into the 15-foot (4572 mm) clearance requirement of Section 454.1.2.6. The bench shall not protrude into the diving bowl.
3. 3.A sun shelf may be installed in pool areas with no more than 4 feet (1219 mm) of water depth, or less, except where the entire sun shelf transitions to steps, where the depth at the bottom of the steps can exceed 4 feet (1219 mm). A sun shelf must have the same markings at the edge as a bench. A sun shelf shall not protrude into the diving bowl. A sun shelf must additionally comply with Section 454.1.2.8.

454.1.2.7 Diving areas.

Diving facilities shall meet the minimum requirements of the FINA dimensions for diving facilities in accordance with the 2021 FINA Handbook and include the following

1. 1.Diving boards or platforms with heights of less than the established standard shall meet the dimensional requirements of the next greater height.
2. 2.Diving boards, platforms and ladders shall have a nonabsorbent, slip-resistant finish and be of sufficient strength to safely carry the anticipated loads. Diving equipment 1 meter and greater shall have guard rails which extend to the edge of the pool wall. All diving boards over 21 inches (533 mm) from the deck shall be provided with a ladder. Diving boards or platforms shall not be installed on curved walls where the wall enters into the defined rectangular diving area specified in this section. Adjacent platform and diving boards shall be parallel.
3. 3.The location of pool ladders shall be such that the distance from the ladder to any point on a diving board or platform centerline is not less than the plummet to side wall

dimension (b) indicated in the FINA standards. Trampoline-type diving facilities are prohibited.

4. 4.Diving targets may be installed in accordance with FINA standards.

454.1.2.8 Sun shelves.

454.1.2.8.1 Sun shelf dimensional requirements.

Sun shelf areas must be a minimum of 20 inches (508 mm) wide and provide a minimum of 10 square feet (0.93 m^2) of horizontal surface adjoining on the edge of the pool over a distance of not less than 3 feet (914 mm). The sun shelf edge that adjoins the pool edge must be continuous. The sun shelf floor shall be horizontal or sloped at a maximum of 1 unit vertical in 60 units horizontal, or shall have a uniform slope from a zero depth entry, and its maximum depth shall be between 6 inches (152 mm) minimum and 12 inches (254 mm) maximum below the water surface.

454.1.2.8.2 Depth markers at sun shelves.

Where a sun shelf is installed, wet deck-located depth and no-diving markers shall be placed every 25 feet (7620 mm) or less, with at least two (2) markers per sunshelf. If the vertical distance between the coping or wet deck and the shelf floor adjacent to the wall is 12 inches (305 mm) or less, these markers shall indicate the water depth of the sun shelf. For open-type gutter pools, the vertical distance shall be measured from the gutter lip to the shelf floor. Where vertical distance between the coping or wet deck and the shelf floor adjacent to the wall is more than 12 inches (305 mm), "No-Entry" markers as described in Section 454.1.9.6.4 shall be provided in the deck. When the sun shelf does not use stairs as a transition, depth markers of the adjacent pool depth at the sun shelf edge and no-dive markers shall be placed on the sun shelf floor, every 10 feet (3048 mm) or less, along a line no more than 1 foot (305 mm) back from the edge of the sun shelf above the deeper pool. All markers shall comply with Items 2, 6 and 7 of Section 454.1.2.3.1, except the distance between them as described in this section shall be followed.

454.1.2.8.3 Access to sun shelf.

For the purposes of Section 454.1.2.5, a sun shelf area shall be considered an entrance to or exit from the pool. If the vertical distance between the coping and the shelf floor adjacent to the wall is more than 10 inches (254 mm), stairs up to the deck or coping shall be provided which shall comply with Sections 454.1.2.5.3 and 454.1.2.5.5; or a zero-depth entry area complying with Section 454.1.9.6 may be provided instead of stairs. For open gutter pools, where the gutter is used as a step, additional steps shall not be required where the distance from the gutter lip to the shelf floor is 10 inches or less. At least one handrail that is compliant with Section 454.1.2.5.5 must be provided at the sun shelf.

454.1.2.8.4 Sun shelf turnover rate.

Additional inlets shall be provided in the sun shelf area. The numbers and location shall be such as to ensure the volume of water in the shelf is filtered and chemically treated once every 60 minutes (1 hour) or less.

454.1.3 Pool appurtenances.

454.1.3.1 Decks and walkways.

454.1.3.1.1

Pool wet decks shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish. Wet deck area finishes shall be designed for such use and shall be installed in accordance with the manufacturer's specifications. Wooden decks and walkways are prohibited.

454.1.3.1.2

Pool wet decks shall be uniformly sloped away from the pool or to deck drains to prevent standing water. The minimum slope for the wet deck is 2 percent, but in the portions of the deck intended to be accessible to disabled persons, it may be 1 percent less than the maximum allowable cross slope given by the *Florida Building Code, Accessibility*. The maximum slope is 4 percent. A minimum of 1 percent deck slope is allowable for paver-type decks. Textured deck finishes that provide pitting and crevices of more than $^{3}/_{16}$ inch (4.8 mm) deep that accumulate soil are prohibited. If settling or weathering occurs that would cause standing water, the original slopes shall be restored or corrective drains installed. When a curb is provided, the deck shall not be more than 10 inches (254 mm) below the top of the curb.

Deck-level perimeter overflow systems may be sloped at a maximum of 4 percent toward trench or slot drains for a maximum distance of 18 inches (457 mm) where deck-level perimeter overflow systems are utilized. These must be slip resistant. This distance is not applicable to zero depth entries in Section 454.1.9.6.2. Wet deck area in accordance with Section 454.1.3.1.3 shall be provided beyond the trench grate or slot drain.

Up to 40 percent or 65 feet (19 812 mm), whichever is less, of the wet deck may be lowered. Lowered portions of wet deck shall be at least 10 inches (254 mm) but not more than 36 inches (914 mm) below the pool water level or curb height. Lowered portions of wet deck shall adjoin the rest of the wet deck via a set of stairs or a ramp at each end. If the lowered deck is adjacent to a transfer wall per Section 1009.4 of the *Florida Building Code, Accessibility*, one end of the lowered deck must be connected to the rest of the wet deck via an accessible route as described in Section 402 of the *Florida Building Code, Accessibility*.

454.1.3.1.3
Pool wet decks shall have a minimum unobstructed width of 4 feet (1219 mm) around the perimeter of the pool, pool curb, ladders, handrails, diving boards, diving towers and slides.

454.1.3.1.4
Traffic barriers shall be provided as needed so that parked vehicles do not extend over the deck area.

454.1.3.1.5
Walkways shall be provided between the pool and the sanitary facilities, and shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish for the first 15 feet (4572 mm) of the walkway measured from the nearest pool water's edge. A hose bibb with a vacuum breaker shall be provided to allow the deck to be washed down with potable water.

454.1.3.1.6
Twenty percent of the deck along the pool perimeter may be obstructed as long as any one obstruction does not exceed 20 feet (6096 mm) in any one area where water depth is 5 feet (1524 mm) or less. No lowered portion of the wet deck may be obstructed. Obstructions shall have a wet deck area behind or through them, with the near edge of the walk within 15 feet (4572 mm) of the water except approved slide obstructions shall have the near edge of the walk within 35 feet (10 668 mm) of the water. These obstructions must be protected by a barrier or must be designed to discourage patron access. Obstructions shall not include pool exit points. When an obstruction exists in multiple areas around the pool, the minimum distance between obstructions shall be 4 feet (1219 mm).

454.1.3.1.7
Food or drink service facilities shall not be located within 12 feet (3658 mm) of the water's edge.

Exception: Food and beverages service facilities complying with Section 454.1.9.9.

454.1.3.1.8

The vertical clearance above the pool deck shall be at least 7 feet (2137 mm).

454.1.3.1.9

All public pools shall be surrounded by a minimum 48 inch (1219 mm) high fence or other approved substantial barrier. The fence shall be continuous around the perimeter of the pool area that is not otherwise blocked or obstructed by adjacent buildings or structures and shall adjoin with itself or abut to the adjacent members. Access through the barrier or fence from dwelling units, such as homes, apartments, motel rooms and hotel rooms, shall be through self-closing, self-latching lockable gates of 48 inch (1219 mm) minimal height from the floor or ground with the latch located a minimum of 54 inches (1372 mm) from the bottom of the gate or at least 3 inches (76 mm) below the top of the gate on the pool side. If the self-closing, self-latching gate is also self-locking and is operated by a key lock, electronic opener or integral combination lock, then the operable parts of such locks or openers shall be 34 inches minimum (864 mm) and 48 inches maximum (1219 mm) above the finished floor or ground. Doored access points from public rooms such as lobbies or club houses need not be through gates if the door(s) meet the same self-closing, self-latching requirements as a gate. Operable parts used for opening doors at these access points shall be 45 inches (1143 mm) minimum to 48 inches (1220 mm) maximum above the finish floor or ground. Gates shall open outward away from the pool area. A latched, lockable gate shall be placed in the fence within 10 feet (3048 mm) of the closest point between the pool and the equipment area for service access.

Instead of a fence, permanent natural or manmade features such as bulkheads, canals, lakes, navigable waterways, etc., adjacent to a pool may be permitted as a barrier when approved. When evaluating such barrier features, the applicable governing body may perform on-site inspections, and review evidence, such as surveys, aerial photographs, water management agency standards and specifications, and any other similar documentation to verify at minimum, the following: the barrier feature is not subject to natural changes, deviations or alterations and is capable of providing an equivalent level of protection as that provided by a structure, and the barrier feature clearly impedes, prohibits or restricts access to the pool.

Screened pool enclosures must be hardened on the bottom 3 feet (914 mm). Fencing consideration shall be given to the U.S. Consumer Product Safety Commission (CPSC) Publication, No. 362, March 2005, guidelines available from CPSC.gov; or Sections 454.2.17.1.1 through 454.2.17.1.8. Safety covers that comply with ASTM F1346-91 (Reapproved 2003), titled *Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs*, and available from ASTM.org, do not satisfy this requirement.

454.1.3.2 Bridges and overhead obstructions or river rides.

Bridges and overhead obstructions over the pool shall be designed so they will not introduce any contamination to the pool water. The minimum height of the bridge or obstruction shall be at least 4 feet (1219 mm) above the surface of the pool in all cases except when the pool is a river ride where it shall be at least 5 feet (1524 mm) above the surface of the pool. Minimum 42-inch-high (1067 mm) handrails shall be provided along each side of the bridge. The walking surfaces shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish. Pool coping shall not overhang into the pool more than 1½ inches (38 mm).

454.1.3.3 Safety.

454.1.3.3.1
All swimming pools shall be installed with a shepherd's hook securely attached to a one piece pole not less than 16 feet (4880 mm) in length, and at least one 16—24-inch (457—610 mm) diameter lifesaving ring, approved or certified under a nationally recognized water safety device standard, with sufficient rope attached to reach all parts of the pool from the pool deck. Safety equipment shall be mounted in a conspicuous place and be readily available for use. Pools greater than 50 feet (15 250 mm) in length shall have multiple units with at least one shepherd's hook and one lifesaving ring located along each of the longer sides of the pools. Spa pools under 200 square feet (1.86 m^2) of surface area, and interactive water features or wading pools with 2 feet (610 mm) or less of water depth are exempt from this requirement.

454.1.3.3.2
All pools with a slope transition shall have safety line anchors as required by Section 454.1.2.2.3.2.

454.1.3.3.3
If a pool cover or solar blanket is installed, it shall be secured around the entire perimeter and designed to support a live load of an adult person; or, the pool area shall be inaccessible to unauthorized individuals during times of cover or blanket use.

454.1.3.3.4
A room or space shall be provided for chemicals to be stored, and the area shall be inaccessible to the public.

454.1.3.3.5
Swimming pool slides shall be installed in accordance with manufacturer's specifications and sound engineering practice, to include water depth, height above water, distance from pool structure, and isolation of landing area from other pool patrons. If an unenclosed ladder is used, it shall have handrails beginning at the bottom step and be no taller than 6 feet (1829 mm). Pools with slides designed for swimming pools are not required to satisfy those of slide plunge pools in Section 454.1.9.2.1.

454.1.3.3.6
Floating and climb-on devices, objects or toys that are not a part of the approved pool design shall not be tethered in the pool or installed without an engineering alterations application.

454.1.3.3.7
To reduce the possibility of injury, removable padding may be installed over the walls and floors of the pool, in areas where impacts are likely, so long as the surface of the padding is impervious, nontoxic, smooth, and slip resistant. Such padding shall be installed and maintained according to the manufacturer's specifications. The surface underneath the padding must be structurally rigid, impervious, nontoxic, smooth, and slip resistant. The padding may be white or a contrasting color.

454.1.4 Electrical systems.

454.1.4.1 Electrical equipment and wiring.
Electrical equipment wiring and installation, including the bonding and grounding of pool components shall comply with Chapter 27 of the *Florida Building Code, Building*. Outlets supplying pool pump motors connected to single-phase 120-volt through 240-volt branch circuits, whether by receptacle or by direct connection, and outlets supplying other electrical equipment and underwater luminaires operating at voltages greater than the low voltage contact limit, connected to single-phase, 120 volt through 240 volt branch circuits, rated 15 or 20 amperes, whether by receptacle or by direct connection, shall be provided with ground-fault circuit interrupter protection for personnel.

454.1.4.2 Lighting.
Artificial lighting shall be provided at all swimming pools which are to be used at night or which do not have adequate natural lighting so that all portions of the pool, including the bottom, may be readily seen without glare.

454.1.4.2.1 Outdoor pool lighting.
Lighting shall provide a minimum of 3 footcandles (30 lux) of illumination at the pool water surface and the pool wet deck surface. Underwater lighting shall be a minimum of ½ watt incandescent equivalent, or 10 lumens, per square foot of pool water surface area.

454.1.4.2.2 Indoor pool lighting.
Lighting shall provide a minimum of 10 footcandles (100 lux) of illumination at the pool water surface and the pool wet deck surface. Underwater lighting shall be a minimum of 8/10 watt incandescent equivalent, or 15 lumens, per square foot of pool surface area.

454.1.4.2.3 Underwater lighting.
Underwater luminaires shall comply with Chapter 27 of the *Florida Building Code, Building*. The location of the underwater luminaires shall be such that the underwater illumination is as uniform as possible. Underwater lighting requirements can be waived when the overhead lighting provides at least 15 footcandles (150 lux) of illumination at the pool water surface and pool wet deck surface.If signage clearly indicates that night swimming is prohibited, underwater lights supplying less than minimum illumination required for night swimming may be installed for safety and decorative purposes. Nothing in this section exempts swimming pools located in coastal areas, as specified in Section 3109 of this code, from compliance with all applicable local and state wildlife and environmental lighting requirements.

454.1.4.2.4 Overhead wiring.
Overhead service wiring shall not pass within an area extending a distance of 10 feet (3048 mm) horizontally away from the inside edge of the pool walls, diving structures, observation stands, towers or platforms. Allowances for overhead conductor clearances to pools that meet the safety standards in the *National Electrical Code* may be used instead. Electrical equipment wiring and installation including the grounding of pool components shall comply with Chapter 27.

454.1.4.2.5 Voltage limitation.
Underwater lighting, or lighting that may be exposed to nozzle-directed pool water, shall not exceed 30 volts DC or 15 volts AC. Such lights shall be installed in accordance with manufacturer's installation instructions and be listed by a nationally recognized testing laboratory.

454.1.5 Equipment area or rooms.

454.1.5.1 Equipment.
Equipment designated by the manufacturer for outdoor use may be located in an equipment area, all other equipment must be located in an equipment room or enclosure. Plastic pipe subject to a period of prolonged sunlight exposure must be coated to protect it from ultraviolet light degradation. An equipment area shall be surrounded with a fence at least 4 feet (1219 mm) high on all sides not confined by a building or equivalent structure. A self-closing and self-latching gate with a permanent locking device shall be provided if necessary for access. An equipment room shall be protected on at least three sides and overhead. Any fence or gate installed shall use members spacing that shall not allow passage of a 4-inch (102 mm) diameter sphere. The fourth side may be a gate, fence, or open if otherwise protected from unauthorized entrance. An equipment enclosure shall be lockable or otherwise protected from unauthorized access.

454.1.5.2 Indoor equipment.

Equipment not designated by the manufacturer for outdoor use shall be located in an equipment room. An equipment room shall be protected on at least three sides and overhead. The fourth side may be a gate, fence or open if otherwise protected from unauthorized entrance.

454.1.5.3 Materials.
The equipment enclosure, area or room floor shall be of concrete or other nonabsorbent material having a smooth slip-resistant finish and shall have positive drainage, including a sump pump if necessary. Ancillary equipment, such as a heater, not contained in an equipment enclosure or room shall necessitate an equipment area as described above.

454.1.5.4 Ventilation.
Equipment rooms shall have either forced draft or cross ventilation. All below-grade equipment rooms shall have a stairway access with forced draft ventilation or a fully louvered door and powered intake within 6 inches (152 mm) of the floor. Where stairway access is not necessary to carry heavy items into the below grade room or vault, a "ship's ladder" may be used if specified by the design engineer who must consider anticipated workload including equipment removal; and the ladder slope, tread height and width; and construction material of the ladder.

454.1.5.5 Access.
The opening to an equipment room or area shall be a minimum 3 feet by 6 feet (914 mm by 1829 mm) and shall provide easy access to the equipment. Below-grade collector tank(s) must have adequate access for cleaning, maintenance and inspection.

454.1.5.6 Size.
The size of the equipment enclosure, room or area shall provide working space to perform routine operations. Clearance shall be provided for all equipment as prescribed by the manufacturer to allow normal maintenance operation and removal without disturbing other piping or equipment. In rooms with fixed ceilings, the minimum height shall be 7 feet (2137 mm).

454.1.5.7 Lighting.
Equipment rooms or areas shall be lighted to provide 30 footcandles (300 lux) of illumination at floor level.

454.1.5.8 Storage.
Equipment enclosures, rooms or areas shall not be used for storage of chemicals emitting corrosive fumes or for storage of other items to the extent that entrance to the room for inspection or operation of the equipment is impaired.

454.1.5.9 Hose bibbs.
A hose bibb with vacuum breaker shall be located in the equipment room or area.

454.1.6 Plumbing systems.

454.1.6.1 Sanitary facilities.
Restrooms shall include a water closet, a diaper change table, a urinal and a lavatory. The entry doors of all restrooms shall be located within a 200-foot (60 960 mm) walking distance of the nearest water's edge of each pool served by the facilities.
Exception: Where a swimming pool serves only a designated group of residential dwelling units including hotel rooms and not the general public, poolside sanitary facilities are not required if all living units are within a 200-foot (60 960 mm) horizontal radius of the nearest water's edge, are not over three stories in height unless serviced by an elevator, and are each equipped with private sanitary facilities.

TABLE 454.1.6.1

PUBLIC SWIMMING POOL—REQUIRED FIXTURE COUNT PER SQUARE FOOT OF POOL SURFACE

MEN'S RESTROOM		WOMEN'S RESTI	
WC	Lavatory	WC	
1 per 2,500 for first 10,000, 1 per 5,000 for remainder exceeding 10,000	1 per 5,000 for first 10,000, 1 per 10,000 for remainder exceeding 10,000	1 per 1,250 for first 10,000, 1 per 2,500 for remainder exceeding 10,000	1 pe 10,(

For SI: 1 square foot = 0.0929 m².

454.1.6.1.1 Required fixtures.
Fixtures shall be provided as indicated on Table 454.1.6.1, rounded up to the next whole number. The fixture count on this chart is deemed to be adequate for the pool and pool deck area that is up to three times the area of the pool surface provided.

454.1.6.1.2 Outside access.
Outside access to facilities shall be provided for bathers at outdoor pools. Where the restrooms are located within an adjacent building and the restroom doors do not open to the outside, the restroom doors shall be within 50 feet (15 240 mm) of the building's exterior door. If the restrooms are not visible from any portion of the pool deck, signs shall be posted showing directions to the facilities. Directions shall be legible from any portion of the pool deck; letters shall be a minimum of 1 inch (25 mm) high.

454.1.6.1.3 Sanitary facility floors.
Floors of sanitary facilities shall be constructed of concrete or other nonabsorbent materials, shall have a smooth, slip-resistant finish, and shall slope to floor drains, which must be installed within the facility. Carpets, duckboards and footbaths are prohibited. The intersection between the floor and walls shall be coved where either floor or wall is not made of waterproof materials such as tile or vinyl.

454.1.6.1.4 Hose bibb.
A hose bibb with vacuum breaker shall be provided in or within 25 feet (7620 mm) of each restroom to allow for ease of cleaning.

454.1.6.2 Rinse shower.
A minimum of one rinse shower shall be provided on the pool deck of all outdoor pools within the perimeter of the fence.

454.1.6.3 Cross-connection prevention.
An atmospheric break or approved backflow prevention device shall be provided in each pool water supply line that is connected to a public water supply. Vacuum breakers shall be installed on all hose bibbs.

454.1.6.4 Plastic pipes.
Plastic pipe subject to a period of prolonged sunlight exposure shall be coated to protect it from ultraviolet light degradation.

454.1.6.5 Recirculation and treatment systems.

454.1.6.5.1 Equipment testing.
Recirculation and treatment equipment such as filters, recessed automatic surface skimmers, ionizers, ozone generators, disinfection feeders and chlorine generators shall be tested and approved using NSF/ANSI 50–2019, *Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities*, which is incorporated by reference.

454.1.6.5.2 Volume.

The recirculation system shall be designed to provide a minimum of four turnovers of the pool volume per day. Pools that are less than 1,000 square feet (93 m^2) at health clubs shall be required to provide a minimum of eight turnovers per day.

454.1.6.5.3 System design.

The design pattern of recirculation flow shall be 100 percent of the minimum turnover rate through the main drain piping and 100 percent of the minimum turnover rate through the perimeter overflow system, or at least 60 percent of the minimum turnover rate through the skimmer system. Except when a bottom drain is used in conjunction with a wall main drain carrying 100 percent of the recirculation flow.

454.1.6.5.3.1 Perimeter overflow gutters.

The lip of the gutter shall be uniformly level with a maximum tolerance of 1/4 inch (6 mm) between the high and low areas. The bottom of the gutter shall be level or slope to the drains. The spacing between drains shall not exceed 10 feet (3048 mm) for 2-inch (51 mm) drains or 15 feet (4572 mm) for 2 1/2-inch (64 mm) drains, unless hydraulically justified by the design engineer. Gutters may be eliminated along pool edges for no more than 15 feet (4572 mm) and this shall not exceed 10 percent of the perimeter (at least 90 percent of the perimeter shall be guttered). In areas where gutters are eliminated, handholds shall be provided within 9 inches (229 mm) of the water surface. Handhold design shall be approved by the jurisdictional building department prior to construction.

454.1.6.5.3.1.1

Either recessed-type or opentype gutters shall be used. Special designs can be approved provided they are within limits of sound engineering practice. Recessed-type gutter open areas shall be at least 4 inches (102 mm) deep and 4 inches (102 mm) wide, with a minimum 4 inches (102 mm) clearance for cleaning. The open area of the recessed gutter, excluding the gutter front dam wall, shall not be visible from a position directly above the gutter sighting vertically down the edge of the deck or curb. Open-type gutters shall be at least 6 inches (150 mm) deep and 12 inches (305 mm) wide. The gutter shall slope 2 inches (51 mm), +/- 1/4 inch (+/-6 mm), from the lip to the drains. The gutter drains shall be located at the deepest part of the gutter.

454.1.6.5.3.1.2

All gutter systems shall discharge into a collector tank.

454.1.6.5.3.1.3

The gutter lip shall be tiled with a minimum of 2-inch (51 mm) tile on the pool wall, each a minimum size of 1 inch (25 mm) on all sides. The back vertical wall of the gutter shall be tiled with glazed tile. All tile used on the flat, horizontal part, or the leading edge of an open-type gutter, must be slip resistant.

Exception: Stainless steel gutter systems when it can be shown that the surfaces at the waterline and back of the gutter are easily cleanable.

454.1.6.5.3.2 Recessed automatic surface skimmers.

Recessed automatic surface skimmers may be utilized when the pool water surface area is 1,000 square feet (93 m^2) or less excluding offset stairs and swimouts and the width of the pool is not over 20 feet (6096 mm).

454.1.6.5.3.2.1 Volume.

The recessed automatic surface skimmer piping system shall be designed to carry 60 percent of the pool total design flow rate with each skimmer carrying a minimum 30 gpm (2 L/s). One

skimmer for every 400 square feet (37 m^2) or fraction thereof of pool water surface area shall be provided.

454.1.6.5.3.2.2 Location.

Prevailing wind direction and the pool outline shall be considered by the designer in the selection of skimmer locations. The location of skimmers shall be such that the interference of adjacent inlets and skimmers is minimized. Recessed automatic surface skimmers shall be installed so that there is no protrusion into the pool water area. The deck or curb shall provide for a handhold around the entire pool perimeter and shall not be located more than 9 inches (229 mm) above the midpoint of the opening of the skimmer.

454.1.6.5.3.2.3 Equalizers.

If installed, an equalizer valve shall be a spring-loaded vertical check valve that will not allow direct suction on the equalizer line. Float valves are prohibited. If installed, the equalizer line outlet shall be installed at least 1 foot (305 mm) below the normal pool water level and the equalizer line outlet shall be protected by an ASME/ANSI A112.19.8 compliant cover/grate. Any equalizer line shall be 2 inches (51 mm) or larger.

454.1.6.5.3.2.4 Wall-inlet fitting.

A wall-inlet fitting shall be provided directly across from each skimmer within a tolerance of 5 feet (304.8 mm) measured along the perimeter in either direction from center, or shall have a directional flow inlet across from the skimmer that directs flow toward the skimmer.

454.1.6.5.3.2.5 Waterline tile.

A minimum 6-inch (152 mm) water line tile shall be provided on all pools with automatic skimmer systems, each a minimum size of 1 inch (25 mm) on all sides. Glazed tile that is smooth and easily cleanable shall be utilized.

454.1.6.5.4 Pumps.

If the pump or suction piping is located above the water level of the pool, the pump shall be self-priming. Pumps that take suction prior to filtration shall be equipped with a hair and lint strainer. The recirculation pump shall be selected to provide the required recirculation flow against a minimum total dynamic head of 60 feet (18 288 mm) unless hydraulically justified by the design engineer. Vacuum D.E. filter system pumps shall provide at least 50 feet (15 240 mm) of total dynamic head. Should the total dynamic head required not be appropriate for a given project, the design engineer shall provide an alternative.

454.1.6.5.5 Filters.

Filters sized to handle the required recirculation flow shall be provided.

454.1.6.5.5.1 Filter capacities.

The maximum filtration rate in gallons per minute per square foot of filter area shall be: 15 [or 20 if so approved using the procedure stated in Section 454.1.6.5.1] for high rate sand filters, 3 for rapid sand filters, 0.375 for pleated cartridge filters, and 2 [or 3 if so approved using the procedure stated in Section 454.1.6.5.1] for Diatomaceous Earth (D.E.) or regenerative media type filters.

454.1.6.5.5.2 Filter appurtenances.

454.1.6.5.5.2.1 Pressure filter systems.

Pressure filter systems shall be equipped with an air relief valve, influent and effluent pressure gauges with minimum face size of 2 inches (51 mm) reading 0–60 psi (0–414 kPa), and a sight glass when a backwash line is required.

454.1.6.5.5.2.2 Vacuum filter systems.

Vacuum filter systems shall be equipped with a vacuum gauge which has a 2-inch (51 mm) face and reads from 0–30 inches of mercury.

454.1.6.5.5.2.3 D.E. systems.
A precoat pot or collector tank shall be provided for D.E.-type systems.

454.1.6.5.5.3 Filter tanks and elements.
The filter area shall be determined on the basis of effective filtering surfaces with no allowance given for areas of impaired filtration, such as broad supports, folds, or portions which may bridge. D.E.- type filter elements shall have a minimum 1-inch (25 mm) clear spacing between elements up to a 4 square foot (0.4 m^2) effective area. The spacing between filter elements shall increase $^1/_8$ inch (3 mm) for each additional square foot of filter area or fraction thereof above an effective filter area of 4 square feet (0.4 m^2). All cartridges used in public pool filters shall be permanently marked with the manufacturer's name, pore size and area in square feet of filter material. All cartridges with end caps shall have the permanent markings on one end cap. Vacuum filter tanks shall have coved intersections between the wall and the floor and the tank floor shall slope to the filter tank drain. The D.E.-type filter tank and elements shall be installed such that the recirculation flow draw down does not expose the elements to the atmosphere whenever only the main drain valve is open or only the surface overflow gutter system valve is open.

454.1.6.5.6 Piping.
All plastic pipe used in the recirculation system shall be imprinted with the manufacturer's name and the NSF-pw logo for potable water applications. Size, schedule and type of pipe shall be included on the drawings. Plastic pipe subject to a period of prolonged sunlight exposure shall be coated to protect it from ultraviolet light degradation.

454.1.6.5.7 Valves.
Return lines, main drain lines, and surface overflow system lines, shall each have proportioning valves.

454.1.6.5.8 Flow velocity.
Pressure piping shall not exceed 10-feet per second (2038 mm/s), except that precoat lines with higher velocities may be used when necessary for agitation purposes. The flow velocity in suction piping shall not exceed 6-feet per second (1829 mm/s) except that flow velocities up to 10-feet per second (3048 mm/s) in filter assembly headers will be acceptable. Main drain systems and surface overflow systems which discharge to collector tanks shall be sized with a maximum flow velocity of 3-feet per second (914 mm/s). The filter and vacuuming system shall have the necessary valves and piping to allow filtering to pool, vacuuming to waste, vacuuming to filter, complete drainage of the filter tank, backwashing for sand and pressure D.E.- type filters and precoat recirculation for D.E.-type filters.

454.1.6.5.9 Inlets.
All inlets shall be adjustable with wall-type inlets being directionally adjustable and floor-type inlets having a means of flow adjustment. Floor inlets shall be designed and installed such that they do not protrude above the pool floor and all inlets shall be designed and installed so as not to constitute sharp edges or protrusions hazardous to pool bathers. Floor inlets for vinyl liner and fiberglass pools, shall be smooth with no sharp edges, and shall not extend more than $^3/_8$ inch (9.5 mm) above the pool floor. Wall inlets shall be installed a minimum of 12 inches (305 mm) below the normal operating water level unless precluded by the pool depth or intended for a specific acceptable purpose. The spacing of inlets shall comply with one of the following:

1. 1.The pool is 30 feet (9144 mm) in width or less and has wall inlets such that the inlet spacing does not exceed 20 feet (6096 mm) along the entire pool water perimeter.
2. 2.The pool has floor inlets such that the spacing between adjacent inlets does not exceed 20 feet (6096 mm) and the spacing between inlets and adjacent walls does not exceed 10 feet (3048 mm).
3. 3.The pool has a combination of wall and floor inlets such that the spacing between adjacent inlets of the same type does not exceed 20 feet (6096 mm), the spacing between a floor inlet and an adjacent wall without inlets does not exceed 10 feet (3048 mm), and the spacing between a floor inlet and an adjacent wall with inlets does not exceed 25 feet (7620 mm).

In each case, additional wall or floor inlets may be provided above and beyond these minimum requirements. The flow rate through each inlet shall not exceed 20 gpm (1 L/s) except for inlets designed for higher flows as specified by the manufacturer.

454.1.6.5.10 Main drain outlets.

All pools shall be provided with an outlet at the deepest point.

454.1.6.5.10.1

If the depth at the outlet deviates more than 3 inches (76 mm) from the side wall, that depth shall be identified on depth markers in addition to the markers normally required for the sidewall depth. Markers for the depth at the drains shall be in accordance with Section 454.1.2.3 with the following words added: “AT CENTER” for circular areas and “AT DEEP POINT” for other pool shapes.

454.1.6.5.10.2

Outlets shall be covered by a secured grating which requires the use of a tool to remove and whose open area is such that the maximum velocity of water passing through the openings does not exceed 1½ feet per second (457 mm/s) at 100 percent of the design recirculation flow. Main drain covers/grates shall comply with the requirements of ANSI/APSP 16 and the water velocity of this section.

454.1.6.5.10.3

Multiple outlets, equally spaced from the pool side walls and from each other, shall be installed in pools where the deep portion of the pool is greater than 30 feet (9144 mm) in width.

454.1.6.5.10.4

If the area is subject to high ground water, the pool shall be designed to withstand hydraulic uplift or shall be provided with hydrostatic relief devices.

454.1.6.5.10.5

The main drain outlet shall be connected to a collector tank. The capacity of the collector tank shall be at least 1 minute of the recirculated flow unless justified by the design engineer. Vacuum filter tanks are considered collector tanks.

454.1.6.5.11 Water makeup control.

An automatic and manual water makeup control shall be provided to maintain the water level at the lip of the overflow gutter or at the mouth of the recessed automatic surface skimmers and shall discharge through an air gap into a fill pipe or collector tank. Over the rim fill spouts are prohibited.

454.1.6.5.12 Cleaning system.

A portable, robotic or plumbed-in vacuum cleaning system shall be provided. All vacuum pumps shall be equipped with hair and lint strainers. When the system is plumbed in, the vacuum fittings shall be located to allow cleaning the pool with a 50-foot (15 240 mm) maximum length of hose.

Vacuum fittings shall be located remotely in the pool deck. Remote vacuum assemblies shall be installed with an equalizer line when the vacuum piping system is connected directly to pump suction and the suction line shall be protected with a threaded plug when not in use. The equalizer line outlet shall be installed at least 1 foot (305 mm) below the normal pool water level and the equalizer line outlet shall be protected by an ANSI/APSP-16 compliant cover/grate. The equalizer line shall be sized to handle the expected flow with a 2-inch (51 mm) minimum line size. The provision of a filtered, chemically treated water supply to the equalizer piping shall be provided to assist in preventing algae from forming within the equalizer piping arrangement. Bag-type cleaners, which operate as ejectors on potable water supply pressure, shall be protected by a vacuum breaker. Cleaning devices shall not be used while the pool is open to bathers.

454.1.6.5.13 Rate of flow indicators.

A rate of flow indicator, reading in gpm, shall be installed on the return line following filtration and prior to chemical injection. The rate of flow indicator shall be properly sized for the design flow rate and shall be capable of measuring from three-quarters to at least one-and-one-quarter times the design flow rate. The flow measuring device shall have an operating range appropriate for the anticipated flow rates and be installed where it is readily accessible to read and for routine maintenance. The clearances upstream and downstream from the rate of flow indicator shall comply with manufacturer's installation specifications.

454.1.6.5.14 Heaters.

Pool heaters shall comply with nationally recognized standards acceptable to the jurisdictional building department and to the design engineer. Pools equipped with heaters shall have a fixed thermometer mounted in the pool recirculation line downstream from the heater outlet. Thermometers mounted on heater outlets do not meet this requirement. A sketch of any proposed heater installation including valves, thermometer, pipe sizes, and material specifications shall be included in the application for permit prior to installation. Piping and influent, effluent and bypass valves which allow isolation or removal of the heater from the system shall be provided. Materials used in solar and other heaters shall be nontoxic and acceptable for use with potable water. Heaters shall not prevent the attainment of the required turnover rate.

454.1.6.5.15 Pool waste water disposal.

Pool waste water shall be discharged through an air gap; disposal shall be to sanitary sewers, storm sewers, drainfields, or by other means, in accordance with local requirements including obtaining all necessary permits. Disposal of water from pools using D.E. powder shall be accomplished through separation tanks which are equipped with air bleed valves, bottom drain lines, and isolation valves, or through a settling tank with final disposal being acceptable to local authorities. D.E. separator tanks shall have a capacity as rated by the manufacturer, equal to the square footage of the filter system. All lines shall be sized to handle the expected flow. There shall not be a direct physical connection between any drain from a pool or recirculation system and a sewer line.

454.1.6.5.16 Addition of chemicals.

Disinfection and ph adjustment shall be added to the pool recirculation flow using automatic feeders meeting the requirement of ANSI/NSF 50. All chemicals shall be fed into the return line after the pump, heater and filters unless the feeder was designed by the manufacturer and approved by the NSF to feed to the collector tank or to the suction side of the pump.

454.1.6.5.16.1 Gas chlorination.

When gas chlorination is utilized, the chlorinator shall be capable of continuously feeding a chlorine dosage of 6 mg/L to the recirculated flow of the filtration system. The application point

for chlorine shall be located in the return line downstream of the filter, recirculation pump, heater, and flow meter, and as far as possible from the pool.

454.1.6.5.16.1.1
Gas chlorinators shall be located in above-grade rooms and in areas which are inaccessible to unauthorized persons.

454.1.6.5.16.1.1.1
Chlorine gas rooms shall have: continuous forced draft ventilation capable of a minimum of one air change per minute with an exhaust at floor level to the outside, a minimum of 30 footcandles (300 lux) of illumination with the switch located outside and the door shall open out and shall not be located adjacent to the filter room entrance or the pool deck. A shatterproof gas-tight inspection window shall be provided.

454.1.6.5.16.1.1.2
Chlorine gas areas shall have a roof and shall be enclosed by a chain-link-type fence at least 6 feet (1829 mm) high to allow ventilation and prevent vandalism.

454.1.6.5.16.1.1.3
After December 31, 2023, new pools may not use chlorine gas.

454.1.6.5.16.1.2
When booster pumps are used with the chlorinator, the pump shall use recirculated pool water supplied via the recirculation filtration system. The booster pump shall be electrically interlocked with the recirculation pump to prevent the feeding of chlorine when the recirculation pump is not operating.

454.1.6.5.16.1.3
A means of weighing chlorine containers shall be provided. When 150-pound (68 kg) cylinders are used, platform-type scales shall be provided and shall be capable of weighing a minimum of two full cylinders at one time. The elevation of the scale platform shall be within 2 inches (51 mm) of the adjacent floor level, and the facilities shall be constructed to allow easy placement of full cylinders on the scales.

454.1.6.5.16.2 Hypohalogenation and electrolytic chlorine generators.
The hypohalogenation-type feeder and electrolytic chlorine generators shall be adjustable from 0 to full range. A rate of flow indicator is required on erosion-type feeders. The feeders shall be capable of continuously feeding a dosage of 6 mg/L to the minimum required turnover flow rate of the filtration systems. Solution feeders shall be capable of feeding the above dosage using a 10-percent sodium hypochlorite solution, or 5-percent calcium hypochlorite solution, whichever disinfectant is to be utilized at this facility. To prevent the disinfectant from siphoning or feeding directly into the pool or pool piping under any type failure of the recirculation equipment, an electrical interlock with the recirculation pump shall be incorporated into the system for electrically operated feeders. The minimum size of the solution reservoirs shall be at least 50 percent of the maximum daily capacity of the feeder. The solution reservoirs shall be marked to indicate contents. The solution reservoirs shall be manufactured to accommodate corrosive and oxidizering liquid chemicals.

454.1.6.5.16.3 Feeders for pH adjustment.
Feeders for pH adjustment shall be provided on all pools. pH adjustment feeders shall be positive displacement type, shall be adjustable from 0 to full range, and shall have an electrical interlock with the circulation pump to prevent discharge when the recirculation pump is not operating. When soda ash is used for pH adjustment, the maximum concentration of soda ash solution to be fed

shall not exceed ½-pound (0.2 kg) soda ash per gallon of water. Feeders for soda ash shall be capable of feeding a minimum of 3 gallons (11 L) of the above soda ash solution per pound of gas chlorination capacity. The minimum size of the solution reservoirs shall not be less than 50 percent of the maximum daily capacity of the feeder. The solution reservoirs shall be marked to indicate the type of contents. The solution reservoirs shall be manufactured to accommodate corrosive and oxidizing liquid chemicals.

454.1.6.5.16.4 Ozone generating equipment.

Ozone generating equipment may be used for supplemental water treatment on public swimming pools subject to the conditions of this section.

454.1.6.5.16.4.1

Ozone generating equipment electrical components and wiring shall comply with the requirements of Chapter 27 of the *Florida Building Code, Building* and the manufacturer shall provide a certificate of conformance. The process equipment shall be provided with an effective means to alert the user when a component of this equipment is not operating.

454.1.6.5.16.4.2

Ozone generating equipment shall meet the NSF/ANSI Standard 50.

454.1.6.5.16.4.3

The concentration of ozone in the return line to the pool shall not exceed 0.1 mg/L.

454.1.6.5.16.4.4

The injection point for ozone generating equipment shall be located in the pool return line after the filtration and heating equipment, prior to the halogen injection point, and as far as possible from the nearest pool return inlet with a minimum distance of 4 feet (1219 mm). Injection methods shall include a mixer, contact chamber, or other means of efficiently mixing the ozone with the recirculated water. The injection and mixing equipment shall not prevent the attainment of the required turnover rate of the recirculation system. Ozone generating equipment shall be equipped with a check valve between the generator and the injection point. Ozone generating equipment shall be equipped with an air flow meter and a means to control the flow. The generator shall be electrically interlocked with the recirculation pump to prevent the feeding of ozone when the recirculation pump is not operating. A flow sensor controller can also be used to turn off the feeder when flow is sensed.

454.1.6.5.16.4.5 Ventilation requirements.

Ozone generating equipment shall be installed in equipment rooms with either forced draft or cross draft ventilation. Below-grade equipment rooms with ozone generators shall have forced draft ventilation and all equipment rooms with forced draft ventilation shall have the fan control switch located outside the equipment room door. The exhaust fan intake for forced draft ventilation and at least one vent grille for cross draft ventilation shall be located at floor level.

454.1.6.5.16.4.6

A self-contained breathing apparatus designed and rated by its manufacturer for use in ozone contaminated air shall be provided when ozone generator installations are capable of exceeding the maximum pool water ozone contact concentration of 0.1 mg/L. The self-contained breathing apparatus shall be available at all times and shall be used at times when the maintenance or service personnel have determined that the equipment room ozone concentration exceeds 10 mg/L. Ozone generator installations which require the self-contained breathing apparatus shall also be provided with Draeger-type detector tube equipment which is capable of detecting ozone levels of 10 mg/L and greater.

Exception: In lieu of the self-contained breathing apparatus an ozone detector capable of detecting 1 mg/L may be used. Said detector shall be capable of stopping the production of ozone, venting the room and sounding an alarm once ozone is detected.

454.1.6.5.16.5

Ionization units may be used as supplemental water treatment on public pools subject to the condition of this section.

454.1.6.5.16.5.1

Ionization equipment and electrical components and wiring shall comply with the requirements of Chapter 27 of the *Florida Building Code, Building* and the manufacturer shall provide a certification of conformance.

454.1.6.5.16.5.2

Ionization equipment shall meet the NSF/ANSI Standard 50, *Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs,* or equivalent, shall meet UL standards and shall be electrically interlocked with a recirculation pump.

454.1.6.5.16.6

Ultraviolet (UV) light disinfectant equipment may be used subject to the conditions of this paragraph and manufacturer's specifications. UV is encouraged to be used to eliminate or reduce chlorine-resistant pathogens, especially the protozoan cryptosporidium.

1. 1.UV equipment and electrical components and wiring shall comply with the requirements of the *National Electrical Code* and the manufacturer shall provide a certification of conformance to the jurisdictional building department.
2. 2.UV equipment shall meet UL standards and shall be electrically interlocked with recirculation pump(s) on all pools and with feature pumps(s) on an IWF such that when the UV equipment fails to produce the required dosage as measured by an automated sensor, the feature pump(s) are disabled so the water features do not operate.
3. 3.UV equipment shall be certified for secondary or supplemental disinfection per NSF 50–2020.
4. 4.UV equipment that is not certified for secondary disinfection per NSF 50–2020 shall be installed and configured to constantly produce a validated dosage of at least 40 mJ/cm^2 (millijoules per square centimeter) at the end of lamp life, and other third party validation criteria in accordance with the USEPA *Ultraviolet Disinfectant Guidance Manual* dated November 2006, publication number EPA 815-R-06-007, whenever these devices are used in high-risk pools for secondary disinfection.
5. 5.The UV equipment shall not be located in a side stream flow and shall be located to treat all water returning to the pool or water features. Any treatment chemicals shall be injected downstream of the UV equipment.

454.1.6.5.17

Up to 50 percent of the return water that has passed through the filter and received the addition of chemicals may be diverted to water features such as waterfalls or fountains in pools, however, all waters used in the feature shall not be counted toward attaining the minimum turnover rate specified in Section 454.1.1.1 or 454.1.6.5.2, or elsewhere in this code. The return piping system shall be designed and capable of handling the additional feature flow when the feature is turned off, otherwise the pump speed shall be reduced automatically. All water features that utilize water from the pool shall be designed to return the water to the pool. Spray features mounted in the pool deck shall be flush with the pool deck and shall be designed with the safety of the pool patron in mind. Where a pool's feature flow is greater than 20 percent, that pool shall comply

with Section 454.1.7.9 for automated controllers, and with Section 454.1.9.2.7 for 12 mg/L disinfectant capacity by the halogen feeder equipment.

454.1.6.5.18 Chemical quality.
Only NSF-60 approved chemicals shall be provided.

454.1.6.5.19
Automated oxidation reduction potential (ORP) and pH controllers with sensing probes shall be provided on all newly built public swimming pools to assist in maintaining proper disinfection and pH levels.

454.1.7 Wading pools.

454.1.7.1 General.
Wading pools shall meet the requirements of Sections 454.1.1 through 454.1.6.5, unless otherwise indicated. Wading pools and associated piping shall not be physically connected to any other swimming pools and have no minimum width dimensions requirements.

454.1.7.2 Depths.
Wading pools shall have a maximum depth of 2 feet (610 mm). The depth at the perimeter of the pool shall be uniform and shall not exceed 12 inches (305 mm). However, where jurisdictional building department-approved zero depth entry designs are used, this uniform depth requirement must be met only on the remainder of the pool outside the zero depth entry portion. The pool floor shall not be more than 12 inches (305 mm) below the deck unless steps and handrails are provided. Depth and "NO DIVING" markers are not required on wading pools.

454.1.7.3 Recirculation.
Wading pools shall have a minimum of one turnover every hour.

454.1.7.3.1
Skimmer equalizer lines, when installed, shall be plumbed into the main drain.

454.1.7.4 Inlets.
Wading pools with 20 feet (6096 mm) or less of perimeter shall have a minimum of two equally spaced adjustable inlets.

454.1.7.5 Emergency drainage.
All wading pools shall have drainage to waste without a cross connection through a quick opening valve to facilitate emptying the wading pool should accidental bowel or other discharge occur.This can also be achieved utilizing a pump taking suction from the collector tank drain with immediate discharge to waste. The pump must be capable of draining all water in the pool and tank.

454.1.7.6
Reserved.

454.1.7.7 Wading pool decks.
When within 50 feet of swimming pools, wading pools shall be separated from the swimming pool by an effective barrier or a fence of a minimum of 48 inches (1219 mm) in height with self-latching and self-closing gates. When adjacent to areas less than 1 foot (305 mm) deep of zero depth entry pools, the fence or effective barrier is required if the water edges are less than 40 feet (12 192 mm) apart. Where the walking distance is at least 50 feet (15 240 mm) between the wading pool and all other pools, fencing requirements should be carefully considered by the applicant to control usage, but are not required by rule. Effective barriers that are designed to define the walking path shall be subject to review and approval by the department. Wading pools shall have a minimum 10-feet (3048 mm) wide deck around at least 50 percent of their perimeter with the remainder of the

perimeter deck being at least 4 feet (1219 mm) wide. There shall be at least 10 feet (3048 mm) between adjacent swimming pools and wading pools.

454.1.7.8 Lighting.
Wading pools are exempt from underwater lighting requirements but shall have lighting installed for night use of 10 footcandles (100 lux) if indoors or 3 footcandles (30 lux) for outdoor night use. Such illumination shall be provided over the pool water surface and the pool deck surface.

454.1.7.9
Automated oxidation reduction potential (ORP) and pH controllers with sensing probes shall be provided to assist in maintaining proper disinfection and pH levels.

454.1.8 Spa pools.

454.1.8.1 General.
Spa pools shall meet the requirements of Sections 454.1.1 through 454.1.6.5, unless specifically indicated otherwise.

454.1.8.2 Color, pattern, finish.
The color, pattern or finish of the pool interior shall not obscure the existence or presence of objects or surfaces within the pool.

454.1.8.3 Water depths.
Spa-type pools shall have a minimum water depth of $2^1/_2$ feet (762 mm) and a maximum water depth of 4 feet (1219 mm), except that swim spa pools may have a maximum water depth of 5 feet (1524 mm). Depth markers and "NO DIVING" markers are not required on spa-type pools with 200 square feet (19 m^2) or less of water surface area.

454.1.8.4 Steps and handrails.
Steps or ladders shall be provided and shall be located to provide adequate entrance to and exit from the pool. The number of sets of steps or ladders required shall be on the basis of one for each 75 feet (22 860 mm), or major fraction thereof, of pool perimeter. Step sets for spa-type pools with more than 200-square-feet (19 m^2) of pool water surface area shall comply with Section 454.1.2.5. Step sets for spa-type pools with 200 square feet (19 m^2) or less of pool water surface area shall comply with the following: Step treads shall have a minimum width of 10 inches (254 mm) for a minimum continuous tread length of 12 inches (305 mm). Step riser heights shall not exceed 12 inches (305 mm). Intermediate treads and risers between the top and bottom treads and risers shall be uniform in width and height, respectively. Contrasting markings on the leading edges of the submerged benches and the intersections of the treads and risers are required to be installed in accordance with Section 454.1.2.5.

454.1.8.5 Decks.
Spa pools that are 10 feet (3048 mm) wide or less shall have a minimum 4-foot-wide (1219 mm) unobstructed continuous deck around a minimum of 50 percent of the pool perimeter, with all points on the water surface within 10 feet (3048 mm) horizontally of the deck. Decks shall not be more than 36 inches (914 mm) below the top of the pool. For spa pools greater than 10 feet (3048 mm) in width, deck obstructions shall comply with Section 454.1.3.1.6.

454.1.8.6 Therapy or jet systems.

454.1.8.6.1
The return lines of spa-type therapy or jet systems shall be independent of the recirculation-filtration and heating systems.

454.1.8.6.2

Therapy or jet pumps shall take suction from the collector tank. Collector tank sizing shall take this additional gallonage into consideration.

454.1.8.6.3
Heated systems shall incorporate a 15-minute patron-activated timer on the therapy pump circuit.

454.1.8.7 Filtration system inlets.
Spa-type pools shall have a minimum of two equally spaced adjustable inlets.

454.1.8.8 Filtration recirculation.
Spa-type pools shall have a minimum of one turnover every 30 minutes. The piping, fittings, and hydraulic requirements shall be in accordance with Section 454.1.6.5. All recirculation lines to and from the pool shall be individually valved with proportional flow-type valves in order to control the recirculation flow.

454.1.8.9 Vacuuming.
Spa-type pools of over 200 square feet (19 m^2) of pool water surface area shall have provisions for vacuuming.

454.1.8.10 Combination spas/pools.
When spa pools are part of a conventional swimming pool, the spa pool area shall be the same water depth as the main pool area. The spa pool area shall meet Sections 454.1.8.6 and 454.1.8.7, and the deck area shall be protected by connected 30-inch-high (762 mm) stanchions or other approved obstruction to prevent entry, wherever there is a bench with high velocity nozzles producing air bubbles. The deck perimeter at the offset spa area shall not exceed 20 feet (6096 mm). All benches shall have contrasting markings on the leading edges of the intersection of the bench seats. If tile is used, it shall be slip resistant.

454.1.8.11 Portable and wooden spa pools.
Portable and wooden-type spa pools are prohibited.

454.1.8.12 Automated controllers.
Automated oxidation reduction potential (ORP) and pH controllers with sensing probes shall be installed on spa pools to assist in maintaining proper disinfection and pH levels.

454.1.8.13
In addition to the requirements of Section 454.1.2.3.5 spa pool signs installed shall include the following:

1. 1.Maximum water temperature: 104°F (40°C).
2. 2.Children under twelve must have adult supervision.
3. 3.Pregnant women, small children, people with health problems and people using alcohol, narcotics or other drugs that cause drowsiness should not use spa pools without first consulting a doctor.
4. 4.Maximum use: 15 minutes.

454.1.8.14
A clock shall be visible from the spa pool to assist the patron in meeting Item 4 of Section 454.1.8.13.

454.1.8.15
If a spa is equipped with an emergency cutoff or kill switch, it shall include provisions for a minimum 80 decibel audible alarm near the spa to sound continuously until deactivated when such device is triggered. The following additional rule sign shall be installed to be visible by the spa

which reads “ALARM INDICATES SPA PUMPS OFF. DO NOT USE SPA WHEN ALARM SOUNDS UNTIL ADVISED OTHERWISE.”

454.1.9 Water recreation attractions and specialized pools.

454.1.9.1 General.

Water recreation attraction projects shall be designed and constructed within the limits of sound engineering practice. In addition to the requirements of this section, compliance is required with Sections 454.1.1 through 454.1.6.5 of this chapter depending upon the pool design and function. Additionally, all pools listed in this section shall provide a minimum of one turnover every 2 hours unless otherwise noted.

454.1.9.2 Recreational water slides.

Recreational Water slides shall terminate in either a plunge pool or run out lanes.

454.1.9.2.1 Plunge pool.

Plunge pools shall be constructed of concrete or other structurally rigid impervious materials with a nontoxic, smooth and slip-resistant finish. The plunge pool design shall meet the criteria of Sections 454.1.9.2.1.1 through 454.1.9.2.1.6.

454.1.9.2.1.1 Adequate space at terminus.

The slide design engineer must demonstrate to the jurisdictional building department’s satisfaction that the water depth, clear area, distance between adjacent slides, floor slope, rope line placement, exit location, and pool floor surface finish are all adequate to prevent injury or harm to riders or other users of the pool, making reference to ASTM F2376, *Standard Practice for Classification, Design, Manufacture, Construction, and Operation of Water Slide Systems*, as appropriate.Only one entry or exit location shall be required, regardless of the plunge pool’s perimeter.

454.1.9.2.1.2

Reserved.

454.1.9.2.1.3 Slide flume terminus.

454.1.9.2.1.3.1

The slide flume terminus shall be designed by the design engineer who can demonstrate to the jurisdictional building department’s satisfaction that riders will be adequately slowed prior to discharge so as to prevent injury or harm to the rider upon impact with the plunge pool water. The design engineer must document the designed, safe location of the terminus relative to the plane of the pool wall and to the water level.

454.1.9.2.1.4 Plunge pool main drains.

The plunge pool shall have a minimum of one main drain with separate piping and valve to the filtration system collector tank. The velocity through the openings of the main drain grate shall not exceed 1½ feet per second (457 mm/s) at the design flow rate of the recirculation pump. The main drain piping shall be sized to handle 100 percent of the design flow rate of the filtration system with a maximum flow velocity of 3 feet (914 mm) per second.

454.1.9.2.1.5 Plunge pool floor slope.

The plunge pool floor shall slope to the main drains and the slope shall not exceed 1 in 10.

454.1.9.2.1.6 Plunge pool decks.

454.1.9.2.1.6.1

Decking shall be provided at the entrance and exit points as necessary to provide safe patron access but shall not be smaller than 10 feet (3048 mm) in width and length.

454.1.9.2.1.6.2 Slopes.
All plunge pool decks shall slope to the plunge pool or pump reservoir or to deck drains which discharge to waste, or other acceptable means. All slopes shall be between 2- and 4-percent grade except for paver-type decks where a minimum of 1 percent grade is allowed.

454.1.9.2.1.7 Plunge pool volume.
The total volume of a plunge pool and its collector tank or tanks shall be equal to or greater than 3 minutes of the combined flow rate in gallons per minute of all filter and slide pumps. The design engineer must account for the water level in the pool both when the slide pumps are on and when they are off. If skimmers are used, skimmers must be placed at both levels if the variance is greater than 3 inches (76 mm). If perimeter overflow is used, half of the gutter outlets must be functional at each water level.

454.1.9.2.2 Run out lanes.

454.1.9.2.2.1
Run out lanes may be utilized in lieu of or within a plunge pool system, provided they are constructed to the slide manufacturers specifications and are approved by the design engineer of record.

454.1.9.2.2.2
Five-foot-wide (1524 mm) walkways shall be provided adjacent to run out lanes, as either dry deck or as part of a pool with up to 12 inches (305 mm) of water depth in this area. The 5-foot (1524 mm) walkway need be only on one side of the run out lane.

454.1.9.2.2.3
Minimum water level indicator markings shall be provided on both sides of the run out trough to ensure adequate water for the safe slowing of pool patrons.

454.1.9.2.2.4
Attendants or lifeguards shall be provided at the top of the slides and at the run out in accordance with a safety/lifeguard plan approved by the Department of Health. If night operation is proposed, 3 footcandles (30 lux) of light shall be provided at the top of the slides and at the run outs.

454.1.9.2.3 Pump reservoirs.
Pump reservoirs are only required for slides with run out lanes. Pump reservoirs shall be made of concrete or other impervious material with a smooth finish. Pump reservoirs shall be for the slide pump intakes, but where properly sized may also be used as a collector tank for the filter system. Pump reservoir designs shall meet the criteria of Sections 454.1.9.2.3.1 through 454.1.9.2.3.5.

454.1.9.2.3.1 Pump reservoir volume.
The minimum reservoir volume shall be equal to 3 minutes of the combined flow rate in gallons per minute of all filter and slide pumps unless justified by the design engineer.

454.1.9.2.3.2 Pump reservoir security.
Pump reservoirs shall be accessible only to authorized individuals.

454.1.9.2.3.3 Pump reservoir maintenance accessibility.
Access decks or walkable grating shall be provided for the reservoir such that all areas are accessible for vacuuming, skimming, and maintenance. The decks shall have a minimum width of 3 feet (914 mm) and shall have a slope of 2−4 percent away from the reservoir.If any part of the pump reservoir has a permanent cover or roof, hatches or other openings for access to and observation of the floor must be provided with one hatch or opening per 150 square feet (13.9 m^2) of tank floor area.

454.1.9.2.3.4 Pump reservoir slide pump intakes.
The slide pump intakes shall be located in the pump reservoir and shall be designed to allow cleaning without danger of operator entrapment.

454.1.9.2.3.5 Pump reservoir main drains.
The pump reservoir shall have a minimum of one main drain with separate piping and valve to the filtration system collector tank unless the reservoir is used as the collector tank. Velocity through the openings of the main drain grates shall not exceed 1½ feet per second (457 mm/s) at the design flow rate of the filtration system pump. The main drain piping shall be sized to handle 100 percent of design flow rate of the filtration system pump with a maximum flow velocity of 3 feet per second (914 mm/s).

454.1.9.2.3.6
Reserved.

454.1.9.2.4 Slide pump check valves.
Slide pumps shall have check valves on all discharge lines.

454.1.9.2.5 Perimeter overflow gutters or skimmers.
Plunge pools shall have perimeter overflow gutter system or skimmer which shall be an integral part of the filtration system.

454.1.9.2.5.1 Perimeter overflow gutter systems.
Perimeter overflow gutter systems shall meet the requirements of Section 454.1.6.5.3.1 except that gutters are not required directly under slide flumes or along the weirs which separate plunge pools and pump reservoirs.

454.1.9.2.5.2 Surface skimmers.
Surface skimmers may be used in lieu of perimeter overflow gutters. The provisions of Section 454.1.6.5.3.2 shall apply, except no maximum width or maximum area shall apply to plunge pools.

454.1.9.2.6 Water slide recirculation–filtration equipment.

454.1.9.2.6.1 Recirculation rate.
The recirculation-filtration system of water slide plunge pools shall turn the water over in a period of 2 hours or less. The turnover rate for slides with run out lanes shall be 1 hour or less. For swimming pools that are not dedicated as plunge pools, but include a recreational water slide as part of the design, the total water volume shall include the water in the plunge pool dimensions stipulated by code, plus the slide water.

454.1.9.2.6.2 Filter performance.
A continuous readout/electronic recording in-line turbidity meter shall be installed per manufacturer's specifications and used to determine compliance with Rule 64E-9, *Florida Administrative Code* water quality criteria for clarity. Otherwise if not installed, the recirculation turnover rate of the plunge pool's water volume as defined in Section 454.1.9.2.6.1, must be enhanced to 1 hour or less.

454.1.9.2.7 Disinfection.
The disinfection equipment shall be capable of feeding 12 mg/L of halogen to the continuous recirculation flow of the filtration system.

454.1.9.2.8
Slide design and construction is the responsibility of a professional engineer licensed in Florida and the applicant.

454.1.9.2.9

A lockable gate shall be provided at the stair or ladder entrance to the slide.

454.1.9.2.10
Upon construction completion, a professional engineer licensed in Florida shall certify that the slide was constructed in accordance with the manufacturer's specifications and is structurally sound.

454.1.9.3 Water activity pools.

454.1.9.3.1
Water activity pools shall be designed and constructed within the limits of sound engineering practice.

454.1.9.3.2
Water activity pools shall be constructed of concrete or other structurally rigid impervious materials with a nontoxic, smooth and slip-resistant finish. These pools shall be of such shape and design as to be operated and maintained in a safe and sanitary manner.

454.1.9.3.3
The recirculation-filtration system of water activity pools shall achieve a minimum of one turnover every 2 hours for water activity pools over 2 feet (610 mm) deep, and 1 hour for these pools that are 2 feet (610 mm) deep or less.

454.1.9.3.4
Those portions of the activity pool where the water depth will not allow for the proper installation of underwater lighting shall be provided with 6 footcandles (60 lux) of lighting on the deck and water surface.

454.1.9.3.5
Fence requirements shall be in accordance with Section 454.1.7.7.

454.1.9.3.6
Play features with an overhead clearance of less than 4 feet (1219 mm) shall be blocked or barricaded to preclude children becoming entrapped.

454.1.9.3.7
In addition to the requirements of Section 454.1.2.3.5, all water activity pool signs installed shall have the following added in one inch letters:

"Do not swallow the pool water, it is recirculated."

"Do not use pool if you are ill with diarrhea."

454.1.9.4 Wave pools.

454.1.9.4.1
Wave pools shall be designed and constructed within the limits of sound engineering practice.

454.1.9.4.2
Wave pools shall be constructed of concrete or other impervious materials with a smooth slip-resistant finish. These pools shall be of such shape and design as to be operated and maintained in a safe and sanitary manner.

454.1.9.4.3
The recirculation-filtration system of wave pools shall be capable of a minimum of one turnover every 3 hours.

454.1.9.4.4

Floors shall be sloped in accordance with the manufacturer's or design engineer's specifications; however, they shall not exceed the slope limits of Section 454.1.2.2.3.

454.1.9.5 River rides.

454.1.9.5.1
River rides shall be constructed within the limits of sound engineering practice.

454.1.9.5.2
River rides shall be constructed on concrete or other impervious materials with a nontoxic, smooth and slip-resistant finish. These rides shall be of such shape and design as to be operated in a safe and sanitary manner.

454.1.9.5.3
The recirculation-filtration system of the river ride shall be capable of a minimum of one turnover every 3 hours.

454.1.9.5.4
The maximum water depth of the river ride shall not exceed 3 feet (914 mm) unless justified to the jurisdictional building department's satisfaction by the design engineer.

454.1.9.5.5
Decking shall comply with Section 454.1.9.2.1.6.1. Additional decking along the ride course is not required except that decking shall be required at lifeguard locations and emergency exit points.

454.1.9.5.6
Access and exit shall be provided at the start and end of the ride and additional exit locations shall be located along the ride course as necessary to provide for the safety of the patrons.

Propulsion jets shall be installed in the walls of the river ride. In the alternative, propulsion jets may be installed in the floor if they are covered by a grate that will inhibit entrapment or injury of the pool patrons' feet or limbs.

454.1.9.6 Zero depth entry pools.

454.1.9.6.1
Zero depth entry pools shall have a continuous floor slope from the water edge to 3 feet (914 mm) of water depth at which point the slope can transition to another, less steep continuous slope. Floating safety ropes and slope transition markings are not required at this transition point.

454.1.9.6.2
The deck level perimeter overflow system with grate shall be provided at the water's edge across the entire zero depth portion of the pool. Zero entry grate must be 8 to 12 inches wide, slip resistant, and constructed for intended purpose of submersion in water and exposure to UV sunlight.

454.1.9.6.3
The pool deck may slope toward the pool for no more than 7 feet (2133 mm), as measured from the overflow system grate outward. Beyond this area the deck shall slope away from the pool in accordance with Section 454.1.2.2.3.

454.1.9.6.4
"No Entry" markers shall be provided along the pool wall edge where the water depth is more than 10 inches (254 mm) but less than 3 feet (914 mm), unless stairs and handrails are provided. "No Entry" markers shall be slip-resistant, shall have 2-inch-high (51 mm) letters, shall be located within 2 feet (610 mm) of the pool edge and shall be spaced no more than 8 feet (2438

mm) apart, or 15 feet (4572 mm) apart if 4-inch-high (102 mm) letters are provided. "NO DIVING" markers are not required around the zero entry area.

454.1.9.6.5

Additional inlets shall be provided in areas of less than 18 inches (457 mm) deep. The numbers and location shall be such as to ensure a 1-hour turnover in this area.

454.1.9.6.6

The recirculation-filtration system shall be of a minimum of one turnover every 2 hours in the area of the pool that is 3 feet (914 mm) deep or less. In the remainder of the pool where the depth is greater than 3 feet (914 mm), the system shall have a maximum 6 hour turnover rate. The design plans submitted by the applicant shall provide the volume of water in the pool area of 3 feet (914 mm) depth and less, the volume of water in the pool area greater than 3 feet (914 mm) in depth and the total volume in the pool for determination of minimum circulation flow. The volume calculations shall provide verification that the correct volume of water is used to determine the minimum flow at the 2-hour and the 6-hour flow requirements.

454.1.9.6.7

Those portions of the zero depth entry pool, where the water depth will not allow for the proper installation of underwater lighting, shall be provided with 6 footcandles (60 lux) of lighting on the deck and the water.

454.1.9.6.8

Play structures in a zero depth entry area [in depth 0–3 feet (0 to 914 mm)] may be within 15 feet (4572 mm) of the pool walls, but shall comply with sound engineering requirements for the safety of pool patrons.

454.1.9.7 Special purpose pools.

454.1.9.7.1 General.

Special purpose pool projects may deviate from the requirements of other sections of these rules provided the design and construction are within the limits of sound engineering practice. Only those deviations necessary to accommodate the special usage shall be allowed and all other aspects of the pool shall comply with the requirements of this section and with Section 454.1.2.

454.1.9.7.2

A special purpose pool may incorporate ledges which do not overhang into the pool.

454.1.9.7.3

Resistance exercise pools shall comply with the requirements of Sections 454.1 through 454.1.6.5 unless exempted or modified by Section 454.1.9.7.3.

454.1.9.7.3.1

Resistance exercise pools shall be circular or oval in shape with a center island that creates a channel to direct the flow of circulated water. Resistance exercise pools shall have a recirculation rate of 5gpm per bather, shall have a gutter type recirculation system, and shall have a maximum bathing load of 20 persons.

454.1.9.7.3.2 Resistance exercise pool dimensions and depth.

The distance from the outer vertical pool wall to the inner island vertical wall of a resistance exercise pool shall be a minimum of 8.5 feet (2591 mm) and maximum of 10 feet (3048 mm), measured at the designed water level.

The water depth of resistance exercise pools shall be a minimum of 3 feet (914 mm) and a maximum of 3 feet 5 inches (1041 mm).

454.1.9.7.3.3 Grabrails and handrails.

The inner island of resistance exercise pools shall have grab rails mounted on the entire top circumference of the island for use has handholds by bathers while in the pool.

454.1.9.7.3.4 Non-applicable requirements.

The following code provisions do apply to resistance exercise pool: Sections 454.1.1.1, 454.1.2.2.3.1, 454.1.2.6 and 454.1.2.2.4.

454.1.9.7.4

Epsom salt float tanks are special purpose pools leased by the public for a brief period of time to float quietly immersed in water with dissolved Epsom salt. *Florida Building Code* Sections 454.1 through 454.1.10 apply to these pools, and only the following code sections do not apply to these pools, as these code requirements are not necessary for health or safety in these special purpose pools: Sections 454.1.2.1(a), 454.1.2.2.4, 454.1.3.1.2, 454.1.3.2, 454.1.4.2.2, 454.1.6.1, 454.1.6.5.10.5, 454.1.6.5.11, 454.1.6.5.14, 454.1.6.5.16.6(3) and 454.1.6.5.3.2.5.

454.1.9.8 Interactive water features (IWFs).

454.1.9.8.1

Waters discharged from all fountain or spray features shall not pond on the feature floor but shall flow by gravity through a main drain fitting to a collection system which discharges to a collector tank. The minimum size of the collector tank shall be equal to the volume of 3 minutes of the combined flow of all feature pumps and the filter pump. Smaller tanks may be utilized if hydraulically justified by the design engineer. Adequate access shall be provided to the sump or collector tank. Stairs or a ladder shall be provided as needed to ensure safe entry into the tank.

454.1.9.8.2

Reserved.

454.1.9.8.3

Chemical feeders shall be in accordance with Section 454.1.6.5; except that the disinfection feeder shall be capable of feeding 12 ppm of free chlorine to the pressure side of the recirculation system or the collector tank (based upon a hypothetical 30-minute turnover of the contained volume within the system). Automated oxidation reduction potential (ORP) and pH controllers with sensing probes shall be installed to assist in maintaining proper disinfection and pH levels.

454.1.9.8.4

If night operation is proposed, 6 footcandles (60 lux) of light shall be provided on the pool deck and the water feature area. For IWFs that are operated with attendants or lifeguards, 3 footcandles (30 lux) of light is acceptable.

454.1.9.8.5

All electrical work shall comply with Chapter 27 of the *Florida Building Code, Building*.

454.1.9.8.6 Hydraulics.

454.1.9.8.6.1

All water discharged to the spray features must first be treated with UV disinfection as described in Section 454.1.6.5.16.6, with final treatment provided by disinfectant adjustment chemicals, before any of this treated water is piped to the spray features.

The recirculation system shall be sized to treat the contained volume of water in the tank and piping system based on a 30-minute turnover with chlorine feeder/generators capable of producing a dosage of at least 12ppm.

The UV disinfection equipment shall be electrically interconnected such that whenever it fails to produce the required UV dosage, the water spray features pump(s) will be immediately stopped. All pumps must draw suction from the collector tank.

454.1.9.8.6.2

All IWFs must comply with one of three options for filtration and disinfection systems as follows:

- Option 1: A single pump may be used for water treatment and to supply the water features. Flow must be filtered, treated by a UV unit certified for supplemental disinfection per NSF Standard 50, then treated with disinfectant adjustment chemicals prior to discharge to the spray features. Excess flow not required by the features must be directed back to the collector tank following UV treatment and must be treated with disinfectant and pH adjustment chemicals prior to discharge to the tank.
- Option 2: Separate filter and feature pumps may be utilized. The filter flow must be filtered and treated with disinfectant and pH adjustment chemicals prior to discharge to the tank. All feature flow must be filtered, treated by a unit certified for supplemental disinfection per NSF Standard 50, then treated with disinfectant adjustment chemicals prior to discharge to the spray features. UV flow capacity must meet the feature pump(s) flow capacity, and a rate of flow indicator complying with Section 454.1.6.5.13 shall be provided for each UV system.
- Option 3: Separate filter and feature pumps may be utilized. The filter flow must be filtered and treated with disinfectant and pH adjustment chemicals prior to discharge to the tank. All feature flow must be treated by a UV disinfection certified for secondary disinfection per NSF Standard 50, then treated with disinfectant adjustment chemicals prior to discharge to the water features. UV flow capacity must meet the feature pump(s) flow capacity, and a rate of flow indicator complying with Section 454.1.6.5.13 shall be provided for each UV system.

454.1.9.8.6.3

Reserved.

454.1.9.8.6.4

The flow rate through the feature nozzles of the water features shall be such as not to harm the patrons and shall not exceed 20 feet per second (6096 mm/s) unless justified by the design engineer and by the fountain system manufacturer.

454.1.9.8.6.5

An automatic water level controller shall be provided.

454.1.9.8.6.6

An overfill waste line with air gap shall be provided.

454.1.9.8.6.7

A means of vacuuming and completely draining the tank(s) shall be provided.

454.1.9.8.6.8

Reserved.

454.1.9.8.6.9

IWFs shall be fenced in the same fashion as wading pools as noted in Section 454.1.7.7. Where the walking distance is at least 50 feet (15 240 mm) between the IWF and all other pools and the IWF is not designed to have any standing water, fencing requirements should be carefully considered by the applicant to control usage, but are not required by rule. Effective barriers that are designed to define the walking path shall be subject to review and approval by the department.

454.1.9.8.6.10
A minimum 4-foot-wide (1219 mm) wet deck area shall be provided around all IWFs. The wet deck shall meet the requirements of Section 454.1.2.2.3; however, up to 50 percent of the perimeter may be obstructed.

454.1.9.8.6.11
IWFs shall be constructed of concrete or other impervious and structurally rigid material.

454.1.9.8.6.12
Floor slopes of an IWF shall be a maximum 1 foot (305 mm) vertical in 10 feet (3048 mm) horizontal and a minimum of 1 foot (305 mm) vertical in 60 feet (18 288 mm) horizontal.

454.1.9.8.6.13
In addition to the requirements of Section 454.1.2.3.5, all IWF pool rule signs installed shall have the following added in one inch letters:

"Do not swallow the fountain water, it is recirculated."

"Do not use fountain if you are ill with diarrhea."

454.1.9.8.7
Water theme parks shall meet all other aspects of these rules for the features provided.

454.1.9.8.7.1
Rules and regulations for water theme parks shall be posted in minimum 1-inch (305 mm) letters at each entrance to the park and shall contain the following:

1. 1.No food, drink, glass or animals in pool or on the pool decks.
2. 2.Park operating hours __A.M. to __P.M.
3. 3.Shower before entering.
4. 4.Do not swallow the pool water.

454.1.9.8.7.2
Showers shall be provided at or near the entrance (queue line) to a water recreation attraction.

454.1.9.8.7.3
Water theme parks are exempt from the fencing requirements of Section 454.1.3.1.9, except that pools designed for small children shall be fenced when located within 50 feet (15 240 mm) walking distance of a pool with water depths of 3 feet (914 mm) or more. Where the walking distance is at least 50 feet (15 240 mm) between a pool designed for small children and all other pools, fencing requirements should be carefully considered by the applicant to control usage, but are not required by rule. Barriers that are designed to define the walking path shall be subject to review and approval by the department.

454.1.9.8.7.4
Sanitary facilities within a water theme park shall be as near to the water recreation attractions as prudent to ensure patron use, but not over 200 feet (60 960 mm) walking distance from any exit of a water attraction.

454.1.9.9 Swim-up bars.
Swim-up bars shall comply with the requirements of Sections 454.1.9.9.1 through 454.1.9.9.9.

454.1.9.9.1

Swim-up bars are only permitted at transient public lodging establishments licensed under s. 509.013(4)(a)1, *Florida Statutes*, or at a theme park or entertainment complex as defined in s. 509.013(9), F.S.

454.1.9.9.2

A swim-up bar shall be constructed in accordance with the applicable provisions of this code and within the limits of sound engineering practice. The maximum pool depth shall not exceed 54 inches (1372 mm). The disinfection equipment shall be capable of feeding 12 mg/L of halogen to the continuous recirculation flow of the filtration system. Attendants or lifeguards shall be provided in accordance with a safety/lifeguard plan approved by the Department of Health.

454.1.9.9.3

A swim-up bar shall be equipped with a recirculation system which provides for a maximum time of 2 hours for turnover of the entire pool water volume. Swim-up bar water quality shall be continuously sustained in accordance with Department of Health (DOH) Rule 64E-9.004, *Florida Administrative Code*, by the installation and use of an automated controller with chemical sensing probes for disinfection and pH control.

454.1.9.9.4

Signage complying with Section 454.1.2.3.5 must be posted to inform patrons that the public swimming pool has a swim-up bar that provides food and beverages, that spillages should be reported to staff for rapid cleanup, and that consumption of alcoholic beverages may cause drowsiness.

454.1.9.9.5

If the bar or counter is built into the edge of the pool, pool access complying with Section 454.1.2.5 shall be provided at both ends of the bar. A deck complying with Section 454.1.3.1 shall be provided, except, up to 50 percent of the pool perimeter may be obstructed by the bar. Gutter or skimmers are not required at or under the bar counter, however, they are required at the rest of the pool. An automatic water level controller shall be provided, and an overfill waste line with air gap shall be provided.

454.1.9.9.6

A smooth, easily cleanable poolside surface must be provided for patrons to place their food and beverage containers upon.

454.1.9.9.7

A swim-up bar may be physically combined or connected with other pool types, however, food and drink must be permitted over the entire body of water and the requirements of Section 454.1.9.9 shall apply to the entire water volume. A swim-up bar's water must not mix with any body of water that is not a swim-up bar and does not allow the consumption of food and beverages.

454.1.9.10 Vanishing edge pools.

454.1.9.10.1

Vanishing edge pools shall be designed and constructed within the limits of sound engineering practice and shall meet the requirements of Sections 454.1.1 through 454.1.6.5, unless specifically indicated otherwise.

454.1.9.10.2

Vanishing edges and associated discharge troughs or catch basins shall be constructed of concrete or other structurally rigid impervious materials with a nontoxic, smooth and slip-resistant finish.

454.1.9.10.3

The vanishing edge shall discharge into a trough or basin. The trough or basin must be covered with a lid or secure grating that has the capacity to support a responder attending to a bather in distress on the opposite side of the vanishing edge. The trough or basin must be designed to deter access. The maximum height of the trough or basin wall above surrounding grade shall be 10 inches (254 mm). A lowered wet deck in accordance with Section 454.1.3.1 must be provided around the trough or basin and immediately adjacent to it.

454.1.9.10.4

The vanishing edge length shall not exceed 65 feet (19 812 mm) or 40 percent of the pool perimeter, whichever is less. The maximum vertical distance from the top of the vanishing edge wall to the trough or catch basin cover or adjacent grade shall be 36 inches (914 mm). The maximum water depth in the pool at the vanishing edge wall shall be 4 feet (1219 mm). The vanishing edge wall shall not be considered as a perimeter deck obstruction. Water line tile at the top of the edge wall as required by Section 454.1.2.1(a) is not required to be non-skid.

454.1.9.10.5

Depth markings for vanishing edges shall be in accordance with Section 454.1.2.3.1(5).

454.1.9.10.6

The remainder of the pool perimeter must have perimeter overflow gutters per Section 454.1.6.5.3.1 or recessed automatic surface skimmers in accordance with Section 454.1.6.5.3.2. Alternatively, a combination of recessed automatic surface skimmers and perimeter overflow gutters may be used along the remainder of the perimeter, such that parts of the perimeter without perimeter overflow gutters or vanishing edges shall have skimmers spaced every 20 feet (6096 mm) or less, regardless of the width or area of the pool.

454.1.10 Resurfacing.

454.1.10.1 Repairs or alterations of pool structure and equipment.

Replacement of the pool or spa shell is considered to be construction of a new facility and shall be processed as such. Resurfacing the pool interior to original nontoxic, slip-resistant and smooth specifications is considered a repair or alteration. Equivalent replacement of equipment is not considered a repair or alteration. The following items shall be addressed during resurfacing projects:

454.1.10.1.1

The lip of the gutter must be leveled to within 1/4 inch (6.4 mm) between the highest and lowest point and the downward slope from the lip to the drain must be maintained as originally designed or increased, but shall not exceed new construction standards.The gutter surfaces shall be made to comply with Section 454.1.6.5.3.1.3.

454.1.10.1.2

Tile step markings must be installed meeting the requirements of Section 454.1.2.5.3.

454.1.10.1.3

Where applicable, the slope break marking must be installed meeting the requirements of Section 454.1.2.2.3.2 and safety line must be installed 2 feet (610 mm) before the marking.

454.1.10.1.4

Depth markers and NO DIVING markers must be installed in accordance with Section 454.1.2.3.

454.1.10.1.5

The pool ladder must have a 3 to 6 inch (76 to 152 mm) clearance from the pool wall. New cross-braced ladder(s) shall be installed in place of noncross-braced ladder(s) in conformance with Section 454.1.2.5.1 during a pool resurfacing.

454.1.10.1.6
Should resurfacing works affect the step riser heights, no riser shall exceed 12 inches (305 mm) for pools and 12 inches (305 mm) for spas, and the intermediate risers shall be made uniform.

454.1.10.1.7
Step treads that protrude from the pool wall shall be removed and replaced with a crossbraced ladder or reconstructed to meet the requirements of Section 454.1.2.5.1 or 454.1.2.5.2.

454.1.10.1.8
Handrails and grabrails that do not meet the requirements of Section 454.1.2.5.5 shall be brought into compliance with Section 454.1.2.5.5 or removed if not needed for compliance with Section 454.1.2.5.

454.1.10.1.9
If gutter grates are replaced, the new gutter grates shall have a total open surface area to meet or exceed the designed flow rate of the pool.

454.1.10.1.10
All elevated above-grade concrete pool walls and floors shall have waterproofing/dampproofing installed prior to the final surface application.

454.1.10.2
The painting of pools shall not be considered a *repair or alteration* provided the following conditions are met:

1. 1.Only paints designated by the manufacturer as pool paints are used.
2. 2.All step stripes, slope break markers and safety line, and depth and NO DIVING markings shall be provided to comply with the applicable provision(s) this section.

454.1.10.3
The installation of copper or copper/silver ionization units and ozone generators capable of producing less than a pool water ozone contact concentration of 0.1 milligrams per liter (mg/L) shall not be considered a pool repair or alteration provided compliance when the following is met:

1. 1.The ionization or ozone generator unit complies with paragraph 64E-9.008*(10)*(e), *Florida Administrative Code*.
2. 2.The manufacturer provides one set of signed and sealed engineering drawings indicating the following:
    1. a.The unit does not interfere with the design flow rate.
    2. b.The unit and the typical installation meet the requirements of the *National Electrical Code*.
    3. c.A copper test kit and information regarding the maximum allowed copper and silver level and the minimum required chlorine level shall be available to the pool owner.
    4. d.The unit shall meet the requirements of NSF/ANSI Standard 50.
3. 3.At least 7 days before the time of installation, the installer will provide a photocopy of the above drawings and a letter of intent identifying the pool on which the unit is to be installed.
4. 4.Upon completion of the installation, a professional engineer or electrician licensed in the state of Florida shall provide a letter to the county health department, indicating the unit

was properly installed in accordance with the typical drawings, the *National Electrical Code* and local codes.

454.1.10.4 Electrical.

454.1.10.4.1 Ground-fault circuit interrupter protection for personnel.

Outlets supplying repaired, replaced, altered, or relocated pool pump motors connected to single-phase, 120-volt through 240-volt branch circuits, whether by receptacle or by direct connection, and outlets supplying all other repaired, replaced, altered, or relocated electrical equipment and underwater luminaires operating at voltages greater than the low voltage contact limit, connected to single-phase, 120-volt through 240-volt branch circuits, rated 15- and 20-amperes, whether by receptacle or by direct connection, shall be provided with ground-fault circuit interrupter protection for personnel.

454.1.10.4.2 Equipotential bonding.

Any of the parts specified in Sections 680.26(B)(1) through (B)(7) of the NFPA 70, *National Electrical Code* that are repaired, replaced, altered, or installed new at an existing swimming pool shall be connected to the existing bonding system using solid copper conductors, insulated, covered, or bare, not smaller than 8 AWG or with rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with Section 250.8 of NFPA 70, *National Electrical Code*. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes. All metallic float-in light rings shall be connected to the equipotential bonding grid. Float-in light rings with no provision for bonding, and other devices which do not provide an electrical connection between a metallic underwater luminaire and the forming shell of a wet niche fixture, including screws or bolts not supplied by the luminaire's manufacturer and listed for use with the specific luminaire, shall not be allowed for use with any underwater luminaire that is required to be grounded. Where none of the bonded parts is in direct connection with the pool water, the pool water shall be in direct contact with an approved corrosion-resistant conductive surface that exposes not less than 9 square inches (5800 mm^2) of surface area to the pool water at all times. The conductive surface shall be located where it is not exposed to physical damage or dislodgement during usual pool activities, and it shall be bonded in accordance with Section 680.26(B) of the NFPA 70, *National Electrical Code*. A bonded concrete pool shell shall be considered to be a conductive surface. The interior metallic surface or surfaces of any forming shell (wet niche) shall not be covered with any material, including plaster, except potting compound covering internal bonding connections in conformance with 680.23(B)(2)(b) of NFPA 70, *National Electrical Code*, shall be allowed.

454.1.11 Public bathing places—artificial lagoons.

454.1.11.1 General.

An artificial lagoon is a type of water impoundment used as a public bathing place as defined in Section 514.011, *Florida Statutes*, that is man-made and has either: a total water surface area of at least one-half acre (2023.4 m^2) in size, with an impervious containment system such as an artificial liner, and incorporates a method of disinfection that results in a disinfectant residual in the swimming zone(s) that is protective of the public health; or has no impervious containment system or disinfectant system, and the water surface area of the artificial lagoon shall be at least 2 acres (8093.9 m^2) in size. Such artificial lagoons shall be designed and constructed within the limits of sound engineering practice and the provisions of Section 454.1.11.

454.1.11.2 Sizing and sanitary facilities for artificial lagoons.

The maximum bathing load for an artificial lagoon with a disinfection system approved by the local authority shall be limited by total square footage of the entire lagoon area that allows for swimming or bathing with 25 square feet (2.32 m^2) assigned per bather in water 4 feet (1.219 m) deep or less, and 75 square feet (6.96 m^2) in water more than 4 feet deep. The maximum bathing load for all other artificial lagoons shall be limited by total square footage of the entire lagoon area that allows for swimming or bathing with 50 square feet (4.65 m^2) assigned per bather in water 4 feet deep or less, and 75 square feet in water more than 4 feet deep. Sanitary facilities serving patrons of an artificial lagoon shall meet the *Florida Building Code, Plumbing* criteria and are exempt from the fixture count requirements in Section 454.1.6.1.1. All sanitary facilities shall be located as near to the designated swimming area(s) as prudent to ensure patron use, but not more than 200 feet (61 m) walking distance from the designated swimming area(s).

454.1.11.3 Construction standards for artificial lagoons.

If an artificial liner is utilized as a containment system, the artificial liner used to contain the water shall consist of a material certified under NSF/ANSI Standard 61—2019, *Drinking Water System Components—Health Effects*, hereby incorporated by reference, which has been deemed copyright protected, and is available for review at the Department of State, R.A. Gray Building, 500 South Bronough Street, Tallahassee, FL 32399-0250. The liner or artificial bottom, the floor, and the walls, if any, shall be white or light pastel in color and shall have the characteristic of reflecting rather than absorbing light. The liner material color shall have a dry lightness level (CIE L value) of 80.0 or greater and a wet luminous reflectance value (CIE Y value) of 50.0 or greater, as determined by test results provided by the manufacturer, utilizing testing methodology from ASTM D4086, ASTM E1477 or ASTM E1347. The design of such liner system is the responsibility of a professional engineer licensed in Florida. If any designated swimming area, or portion thereof, is designed with swimming pool features, including concrete vertical walls and floors, such areas of the artificial lagoon shall be designed in compliance with Sections 454.1.2.2.2, 454.1.2.2.3 and 454.1.2.2.4. Additionally, debris skimmers shall be provided in such areas at least every 40 linear feet (12.19 m). Zero depth entry areas of artificial lagoons shall be designed in compliance with Sections 454.1.11.5 and 454.1.11.6.

454.1.11.4 Access to artificial lagoons.

Points of access shall be provided as needed to provide adequate entrance to and exit from the artificial lagoon. Means of access may consist of ladders, stairs, recessed treads, and swimouts, designed in compliance with Section 454.1.2.5, zero depth entry areas, and docks, in any number and combination that is appropriate for the intended use(s) of the artificial lagoon. Permanent or portable steps, ramps, handrails, lifts or other devices designed to accommodate handicapped individuals may be provided. Lifts mounted into the wet deck shall have a minimum 4-foot-wide (1219 mm) deck behind the lift mount.

454.1.11.5 Decks and walkways for artificial lagoons.

Decks and walkways, if utilized to access a designated swimming area, shall be designed in compliance with Sections 454.1.3.1.1 and 454.1.3.1.2. Zero depth entry areas may slope toward the water for no more than 7 feet (2133 mm), as measured from the water's edge outward. Beyond this area, the deck or other surface shall slope away from the lagoon at a minimum of 2 percent to a maximum of 4 percent. Docks for aquatic activities such as sailing or kayaking, located outside of designated swimming areas, are exempt from this section.

454.1.11.6 Safety for artificial lagoons.

The portion(s) of artificial lagoons designated for swimming shall meet the safety requirements in Section 454.1.3.3. Such designated swimming area(s) shall be visually separated from the rest

of the artificial lagoon using a buoyed safety line(s) or similar device(s) approved by the local authority. Additionally, the floor slope at any designated swimming area(s) shall be continuous from the water's edge to the deepest point and not exceed 1-unit vertical in 10-units horizontal. The depth at the deepest point in any designated swimming area shall be indicated, along with the other rules and regulations signage required in Section 454.1.2.3.5. Where access to a portion of the artificial lagoon with a vertical wall is not blocked or obstructed by an approved substantial barrier, NO DIVING markers and depth markers shall be installed in accordance with Section 454.1.2.3.1, except that markers are not required on inside vertical walls of an artificial lagoon. Signage may be substituted for markers if approved by the local authority, and such markers or signs are required only along the accessible perimeter of the lagoon. Markings shall be of such materials that will not fade over time. Artificial lagoons are exempt from the fencing requirements of Section 454.1.3.1.9, except that separate swimming pools designed for small children shall be fenced when located within 50 feet (15 240 mm) of an artificial lagoon. If installed, underwater seat bench construction shall be in compliance with Section 454.1.2.6, Exception 2. If installed, sun shelf construction shall be in compliance with Section 454.1.2.6, Exception 3 and the applicable provisions of Section 454.1.2.8. Where water slides or climbable water activity features are used in or adjacent to the artificial lagoon, a lifeguard safety plan shall be submitted to the health department for approval and implemented by the owner/operator. Slides and water activity features shall be reviewed and approved by the local authority to conform with the same criteria for public swimming pools. If boating is allowed in the lagoon, provisions for bather safety and injury prevention must be specified and provided to the health department.

454.1.11.7 Electrical systems for artificial lagoons.

Electrical equipment wiring and installation, including the bonding and grounding of components, shall comply with Chapter 27 of the *Florida Building Code, Building*. Outlets supplying pump motors connected to single-phase 120-volt through 240-volt branch circuits, whether by receptacle or by direct connection, and outlets supplying other electrical equipment and underwater luminaires operating at voltages greater than the low voltage contact limit, connected to single-phase, 120 volt through 240 volt branch circuits, rated 15 or 20 amperes, whether by receptacle or by direct connection, shall be provided with ground-fault circuit interrupter protection for personnel. Any portions of the artificial lagoon designated for swimming at night shall comply with the lighting requirements in Sections 454.1.4.2.1 and 454.1.4.2.3.

454.1.11.8 Equipment rooms.

Equipment rooms for artificial lagoons shall comply with Section 454.1.5.

454.1.11.9 Treatment systems for artificial lagoons.

If continuous or intermittent chemical disinfection and/or non-chemical disinfection is provided to the artificial lagoon water, the equipment that feeds or generates the chemical shall be NSF/ANSI Standard 50 certified and subject to review and approval by the local authority. The disinfectant chemical shall be applied in accordance with the manufacturer's instructions, and must be an NSF/ANSI Standard 60 certified chemical, or a US EPA registered microbial biocide. Any other chemical applied to the water for water quality treatment must be applied in accordance with the manufacturer's instructions and must be an NSF/ANSI Standard 60 or Standard 50 certified chemical. If remote chemical monitoring sensors are used, one (1) chemical sensor shall be installed in or directly adjacent to each designated swimming area. Vacuum systems shall not be used in designated swimming area(s) while such area(s) is (are) open for swimming, and all suction outlets shall comply with the requirements of Section 514.0315, *Florida Statutes*.

454.1.12 Surf pools.

454.1.12.1 General.

A surf pool is a type of water impoundment used as a public bathing place as defined in Section 514.011, *Florida Statutes*, that is man-made and has either: a total water surface area of at least onequarter acre (1012 m^2) in size, with an impervious containment system such as an artificial liner, and incorporates a method of disinfection that results in a disinfectant residual in the swimming zone(s) that is protective of the public health. Such surf pools shall be designed and constructed within the limits of sound engineering practice and the provisions of Section 454.1.12.

454.1.12.2 Sizing and sanitary facilities.

The maximum bathing load for a surf pool with a disinfection system approved by the local authority shall be limited by total square footage of the entire area that allows for surfing with 100 square feet (9.29 m^2) per bather in water more than 4 feet (1219 mm) deep. Sanitary facilities serving patrons of an artificial lagoon shall meet the *Florida Building Code, Plumbing* criteria and are exempt from the fixture count requirements in Section 454.1.6.1.1. All sanitary facilities shall be located as near to the designated surfing area(s) as prudent to ensure patron use, but not more than 200 feet (60 960 mm) walking distance from the designated surfing area(s).

454.1.12.3 Construction standards.

If an artificial liner is utilized as a containment system, the artificial liner used to contain the water shall consist of a material certified under NSF/ANSI Standard 61-2021, *Drinking Water System Components—Health Effects*, dated April 14, 2021, hereby incorporated by reference, which has been deemed copyright protected, and is available for review at the Department of State, R.A. Gray Building, 500 South Bronough Street, Tallahassee, FL 32399-0250. The liner or artificial bottom, the floor, and the walls, if any, shall be white or light pastel in color and shall have the characteristic of reflecting rather than absorbing light. The liner material color shall have a wet luminous reflectance value (CIE Y value) of 50.0 or greater, as determined by test results provided by the manufacturer, utilizing testing methodology from ASTM D4086, ASTM E1477 or ASTM E1347. The design of such liner system is the responsibility of a professional engineer licensed in Florida. If any designated surfing area, or portion thereof, is designed with swimming pool features, including concrete vertical walls and floors, such areas of the pool shall be designed in compliance with Sections 454.1.2.2.2, 454.1.2.2.3 and 454.1.2.2.4.

454.1.12.4 Access.

Points of access shall be provided as needed to provide adequate entrance to and exit from the surf pool. Means of access may consist of ladders, stairs, recessed treads, and swimouts designed in compliance with Section 454.1.2.5, zero depth entry areas, and docks, in any number and combination that is appropriate for the intended use(s) of the surf pool. Permanent or portable steps, ramps, handrails, lifts or other devices designed to accommodate handicapped individuals may be provided. Lifts mounted into the wet deck shall have a minimum 4-foot-wide (1219 mm) deck behind the lift mount.

454.1.12.5 Decks and walkways.

Decks and walkways, if utilized to access a designated surfing area, shall be designed in compliance with Sections 454.1.3.1.1 and 451.1.3.1.2. Zero depth entry areas may slope toward the water for no more than 15 feet (4572 mm), as measured from the water's edge outward. Beyond this area, the deck or other surface shall slope away from the surf pool at a minimum of 2 percent to a maximum of 4 percent, and shall be ADA compliant.

454.1.12.6 Safety.

The portion(s) designated for surfing shall meet the safety requirements in Section 454.1.3.3. The depth at the deepest point in any designated swimming/surfing area shall be indicated, along with

the other rules and regulations signage required in Section 454.1.2.3.5. Where access to a portion with a vertical wall is not blocked or obstructed by an approved substantial barrier, NO DIVING markers and depth markers shall be installed in accordance with Section 454.1.2.3.1, except that markers are not required on inside vertical walls. Signage may be substituted for markers if approved by the local authority, and such markers or signs are required only along the accessible perimeter. Markings shall be of such materials that will not fade over time. A lifeguard safety plan shall be submitted to the health department for prior approval and implemented by the owner/operator.

454.1.12.7 Electrical systems for artificial lagoons.

Electrical equipment wiring and installation, including the bonding and grounding of components, shall comply with Chapter 27 of the *Florida Building Code, Building*. Outlets supplying pump motors connected to single-phase 120-volt through 240-volt branch circuits, whether by receptacle or by direct connection, and outlets supplying other electrical equipment and underwater luminaires operating at voltages greater than the low voltage contact limit, connected to single-phase, 120- volt through 240-volt branch circuits, rated 15 or 20 amperes, whether by receptacle or by direct connection, shall be provided with ground-fault circuit interrupter protection for personnel. Any portions of the artificial lagoon designated for swimming at night shall comply with the lighting requirements in Sections 454.1.4.2.1 and 454.1.4.2.3.

454.1.12.8 Equipment rooms.

Equipment rooms shall comply with Section 454.1.5.

454.1.12.9 Treatment systems.

The design of the treatment system is the responsibility of a professional engineer licensed in Florida. Chemical disinfection of recirculated water immediately following the filtration process shall achieve a measurable residual in the surf pool water that is continuously protective of public health and shall be in compliance with Section 454.1.6.5.16. The equipment that feeds or generates the chemical shall be NSF/ANSI Standard 50 certified and subject to review and approval by the local authority. The disinfectant chemical shall be applied in accordance with the manufacturer's instructions, and must be an NSF/ANSI Standard 60-certified chemical, or a US EPA-registered microbial biocide. Any other chemical applied to the water for water quality treatment must be applied in accordance with the manufacturer's instructions and must be an NSF/ANSI Standard 60- or Standard 50-certified chemical. If remote chemical monitoring sensors are used, one (1) chemical sensor shall be installed in or directly adjacent to each designated surf area. Vacuum systems shall not be used in designated swimming area(s) while such area(s) is (are) open for swimming, and all suction outlets shall comply with the requirements of Section 514.0315, *Florida Statutes*.