

**641—15.5 (135I) Construction and reconstruction.** A swimming pool constructed or reconstructed after May 4, 2005, shall comply with the following standards. Nothing in these rules is intended to exempt swimming pools and associated structures from any applicable federal, state or local laws, rules, or ordinances. Applicable requirements may include, but are not limited to, the handicapped access and energy requirements of the state building code, the fire and life safety requirements of the state fire marshal, the rules of the department of workforce development, and the rules of the department of natural resources.

**15.5(1) Construction permit.**

*a. Permit required.* No swimming pool shall be constructed or reconstructed without the owner or a designated representative of the owner first receiving a permit from the department. Construction shall be completed within 24 months from the date the construction permit is issued unless an extension is granted in writing by the department.

*b. Permit application.* The owner of a proposed or existing facility or a designated representative of the owner shall apply for a construction permit on forms provided by the department. The application shall be submitted to the department at least 15 days prior to the start of construction of a new swimming pool or the reconstruction of an existing swimming pool.

*c. Plan submission and fee.* Three sets of plans and specifications shall be submitted with the application. A nonrefundable plan review fee for each swimming pool, leisure river, water slide, wave pool, wading pool, spray pad, zero-depth swimming pool, and multisection water recreation pool shall be remitted with the application as required in 15.12(3).

*d. Notification of completion.* The owner of a newly constructed or reconstructed swimming pool, or the owner's designated representative, shall notify the department in writing at least 15 business days prior to opening the swimming pool.

**15.5(2) Plans and specifications.**

*a. Plan certification.* Plans and specifications shall be sealed and certified in accordance with the rules of the engineering and land surveying examining board or the architectural examining board by an engineer or architect licensed to practice in Iowa. This requirement may be waived by the department if the project is the addition or replacement of a chemical feed system, including a disinfection system, or a simple replacement of a filter or pump or both.

If the requirement for engineering plans is waived, the owner of the facility assumes full responsibility for ensuring that the reconstruction complies with these rules and with any other applicable federal, state and local laws, rules and ordinances.

*b. Content of plans.* Plans and specifications submitted shall contain sufficient information to demonstrate to the department that the proposed swimming pool will meet the requirements of this chapter. The plans and specifications shall include, but may not be limited to:

(1) The name and address of the owner and the name, address, and telephone number of the architect or engineer responsible for the plans and specifications. If a swimming pool contractor applies for a construction permit, the name, address and telephone number of the swimming pool contractor shall be included.

(2) The location of the project by street address or other legal description.

(3) A site plan showing the pool in relation to buildings, streets, water and sewer service, gas service, and electrical service.

(4) Detailed scale drawings of the swimming pool and its appurtenances, including a plan view and cross sections at a scale of 3/32 inch per ft or larger. The location of inlets, overflow system components, main drains, the deck and deck drainage, the location and size of pool piping, the swimming pool ladders, stairs and deck equipment, including diving stands and boards, and fencing shall be shown.

(5) A drawing(s) showing the location, plan, and elevation of filters, pumps, chemical feeders, ventilation devices, heaters, and surge tanks; and additional drawings or schematics showing operating levels, backflow preventers, valves, piping, flow meters, pressure gauges, thermometers, the make-up water connection, and the drainage system for the disposal of filter backwash water.

(6) Plan and elevation drawings of bathhouse facilities including dressing rooms; lockers; showers, toilets and other plumbing fixtures; water supply; drain and vent systems; gas service; water heating equipment; electrical fixtures; and ventilation systems, if provided.

(7) Complete technical specifications for the construction of the swimming pool, for the swimming pool equipment and for the swimming pool appurtenances.

*c. Deviation from plans.* No deviation from the plans and specifications or conditions of approval shall be made without prior approval of the department.

**15.5(3) General design.**

*a.* Construction of fill and drain wading pools is prohibited.

*b.* Materials. Swimming pools shall be constructed of materials which are inert, stable, nontoxic, watertight, and durable.

*c.* Structural loading.

(1) Swimming pools shall be designed and constructed to withstand the anticipated structural loading. If maintenance of the structural integrity of the swimming pool requires specific operations or limits of operation, these shall be specified in the permanent operations manual required in 15.5(3) "f."

(2) Except for aboveground swimming pools, a hydrostatic relief valve or a suitable underdrain system shall be provided.

*d.* Water supply. The water supplied to a swimming pool shall be from a water supply meeting the requirements of the department of natural resources for potable water.

(1) Water supplied to a swimming pool shall be discharged to the pool system through an air gap, or a reduced-pressure principle backflow device complying with AWWA C-511-97, "Reduced-Pressure Principle Backflow-Prevention Assembly."

(2) Each hose bib at a facility shall be equipped with an atmospheric vacuum breaker or a hose connection backflow preventer.

*e.* No part of a swimming pool recirculation system may be directly connected to a sanitary sewer. An air break or an air gap shall be provided.

*f.* Operations manual. The owner shall require that a permanent manual for the operation of the facility be provided. The manual shall include, but may not be limited to:

(1) Instructions for routine operations at the swimming pool including, but not necessarily limited to:

1. Filter backwash or cleaning.
2. Maintaining the chemical supply for the chemical feed systems.
3. Vacuuming and cleaning the swimming pool.
4. Swimming pool water testing procedures, including the frequency of testing.
5. Superchlorination.
6. Controller sensor maintenance and calibration, including the recommended frequency of maintenance.

(2) For each centrifugal pump, a pump performance curve plotted on an 8½" × 11" or larger sheet.

(3) For each chemical feeder, the maximum rated output listed in weight per time or volume per time units.

(4) Basic operating and maintenance instructions for swimming pool equipment that requires cleaning, adjustment, lubrication, or parts replacement, with recommended maintenance frequencies or the parameters that would indicate a need for maintenance.

*g.* A schematic drawing of the pool recirculation system shall be posted in the swimming pool filter room or shall be in the operations manual. Clear labeling of the swimming pool piping with flow direction and water status (unfiltered, treated, backwash) may be substituted for the schematic drawing.

*h.* A permanent file containing the operations and maintenance manuals for the equipment installed at the swimming pool shall be established. The file shall include a source for parts or maintenance for the equipment at the swimming pool. The file may be located in a location other than the facility, but it shall be readily available to the facility management and maintenance staff.

**15.5(4) Decks.**

*a. Deck width.* A swimming pool shall be surrounded by a deck. The deck shall be at least 6 ft wide for a Class A swimming pool, and 4 ft wide for a Class B swimming pool, and shall extend at least 4 ft beyond the diving stands, lifeguard chairs, swimming pool slides, or any other deck equipment.

*b. Materials.* Decks shall be constructed of stable, nontoxic, durable, and impervious materials and shall be provided with a slip-resistant surface.

*c. Deck coverings.* Porous, nonfibrous deck coverings may be used, subject to department approval, provided that:

(1) The covering allows drainage so that the covering and the deck underneath it do not remain wet or retain moisture.

(2) The covering is inert and will not support bacterial growth.

(3) The covering provides a slip-resistant surface.

(4) The covering is durable and cleanable.

*d. Deck drainage.* The deck of a swimming pool shall not drain to the pool or to the pool recirculation system except as provided in 15.5(15)“c” and 15.5(16)“b.” For deck-level swimming pools (“rim flow” or “rollout” gutter), a maximum of 5 ft of deck may slope to the gutter.

*e. Deck slope.* The deck slope shall be at least 1/8 inch/ft and no more than 1/2 inch/ft to drain. The deck shall be designed and constructed so that there is no standing water on the deck during normal operation of the facility.

*f. Surface runoff.* For outdoor swimming pools, the drainage for areas outside the facility and for nondeck areas within the facility shall be designed and constructed to keep the drainage water off the deck and out of the swimming pool.

*g. Carpeting.* The installation of a floor covering of synthetic material may be used only in separate sunbathing, patio, or refreshment areas, except as permitted by 15.5(4)“c.”

*h. Hose bibs.* At least one hose bib shall be provided for flushing the deck.

*i. Rinse showers.* If users are permitted free access between the deck and an adjacent sand play area without having to pass through a bathhouse, a rinse shower area shall be installed between the deck and the sand play area. Fences, barriers and other structures shall be installed so that users must pass through the rinse shower area when going from the sand play area to the deck.

(1) Tempered water shall be provided for the rinse shower(s).

(2) The rinse shower area shall have sufficient drainage so that there is no standing water.

(3) Foot surfaces in the rinse shower area shall be impervious and slip-resistant.

**15.5(5) Recirculation.**

*a. Combined recirculation.* Except for wading pools, two or more swimming pools may share the same recirculation system. A wading pool shall have a recirculation system separate from any other wading pool or swimming pool.

(1) The recirculation flow rate for each swimming pool shall be calculated in accordance with 15.5(5)“b.” The recirculation flow rate for the system shall be at least the arithmetic sum of the recirculation flow rates of the swimming pools.

(2) The flow to each pool shall be adjustable. A flow meter shall be provided for each pool.

*b. Recirculation flow rate.* The recirculation flow rate shall provide for the treatment of one pool volume within:

(1) Four hours for a swimming pool with a volume of 30,000 gal or less.

(2) Six hours for a swimming pool with a volume of more than 30,000 gal.

(3) Two hours for a wave pool.

- (4) Four hours for a zero-depth pool.
- (5) One hour for a wading pool.
- (6) One hour for a water slide plunge pool.
- (7) Four hours for a leisure river.
- (8) Thirty minutes for a spray pad with its own filter system.
- (9) For swimming pools with skimmers, the recirculation flow rate shall be at least 30 gpm per skimmer or the recirculation flow rate defined above, whichever is greater.

The recirculation flow rate for pools not specified in 15.5(5) "b"(1) to (9) shall be determined by the department.

*c. Recirculation pump.* The recirculation pump(s) shall be listed by NSF or by another listing agency approved by the department as complying with the requirements of Standard 50 and shall comply with the following requirements:

(1) The pump(s) shall supply the recirculation flow rate required by 15.5(5) "b" at a TDH of at least that given in "1," "2," or "3" below, unless a lower TDH is shown by the designer to be appropriate. A valve for regulating the rate of flow shall be provided in the recirculation pump discharge piping.

1. 40 feet for vacuum filters; or
2. 60 feet for pressure sand filters; or
3. 70 feet for pressure diatomaceous earth filters or cartridge filters.

(2) For sand filter systems, the pump and filter system shall be designed so that each filter can be backwashed at a rate of at least 15 gpm/ft<sup>2</sup> of filter area.

(3) If a pump is located at an elevation higher than the pool water surface, it shall be self-priming or the piping shall be arranged to prevent the loss of pump prime when the pump is stopped.

(4) Where a vacuum filter is used, a vacuum limit control shall be provided on the pump suction line. The vacuum limit switch shall be set for a maximum vacuum of 18 in Hg.

(5) A compound vacuum-pressure gauge shall be installed on the pump suction line as close to the pump as practical. A vacuum gauge may be used for pumps with suction lift. A pressure gauge shall be installed on the pump discharge line as close to the pump as practical. Gauges shall be of such a size and located so that they may be easily read by the facility staff.

(6) On pressure filter systems, a hair and lint strainer shall be installed on the suction side of each recirculation pump. The hair and lint strainer basket shall be readily accessible for cleaning, changing, or inspection. A spare strainer basket shall be provided, except where the strainer basket has a volume of 15 gallons or more. This requirement may be waived for systems using vertical turbine pumps or pumps designed for solids handling.

*d. Swimming pool water heaters.*

(1) A heating coil, pipe or steam hose shall not be installed in a swimming pool.

(2) Gas-fired pool water heaters shall comply with the requirements of ANSI/AGA Z21.56-2001, ANSI/AGA Z21.56a-2004, and ANSI/AGA Z21.26b-2004. The data plate of the heater shall bear the AGA mark.

(3) Electric pool water heaters shall comply with the requirements of UL 1261 and shall bear the UL mark.

(4) A swimming pool water heater with an input of greater than 400,000 BTU/hour (117 kilowatts) shall have a water heating vessel constructed in accordance with ASME Boiler Code, Section 8. The data plate of the heater shall bear the ASME mark.

(5) A thermometer shall be installed in the piping to measure the temperature of the water returning to the pool. The thermometer shall be located so that it may be easily read by the facility staff.

(6) Combustion air shall be provided for fuel-burning water heaters as required by the state plumbing code, 641—Chapter 25, Iowa Administrative Code, or as required by local ordinance.

(7) Fuel-burning water heaters shall be vented as required by the state plumbing code, 641—Chapter 25, Iowa Administrative Code, or as required by local ordinance.

(8) Each fuel-burning water heater shall be equipped with a pressure relief valve sized for the energy capacity of the water heater.

*e. Flow meters.*

(1) Each swimming pool recirculation system shall be provided with a permanently installed flow meter to measure the recirculation flow rate.

(2) In a multiple pool system, a flow meter shall be provided for each pool.

(3) A flow meter shall be accurate within 5 percent of the actual flow rate between  $\pm 20$  percent of the recirculation flow rate specified in 15.5(5) “b” or the nominal recirculation flow rate specified by the designer.

(4) A flow meter shall be installed on a straight length of pipe with sufficient clearance from valves, elbows or other sources of turbulence to attain the accuracy required by 15.5(5) “e”(3). The flow meter shall be installed so that it may be easily read by facility staff, or a remote readout of the flow rate shall be installed where it may be easily read by the facility staff. The designer may be required to provide documentation that the installation meets the requirements of subparagraph (3).

*f. Vacuum cleaning system.*

(1) A swimming pool vacuum cleaning system capable of reaching all parts of the pool bottom shall be provided.

(2) A vacuum system may be provided which utilizes the attachment of a vacuum hose to the suction piping through a skimmer.

(3) Automatic vacuum systems may be used provided they are capable of removing debris from all parts of the swimming pool bottom.

**15.5(6) Filtration.** A filter shall be listed by NSF or by another listing agency approved by the department as complying with the requirements of Standard 50 and shall comply with the following requirements:

*a.* Pressure gauges. Each pressure filter shall have a pressure gauge on the inlet side. Gauges shall be of such a size and located so that they may be read easily by the facility staff. A differential pressure gauge that gives the difference between the inlet and outlet pressure of the filter may be used in place of a pressure gauge.

*b.* Air relief valve. An air relief valve shall be provided for each pressure filter.

*c.* Backwash water visible. Backwash water from a pressure filter shall discharge through an observable free fall, or a sight glass shall be installed in the backwash discharge line.

*d.* Indirect discharge required. Backwash water shall be discharged indirectly to a sanitary sewer or another point of discharge approved by the department of natural resources.

*e.* Rapid sand filter.

(1) The filtration rate shall not exceed 3 gpm/ft<sup>2</sup> of filter area.

(2) The backwash rate shall be at least 15 gpm/ft<sup>2</sup> of filter area.

*f.* High-rate sand filter.

(1) The filtration rate shall not exceed 15 gpm/ft<sup>2</sup> of filter area.

(2) The backwash rate shall be at least 15 gpm/ft<sup>2</sup> of filter area.

(3) If more than one filter tank is served by a pump, the designer shall demonstrate that the backwash flow rate to each filter tank meets the requirements of subparagraph (2) above, or an isolation valve shall be installed at each filter tank to permit each filter to be backwashed individually.

*g.* Vacuum sand filter.

(1) The filtration rate shall not exceed 15 gpm/ft<sup>2</sup> of filter area.

(2) The backwash rate shall be at least 15 gpm/ft<sup>2</sup> of filter area.

(3) An equalization screen shall be provided to evenly distribute the filter influent over the surface of the filter sand.

(4) Each filter system shall have an automatic air-purging cycle.

*h.* Sand filter media shall comply with the filter manufacturer's specifications.

*i.* Diatomaceous earth filter.

(1) The filtration rate shall not exceed 1.5 gpm/ft<sup>2</sup> of effective filter area except that a maximum filtration rate of 2.0 gpm/ft<sup>2</sup> may be allowed where continuous body feed is provided.

(2) Diatomaceous earth filter systems shall have piping to allow recycling of the filter effluent during precoat.

(3) Waste diatomaceous earth shall be discharged to a sanitary sewer or other point of discharge approved by the department of natural resources. The discharge may be subject to the requirements of the local wastewater utility.

*j.* Cartridge filter.

(1) The filtration rate shall not exceed 0.38 gpm/ft<sup>2</sup> of filter area.

(2) A duplicate set of cartridges shall be provided.

*k.* Other filter systems may be used if approved by the department.

#### **15.5(7) Piping.**

*a. Piping standards.* Swimming pool piping shall conform to applicable nationally recognized standards and shall be specified for use within the limitations of the manufacturer's specifications. Swimming pool piping shall comply with the applicable requirements of NSF/ANSI Standard 61, "Drinking Water System Components—Health Effects." Plastic swimming pool pipe shall comply with the requirements of NSF/ANSI Standard 14, "Plastic Piping Components and Related Materials," for potable water pipe.

*b. Pipe sizing.* Swimming pool recirculation piping shall be sized so water velocities do not exceed 6 ft/sec for suction flow and 10 ft/sec for pressure flow. Gravity piping shall be sized in accordance with recognized engineering principles.

*c. Overflow system piping.* The piping for an overflow perimeter gutter system shall be designed to convey at least 125 percent of the recirculation flow rate. The piping for a skimmer system shall be designed to convey at least 100 percent of the recirculation flow rate.

*d. Main drain piping.* If the main drains are connected to the recirculation system, the main drains and main drain piping shall be designed to convey at least 100 percent of the recirculation flow rate.

*e. Play feature circulation.* Where there are attractions, such as water slides, fountains and play features, that circulate water to the swimming pool and through the main drain and overflow systems, the main drain and overflow systems and the associated piping shall be designed to accommodate the combined flow of the recirculation system and the attractions within the requirements of paragraph "b" above and the applicable requirements of 15.5(9) and 15.5(10).

#### **15.5(8) Inlets.**

*a. Inlets required.* Wall inlets or floor inlets, or both, shall be provided for a swimming pool. The inlets shall be adequate in design, number, location, and spacing to ensure effective distribution of treated water and the maintenance of a uniform disinfectant residual throughout the swimming pool. The designer may be required to provide documentation of adequate distribution. The department may require dye testing of a pool.

*b. Wall inlet spacing.* Where wall inlets are used, they shall be no more than 20 ft apart around the perimeter of the area with an inlet within 5 ft of each corner of the swimming pool.

(1) There shall be at least one inlet at each stairway or ramp leading into a swimming pool.

(2) Except for wading pools, wall inlets shall be located at least 6 inches below the design water surface.

(3) Wall inlets in pools with skimmers shall be directional flow-type inlets.

(4) Each inlet shall have a directional flow inlet fitting with an opening of 1-inch diameter or less, or a fixed fitting with openings ½ inch wide or less.

*c. Floor inlets.* Floor inlets shall be provided for the areas of a zero-depth swimming pool or wave pool where the water is less than 2 ft deep and may be used throughout a swimming pool in lieu of or in combination with wall inlets. Floor inlets shall be no more than 20 ft apart in the area where they are used. There shall be floor inlets within 15 ft of each wall of the swimming pool in the area where they are used. Floor inlets shall be flush with the pool floor.

**15.5(9) Overflow system.**

*a. Skimmers.* Recessed automatic surface skimmers shall be listed by NSF or by another listing agency approved by the department as complying with the requirements of Standard 50 except that an equalizer is not required for a skimmer installed in a swimming pool equipped with an automatic water level maintenance device.

(1) Skimmers may be used for swimming pools which are no more than 30 ft wide.

(2) A swimming pool shall have at least one skimmer for each 500 ft<sup>2</sup> of surface area or fraction thereof.

(3) Each skimmer shall be designed for a flow-through rate of at least 30 gpm or 3.8 gpm per lineal inch of weir, whichever is greater. The combined flow capacity of the skimmers in a swimming pool shall not be less than the total recirculation rate.

(4) Each skimmer shall have a weir that adjusts automatically to variations in water level of at least 4 inches.

(5) Each skimmer shall be equipped with a device to control flow through the skimmer.

(6) If a swimming pool is not equipped with an automatic water level maintenance device, each skimmer that is a suction outlet shall have an operational equalizer. The equalizer opening in the swimming pool shall be covered with a fitting listed by a listing agency approved by the department as meeting the requirements of the ASME standard.

(7) A skimmer pool shall have an approved handhold around the perimeter of the pool. The handhold shall be 9 inches or less above the minimum skimmer operation level.

*b. Perimeter overflow gutters.*

(1) A perimeter overflow gutter system is required for a swimming pool greater than 30 ft in width, except for a wave pool or a wading pool.

(2) The overflow weir shall extend completely around the swimming pool, except at stairs, ramps, or water slide flumes.

(3) The gutter shall be designed to provide a handhold and to prevent entrapment.

(4) Drop boxes, converters, return piping, or flumes used to convey water from the gutter shall be designed to convey 125 percent of the recirculation flow rate. The flow capacity of the gutter and the associated plumbing shall be sufficient to prevent backflow of skimmed water into the swimming pool.

(5) Gutter overflow systems shall be designed with an effective surge capacity within the gutter system and surge tank of not less than 1 gal/ft<sup>2</sup> of swimming pool surface area. In-pool surge may be permitted for prefabricated gutter systems, subject to the approval of the department.

*c. Alternative overflow systems.* Overflow systems not meeting all of the requirements in 15.5(9)“a” or 15.5(9)“b” may be used if the designer can provide documentation that the alternative overflow system will skim the pool water surface at least as effectively as a skimmer system.

**15.5(10) Main drain system.**

*a. Main drains.* Each swimming pool shall have a convenient means of draining the water from the pool for winterization and service.

*b. Main drains for recirculation.* If the main drain system is connected to the recirculation system, there shall be two or more main drains or a single main drain that is unblockable.

(1) Two main drains shall be at least 3 ft apart on center. If three or more main drains are installed, the distance between the drains farthest apart shall be at least 3 ft on center.

(2) Each main drain and its associated piping in a swimming pool shall be designed for the same flow rate. Multiple drains shall be plumbed in parallel, and the piping system shall be designed to equalize flow among the main drains.

(3) If one or two main drains are installed, each main drain cover/grate, sump and the associated piping shall be designed for at least 100 percent of the recirculation flow rate specified by 15.5(5) "b." If three or more main drains are installed, the combined flow rating of the cover/grates, the sumps and the associated piping shall be at least 200 percent of the recirculation flow rate. If water for water slides, fountains and play features is circulated through the main drain and overflow systems, the main drains shall be designed for the combined feature and recirculation flow.

(4) Manufactured main drain sumps shall be listed by a listing agency acceptable to the department for compliance with the ASME standard. Field fabricated sumps shall be designed in accordance with the ASME standard and shall be certified by an engineer licensed in Iowa.

(5) There shall be a control valve to adjust the flow between the main drain and the overflow system.

(6) Main drain covers. Each main drain shall be covered with a cover/grate that complies with the ASME standard.

1. The flow rating for each cover/grate shall comply with 15.5(10) "b"(3).

2. The mark of a listing agency acceptable to the department shall be permanently marked on the top surface of each manufactured cover/grate.

3. Field fabricated cover/grates shall be certified for compliance to the ASME standard by a professional engineer licensed in Iowa. A certificate of compliance shall be provided to the swimming pool owner and to the department.

4. The main drain cover/grate shall be designed to be securely fastened to the pool so that the cover/grate is not removable without tools.

*c. Feature outlets.* Where fully submerged outlets for play or decorative features or water slides are in the swimming pool, the outlets shall be designed in accordance with 15.5(10) "b."

**15.5(11) Disinfection.**

*a.* Each swimming pool recirculation system approved for construction after May 4, 2005, shall be equipped with an automatic controller for maintenance of the disinfectant level in the swimming pool water. The control output of the controller to the disinfectant feed system shall be based on the continuous measurement of the ORP of the water in the swimming pool recirculation system.

*b.* No disinfection system designed to use di-chlor or tri-chlor shall be installed for an indoor swimming pool after May 4, 2005.

*c.* Disinfection system capacity. A continuous feed disinfectant system shall be provided. The disinfectant feed system shall have the capacity to deliver at least 10 mg/L chlorine or bromine equivalent based on the recirculation flow rate required in 15.5(5) "b" for an outdoor swimming pool and 4 mg/L chlorine or bromine equivalent based on the recirculation flow rate required in 15.5(5) "b" for an indoor swimming pool.

*d.* Feeder listing. A disinfectant feeder (except chlorine gas feed equipment) shall be listed by NSF or by another listing agency approved by the department as complying with the requirements of Standard 50.

*e.* Chemical feed stop. The disinfectant system shall be installed so that chemical feed is automatically and positively stopped when the recirculation flow is interrupted.

*f.* Gas chlorinators. Gas chlorinator facilities shall comply with applicable federal, state and local laws, rules and ordinances and the requirements below.

(1) The chlorine supply and gas feeding equipment shall be housed in a separate room or building.

1. No entrance or openable window to the chlorine room shall be to the inside of a building used other than for the storage of chlorine.

2. The chlorine room shall be provided with an exhaust system which takes its suction not more than 8 inches from the floor and discharges out of doors in a direction to minimize the exposure of



swimming pool patrons to chlorine gas. The exhaust system shall be capable of producing 15 air changes per hour in the chlorine room.

3. An automatic chlorine leak detector and alarm system shall be provided in the chlorine room. The alarm system shall provide visual and audible alarm signals outside the chlorine room.

4. An air intake shall be provided near the ceiling of the chlorine room. The air intake and the exhaust system outlet shall be at least 4 ft apart.

5. The room shall have a window at least 12 inches square. The window glass shall be shatterproof.

6. The door of the chlorine enclosure shall open outward. The inside of the door shall be provided with panic hardware.

7. The chlorine room shall have adequate lighting.

8. Electrical switches for the exhaust system and for the lighting shall be outside the chlorine room and adjacent to the door, or in an adjoining room.

9. An anchoring system shall be provided so that full and empty chlorine cylinders can be individually secured.

10. Scales shall be provided for weighing the cylinders that are in use.

(2) A chlorine enclosure that is 30 inches deep or less and 72 inches wide or less and that is installed out of doors shall comply with the above requirements except:

1. An automatic chlorine leak detector is not required.

2. The enclosure shall have a window of at least 48 in<sup>2</sup>.

3. The light and exhaust fan may be activated by opening the door rather than by a separate switch.

(3) The chlorinator shall be designed to prevent the backflow of water into the chlorine cylinder.

g. Solution feed. Where a metering pump is used to feed a solution of disinfectant, the disinfectant solution container shall have a capacity of at least one day's supply at the rate specified in 15.5(11) "c," except that when the system is designed to feed directly from a 55-gal shipping container, a larger solution container is not required.

NOTE: Secondary containment must be provided when a tank larger than 55 gallons is installed for the storage of sodium hypochlorite.

h. Erosion disinfectant feeders. The storage capacity of an erosion feeder shall be at least one day's supply of disinfectant at the rate specified in 15.5(11) "c."

i. Test equipment. Test equipment complying with the following requirements shall be provided.

(1) The test equipment shall provide for the direct measurement of free chlorine and combined chlorine from 0 to 10 ppm in increments of 0.2 ppm or less over the full range, or total bromine from 0 to 20 ppm in increments of 0.5 ppm over the full range.

(2) The test equipment shall provide for the measurement of swimming pool water pH from 7.0 to 8.0 with at least five increments in that range.

(3) The test equipment shall provide for the measurement of total alkalinity and calcium hardness with increments of 10 ppm or less.

(4) The test equipment shall provide for the measurement of cyanuric acid from 30 to 100 ppm. This requirement may be waived for a facility that does not use cyanuric acid or a stabilized chlorine disinfectant.

### **15.5(12) pH control.**

a. *pH controller required.* Each swimming pool recirculation system approved for construction after May 4, 2005, shall be equipped with a controller that senses the pH of the swimming pool water, and that automatically controls the operation of a metering pump for the addition of a pH control chemical or the operation of a carbon dioxide (CO<sub>2</sub>) gas feed system.

*b. pH chemical feed required.* Each swimming pool shall have a metering pump for the addition of a pH control chemical to the pool recirculation system, or a carbon dioxide (CO<sub>2</sub>) gas feed system.

*c. Metering pump listing.* A metering pump shall be listed by NSF or by another listing agency approved by the department as meeting the requirements of Standard 50.

*d. CO<sub>2</sub> cylinder anchors.* Where carbon dioxide (CO<sub>2</sub>) is used as a method of pH control, an anchoring system shall be provided to individually secure full and empty CO<sub>2</sub> cylinders.

*e. Chemical feed stop.* The pH control system shall be installed so that chemical feed is automatically and positively stopped when the recirculation flow is interrupted.

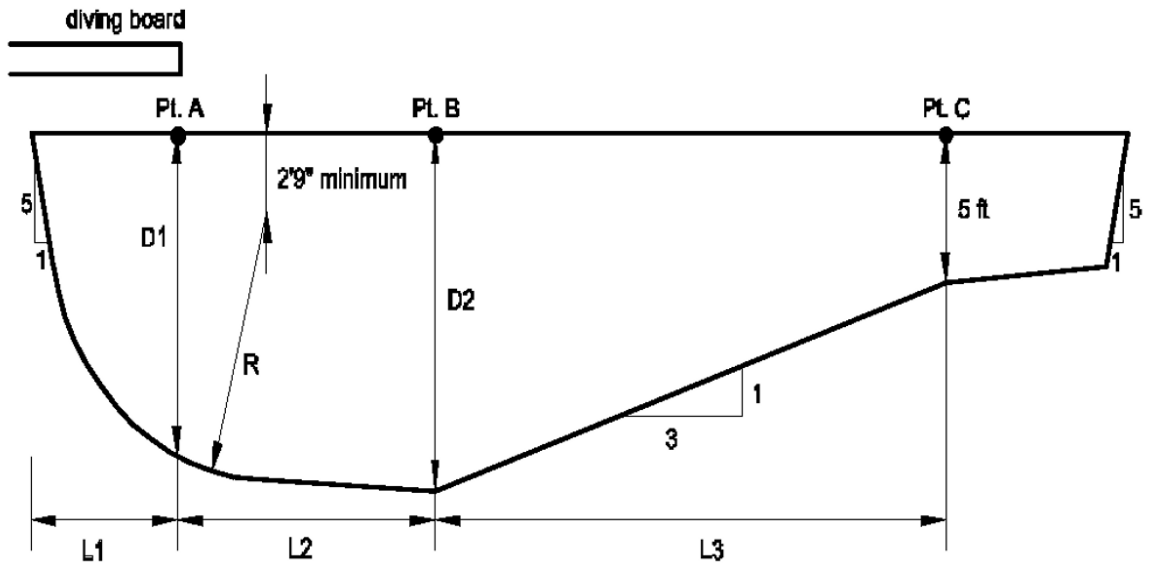
**15.5(13) Safety.**

*a. Diving areas.*

(1) Diving boards are permitted only if the diving area dimensions conform to the minimum requirements shown in Figure 3, Tables 4 and 5. Alternative diving well configurations may be used, subject to the approval of the department, but the boundaries of the diving well shall be outside the boundaries prescribed in these rules. The distances specified in Tables 4 and 5 shall be measured from the top center of the leading edge of the diving board. The reference water level shall be the midpoint of the skimmer opening for a skimmer pool or a stainless steel gutter system with surge weirs. The reference water level for a gutter pool shall be the top of the gutter weir.

(2) Where diving boards are specified that have been advertised or promoted to be “competition” diving boards, the diving area shall comply with the standards of the National Collegiate Athletic Association (NCAA) or the National Federation of State High School Associations (NFSHSA).

Figure 3



R minimum = Pool depth minus Vertical wall depth from the water line minus 3 inches.

Table 4

Diving Board Height Above Water	Maximum Board Length	Minimum Dimensions					Minimum Width of Pool		
		D1	D2	L1	L2	L3	Pt A	Pt B	Pt C
Deck level to 2/3 meter	10 ft	7 ft	8.5 ft	2.5 ft	8 ft	10.5 ft	16 ft	18 ft	18 ft
Greater than 2/3 meter to 3/4 meter	12 ft	7.5 ft	9 ft	3 ft	9 ft	12 ft	18 ft	20 ft	20 ft
Greater than 3/4 meter to 1 meter	16 ft	8.5 ft	10 ft	4 ft	10 ft	15 ft	20 ft	22 ft	22 ft
Greater than 1 meter to 3 meters	16 ft	11 ft	12 ft	6 ft	10.5 ft	21 ft	22 ft	24 ft	24 ft

Table 5

Diving Board Height Above Water	To Pool Side	To 1-Meter Board	To 3-Meter Board
Deck level to 1 meter	10 ft	8 ft	10 ft
Greater than 1 meter	11 ft	10 ft	10 ft

(3) There shall be a completely unobstructed clear distance of 13 ft above the diving board measured from the center of the front end of the board. This area shall extend at least 8 ft behind, 8 ft to each side, and 16 ft beyond the end of the diving board.

(4) Diving boards and platforms over 3 meters high are prohibited except where approved by the department.

(5) Diving boards and platforms shall have slip-resistant surfaces.

(6) Diving board supports, ladders, and guardrails.

1. Supports, platforms, and steps for diving boards shall be of substantial construction and of sufficient structural strength to safely carry the maximum anticipated loads.

2. Ladders, steps, supports, handrails and guardrails shall be of corrosion-resistant materials or shall be provided with a corrosion-resistant coating. They shall be designed to have no exposed sharp edges. Ladder steps shall have slip-resistant surfaces.

3. Handrails shall be provided at steps and ladders leading to diving boards and diving platforms. Guardrails shall be provided for diving boards and platforms which are more than 1 meter above the water. Guardrails for diving boards and platforms shall be at least 36 inches high and shall have at least one horizontal mid-bar and shall extend to the edge of the water.

*b.* Starting blocks and starting block installation shall meet the requirements of the competition governing body (National Collegiate Athletic Association, USA Swimming, or National Federation of State High School Associations).

*c.* Stairs, ladders, and recessed steps.

(1) Ladders or recessed steps shall be provided in the deep portion of a swimming pool and in the shallow portion if the vertical distance from the bottom of the swimming pool to the deck is more than 2 ft. Stairs or ramps may be used instead of ladders or recessed steps at the shallow end of the swimming pool.

(2) If a swimming pool is over 30 ft wide, recessed steps, ladders, ramps, or stairs shall be installed on each side. If a stairway centered on the shallow end wall of the swimming pool is within 30 ft of each side of the swimming pool, that end of the swimming pool shall be considered in compliance with this subrule.

(3) The foot contact surfaces of stairs, ramps, ladder rungs, and recessed steps shall be slip-resistant.

(4) Ladders.

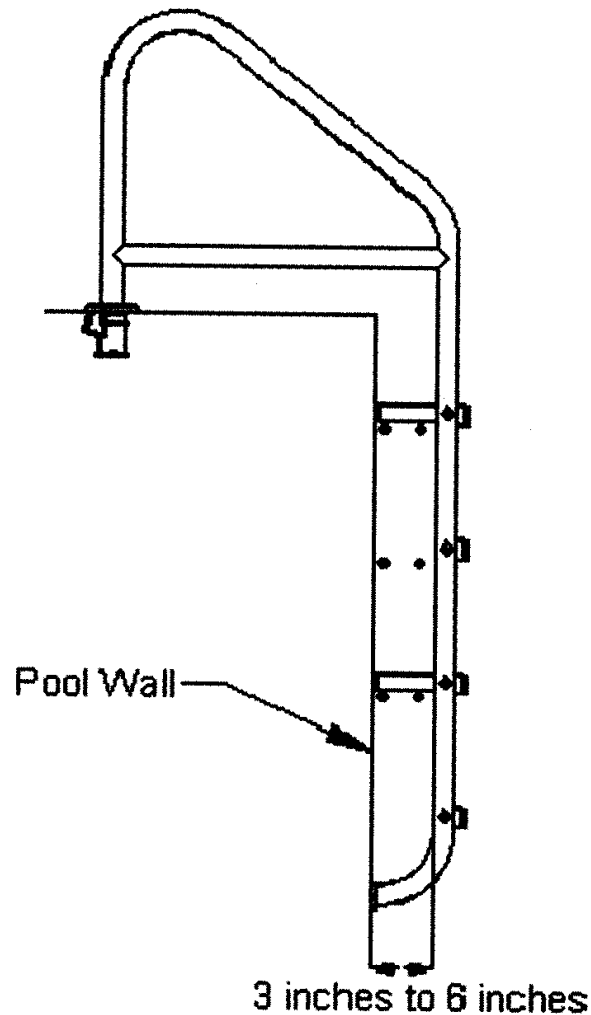
1. Ladders shall have a handrail on each side which extends from below the water surface to the top surface of the deck.

2. Ladders, treads, or supports shall be of a color contrasting with the swimming pool walls; however, stainless steel ladders may be used with stainless steel wall pools.

3. A ladder shall have a tread width of at least 16 inches and a uniform rise of 12 inches or less.

4. The distance between the swimming pool wall and the vertical rail of a ladder shall be no greater than 6 inches and no less than 3 inches. The lower end of each ladder rail shall be securely covered with a smooth nonmetallic cap. The lower end of each ladder rail shall be within 1 inch of the swimming pool wall.

Figure 4



(5) Recessed steps.

1. Recessed steps shall have a tread depth of at least 5 inches, a tread width of at least 12 inches, and a uniform rise of no more than 12 inches.
2. Each set of recessed steps shall be equipped with a securely anchored deck-level grab rail on each side.
3. Recessed steps shall drain to the pool.

(6) Stairs.

1. Stairs shall have a uniform tread depth of at least 12 inches and a uniform rise of no more than 10 inches. The area of each tread shall be at least 240 in<sup>2</sup>.
2. Stairs shall be provided with at least one handrail for each 12 ft in width. Handrails shall be between 34 inches and 38 inches high, measured vertically from the line defined by the front edge of the steps.
3. A stripe at least 1 inch wide of a color contrasting with the step surface and with the swimming pool floor shall be marked at the top front edge of each tread. The stripe shall be slip-resistant.

## (7) Handrails and grab rails.

1. Ladders, handrails, and grab rails shall be designed to be securely anchored so that tools are required for their removal.
2. Ladders, handrails, and grab rails shall be constructed of corrosion-resistant materials or provided with corrosion-resistant coatings. They shall have no exposed sharp edges.

*d.* Floor slope. The bottom of the swimming pool shall slope toward the main drain(s). The slope of the swimming pool bottom where the water is less than 5 ft deep shall not exceed 1 ft vertical in 12 ft horizontal.

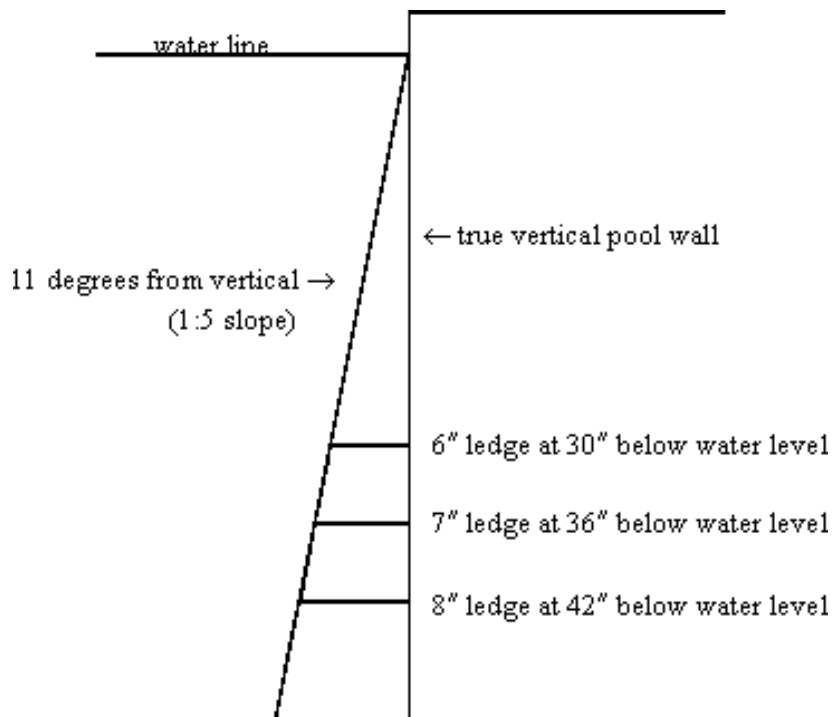
(1) Subject to the approval of the department, a swimming pool may be designed to have the change in slope (from 1:12 or less to a steeper slope) at a point where the water depth is less than 5 ft. The marking requirements of 15.5(13) "f"(3) and 15.5(13) "f"(4) shall apply and, if possible, depth markers which are clearly visible to persons in the pool shall be provided.

(2) For a wave pool, steeper slopes may be approved by the department if they are required for the proper function of the wave pool.

*e.* Walls.

(1) Walls in the deep section of a swimming pool shall be vertical to a water depth of at least 2.8 ft. If a transition radius is provided, it shall comply with Figure 3.

Figure 5



(2) The term "vertical" is interpreted to permit slopes not greater than 1 ft horizontal for each 5 ft of depth of side wall ( $11^\circ$  from vertical).

(3) Ledges, when provided, shall fall within an 11° line from vertical, starting at the water surface (Figure 5). A ledge shall be no less than 4 inches wide and no more than 8 inches wide. A ledge shall have a slip-resistant surface.

*f.* Surface finish and markings.

(1) The swimming pool floor shall have a slip-resistant finish.

(2) The bottom and sides of the swimming pool shall be white or a light color. This does not prohibit painting or marking racing lines or turn targets.

(3) Where the slope of a swimming pool bottom in a shallow area changes from 1:12 or less to a slope greater than 1:12, or at the 5-ft depth area, the pool bottom and sides shall be marked with a stripe at least 4 inches wide in a color contrasting with the pool bottom and sides. The stripe shall be on the shallow side of the slope change or 5-ft depth area within 6 inches of the slope change or 5-ft depth area. Depending on the pool configuration, more than one stripe may be required.

(4) A float line with floats no more than 5 ft apart shall be installed on the shallow side of the stripe required in 15.5(13) "f"(3) within 12 inches of the stripe.

(5) The landing area for a swimming pool slide or a water slide which does not terminate in a separate plunge pool shall be delineated by a float line or as approved by the department.

(6) Depth markers.

1. Depth markers shall be painted or otherwise marked on the deck within 3 ft of the edge of a swimming pool. The depth of a wave pool shall also be marked on the side walls of the wave pool above the maximum static water level where the static water depth is 3 ft or more and on the deep-end wall of the wave pool.

2. Depth markers shall be located 25 ft apart or less, center to center, around the full perimeter of a swimming pool.

EXCEPTIONS: Depth markers are not required at the zero-depth end of a wading pool, wave pool, or a zero-depth swimming pool. Depth markers are not required on the deck of a plunge pool on the flume discharge end or on the exit end if stairs are used for exit.

3. The maximum depth of a swimming pool shall be marked on both sides of a swimming pool at the main drain.

4. The water depth of a swimming pool shall be marked at both ends of a float line required by 15.5(13) "f"(4).

5. In shallow water, the depth shall be marked at 1-ft depth intervals starting at one of the points specified in "3" and "4" above, if the 1-ft depth interval is less than 25 ft. The zero depth shall be used as the starting point for a zero-depth swimming pool.

6. In deep water, the words "Deep Water" may be used in place of numerals except as required in "3" above.

7. "No Diving" or equivalent wording or graphics shall be marked on the swimming pool deck within 3 ft of the edge of the swimming pool where the water is shallow and at other pool areas determined by management. The markers shall be 25 ft apart or less, center to center, around the perimeter of the area. This marking is not required at the zero-depth end of a wave pool or of a zero-depth swimming pool. "No Diving" or equivalent wording or graphics shall be marked on the deck of a leisure river in the areas where users will be permitted. The "No Diving" markers shall be within 3 ft of the edge of the leisure river at intervals not to exceed 25 ft on center.

8. Letter, number and graphic markers shall be slip-resistant, of a contrasting color from the deck and at least 4 inches in height.

9. In lieu of the requirements of "1" through "8" above, the maximum depth of a wading pool may be posted in lettering a minimum of 3 inches high at each entrance to the wading pool area and at least at one conspicuous location inside the wading pool enclosure. "No Diving" markers are not required at a wading pool.

10. The depth of a leisure river shall be posted at the entrance(s) to the leisure river in characters at least 3 inches high. The depth of the leisure river shall be marked on the side wall of the leisure river above the static water level at intervals not to exceed 50 ft on center. The depth of the leisure river shall

be marked on the deck in the areas where users will be permitted. The depth markers shall be within 3 ft of the edge of the leisure river at intervals not to exceed 25 ft on center.

g. Lifeguard chairs. One elevated lifeguard chair or station shall be provided for a swimming pool with a water surface area of 2000 to 4000 ft<sup>2</sup> inclusive; two chairs shall be provided if the area is 4001 to 6000 ft<sup>2</sup>; three chairs shall be provided if the area is 6001 ft<sup>2</sup> or more. A swimming pool is not required to have more than three lifeguard chairs or stations. This requirement does not apply to wave pools, leisure rivers or wading pools.

h. Emergency equipment and facilities.

(1) If a swimming pool facility employs lifeguards, whether required by rule or not, the lifeguards shall be provided with the minimum equipment required by their training including, but not necessarily limited to, rescue tubes and personal CPR masks.

(2) A minimum of one unit of lifesaving equipment shall be provided for each 1500 ft<sup>2</sup> of water surface area or fraction thereof. The area of a swimming pool where the water is 2 ft deep or less may be subtracted from the total area for this requirement. A swimming pool is not required to have more than ten units of lifesaving equipment.

(3) A unit of lifesaving equipment consists of at least one of the following:

1. A U.S. Coast Guard-recognized ring buoy fitted with a ¼-inch diameter line with a length at least one-half the width of the pool, but no more than 60 ft; or

2. A life pole with a “shepherd’s crook,” having blunted ends with a minimum length of 8 ft; or

3. A rescue buoy which is made of a hard, buoyant plastic and is provided with molded handgrips along each side, a shoulder strap, and a towing rope between 4 and 6 ft long; or

4. A rescue tube made of a soft, strong foam material 3 inches by 6 inches by 40 inches with a molded strap providing a ring at one end and a hook at the other. Attached to the ring end shall be a 6-ft-long towline with a shoulder strap; or

5. Any other piece of rescue equipment approved by the department.

Rescue equipment identified in 15.5(13) “h”(3)“3” and 15.5(13) “h”(3)“4” above shall be used only at swimming pools where lifeguards are employed.

(4) Whenever lifeguard chairs are provided, each chair shall be equipped with at least one unit of lifesaving equipment.

(5) A standard spine board with straps and head immobilizer shall be provided at each swimming pool where lifeguards are required by rule.

i. Pool enclosures.

(1) Except for a fill and drain wading pool, a circulated wading pool that is drained when not in use, or a spray pad, a swimming pool shall be enclosed by a fence, wall, building, or combination thereof not less than 4 ft high. The enclosure shall be constructed of durable materials.

(2) A fence, wall, or other means of enclosure shall have no openings that would allow the passage of a 4-inch sphere, and shall not be easily climbable by toddlers. The distance between the ground and the top of the lowest horizontal support accessible from outside the facility, or between the two lowest horizontal supports accessible from outside the facility, shall be at least 45 inches. A horizontal support is accessible if it is on the exterior of the fence relative to the swimming pool, or if the space between the vertical members of a fence is greater than 1¼ inches.

(3) Gates and doors shall be installed in the enclosure for general access, maintenance and emergency access. At least one 36-inch-wide gate or door shall be installed for emergency access. When closed, gates and doors shall comply with the requirements of 15.5(13) “i”(1) and (2). Gates and doors shall be lockable. Except where lifeguard or structured program supervision is provided whenever the swimming pool is open, gates and doors shall be self-closing and self-latching.

(4) If a wading pool is within 50 ft of a swimming pool, the wading pool shall have a barrier at least 36 inches high separating it from the swimming pool. A barrier installed after May 4, 2005, shall



have no openings that would allow the passage of a 4-inch sphere and shall not be easily climbable by toddlers. The barrier shall have at least one 36-inch-wide gate or door. Gates and doors shall be lockable. Except where lifeguard supervision is provided, gates and doors shall be self-closing and self-latching.

The department may approve alternate management of the area between the wading pool and swimming pool at facilities where lifeguards are provided whenever the pools are open. The alternate management plan shall be in writing and shall be at the facility when the pools are open.

(5) An indoor swimming pool shall be enclosed by a barrier at least 3 ft high if there are sleeping rooms, hallways, apartments, condominiums, or permanent recreation areas which are used by children and which open directly into the swimming pool area. No opening in the barrier shall permit the passage of a 4-inch sphere. The barrier shall not be easily climbable by toddlers. There shall be at least one 36-inch-wide gate or door through the barrier. Gates and doors shall be lockable. Except where lifeguard supervision is provided whenever the pool is open, gates and doors shall be self-closing and self-latching.

*j.* Electrical. Construction or reconstruction shall meet the requirements in Section 680 of the National Electrical Code, 70-05, as published by the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, and the following requirements:

(1) Each electrical outlet in the deck, shower and dressing rooms and the pool water treatment equipment areas shall be equipped with a properly installed ground fault circuit interrupter (GFCI) at the outlet or at the breaker serving the outlet. Electrical outlets energized through an ORP/pH controller are not required to have a separate GFCI if the controller is equipped with a GFCI or is energized through a GFCI breaker.

(2) An underwater light circuit shall be equipped with a GFCI unless the underwater light(s) operates at 15 volts or less.

*k.* Lighting. Artificial lighting shall be provided at indoor swimming pools and at outdoor swimming pools which are to be used after sunset in accordance with the following:

(1) Underwater lighting of at least 60 lamp lumens/ft<sup>2</sup> or 0.5 watts/ft<sup>2</sup> of water surface area, located to provide illumination of the entire swimming pool bottom, and area lighting of at least 10 lumens/ft<sup>2</sup> or 0.6 watts/ft<sup>2</sup> of deck area.

(2) If underwater lights are not provided, overhead lighting of at least 30 lumens/ft<sup>2</sup> or 2.0 watts/ft<sup>2</sup> of swimming pool water surface area shall be provided.

*l.* Swimming pool slides. Swimming pool slides shall meet the requirements of the January 1, 2004, product standard of the United States Consumer Product Safety Commission (CFR Title 16, Part 1207). Swimming pool slides shall be installed in accordance with the manufacturer's recommendations.

**15.5(14) Wading pools.** Wading pools shall comply with the applicable provisions of 15.5(1) to 15.5(13), except as modified below.

*a.* A wading pool shall have at least 4 ft of deck.

*b.* Overflow system.

(1) Intermittent fixed weir overflow structures, including gutters, overflow fixtures, and drains at zero depth may be used. They shall have a hydraulic capacity of at least 125 percent of the recirculation flow rate. The designer shall be responsible for demonstrating that the overflow system will provide adequate skimming.

(2) If skimmers are used, there shall be at least one skimmer for every 500 ft<sup>2</sup> of water surface area or fraction thereof.

1. The recirculation flow rate shall be at least 3.8 gpm per lineal inch of skimmer weir or as required in 15.5(5) "b," whichever is greater.

2. The skimmer(s) suction line may be connected to the main drain line in lieu of an equalizer.

3. A skimmer(s) may be used in combination with overflow drains in a zero-depth wading pool.

c. *Inlet system.* Inlets shall be designed to uniformly distribute treated water throughout the wading pool. Wall and floor inlets or other means may be used, alone or in combination. The designer shall be responsible for demonstrating that the inlet system will provide adequate distribution of the treated water.

**15.5(15) *Wave pools.*** Wave pools shall comply with the applicable provisions of 15.5(1) to 15.5(13), except as modified below.

a. *Overflow not required.* Perimeter overflow gutters and skimmers are not required on the deep-end wall where the wave generation equipment is located.

b. *Overflow drain at zero depth.* There shall be an overflow drain or weir across the full width of the zero-depth end of the wave pool. Full width is interpreted to allow construction joints at each end of the drain. The combined length of the joints shall be no more than 10 percent of the width of the end of the pool.

The drain shall be covered with a grate designed to prevent entrapment. The grate shall be designed so that it is securely fastened to the pool floor and cannot be removed without a tool or tools.

c. *Deck above zero depth.* The deck above the overflow drain at the zero-depth end of the pool may slope to the overflow drain for a distance no greater than 15 ft. The deck slope shall be no greater than 1 ft vertical in 12 ft horizontal.

d. *Overflow gutter or fittings.* There shall be a perimeter overflow gutter or overflow fittings along both sides of the wave pool where the water is 3 ft deep or more.

(1) If a perimeter overflow gutter is used, it shall be designed to prevent entrapment during wave action. Overflow grates shall be securely fastened so they will not be dislodged by wave action.

(2) Overflow fittings need not be continuous, but they shall be spaced no more than 10 ft apart.

e. *Overflow capacity.* The combined hydraulic capacity of the overflow drain at zero depth and the gutter or overflow outlets shall be at least 125 percent of the recirculation flow rate.

f. *Main drains.* The main drain system shall comply with the requirements of 15.5(10).

g. *Wave generator openings.* Openings or connections between the wave pool and the wave generation equipment shall be designed to prevent entrapment of users.

h. *Side barrier.* There shall be a continuous barrier along the full length of each side of a wave pool. The barrier shall be at least 42 inches high and installed no more than 3 ft from the side of the wave pool.

i. *Emergency switches.* Emergency switches which will stop the wave action shall be provided in at least four locations on the deck of the wave pool. Switch locations shall be marked by signs or contrasting bright colors.

j. *Float line.* A wave pool shall be equipped with a float line with floats spaced no more than 5 ft apart. The float line shall be located at least 6 ft from the deep-end wall. Users shall not be permitted between the float line and the deep-end wall.

**15.5(16) *Zero-depth swimming pools.*** Zero-depth swimming pools shall comply with the applicable provisions of 15.5(1) to 15.5(13), except as modified below.

a. *Overflow drain at zero depth.* There shall be an overflow drain or weir across the full width of the zero-depth end of the swimming pool. Full width is interpreted to allow construction joints at each end of the drain. The combined length of the joints shall be no more than 10 percent of the width of the end of the pool.

(1) The drain shall be covered with a grate designed to prevent entrapment. The grate shall be designed so that it is not removable without a tool.

(2) The drain and its associated piping shall be designed to convey at least 50 percent of the recirculation flow rate.

b. *Deck above zero depth.* The deck above the overflow drain at the zero-depth end of the pool may slope to the overflow drain for a distance no greater than 15 ft. The deck slope shall be no greater than 1 ft vertical in 12 ft horizontal.

*c. Perimeter overflow gutter.* If a perimeter overflow gutter is provided, the gutter may be interrupted in the area where the water is less than 2 ft deep provided that:

- (1) The length of the perimeter overflow gutter and overflow drain shall be at least 60 percent of the total pool perimeter.
- (2) The hydraulic capacity of the perimeter overflow gutter system combined with the overflow drain shall be at least 125 percent of the recirculation flow rate.

*d. Skimmers.* Recessed automatic surface skimmers may be used with the overflow drain at zero depth in accordance with 15.5(9)“a.” The hydraulic capacity of the skimmer/drain system shall be at least 125 percent of the recirculation flow rate.

**15.5(17) Water slides.** Water slides shall comply with the applicable provisions of 15.5(1) to 15.5(13) and the following:

*a. Flume construction.* A water slide flume shall comply with the following:

- (1) The flume shall be perpendicular to the plunge or swimming pool wall for at least 10 ft from the flume end.
- (2) The flume shall be sloped no more than 1 ft vertical in 10 ft horizontal for at least 10 ft before the end of the flume.
- (3) The flume shall terminate between 6 inches below and 2 inches above the design water level in the plunge pool or swimming pool.
- (4) There shall be at least 5 ft between the side of the plunge pool or swimming pool and the side of the flume. Adjacent flumes shall be at least 10 ft apart on center.
- (5) The inside surface of a flume shall be smooth and continuous.
- (6) The flume shall be designed to ensure that users cannot be thrown out of the flume and to minimize user collisions with the sides of the flume.
- (7) The flume shall have no sharp edges within reach of a user while the user is in the proper riding position.
- (8) The flume path shall be designed to prevent users from becoming airborne while in the ride.

*b. Water slide landing areas.* The landing area for a water slide flume shall comply with the following:

- (1) The water depth shall be at least 3 ft and no more than 4 ft at the end of the flume and for at least 15 ft beyond the end of the flume.
- (2) The landing area floor may slope up to a minimum of 2 ft water depth subject to (1) above. The slope shall be no greater than 1 ft vertical in 12 ft horizontal.
- (3) There shall be at least 20 ft between the end of the flume and any barrier or steps.
- (4) If the water slide flume ends in a swimming pool, the landing area shall be divided from the rest of the swimming pool by a float line or as approved by the department.

*c. Speed slides.* A speed slide shall provide for the safe deceleration of the user. A run-out system or a special plunge pool entry system shall control the body position of the user relative to the slide to provide for a safe exit from the ride.

*d. Decks.* The deck around a water slide plunge pool shall be at least 4 ft wide, except on the side where the flume enters the pool. A walkway which is at least 4 ft wide and meets the requirements of a deck shall be provided between the plunge pool and the slide steps.

*e. Alternate overflow systems.* Intermittent fixed weir overflow structures may be used for a separate plunge pool if:

- (1) Floor inlets are provided according to the requirements of 15.5(8)“c.”
- (2) The hydraulic capacity of the combined overflow structures and the appurtenant piping is at least 125 percent of the recirculation flow rate. The department may require more hydraulic capacity based on the specific design of the plunge pool system.

*f. Pump reservoir.* If a pump reservoir or surge tank is provided, it shall have a capacity of at least one minute of the combined recirculation and flume flow. Openings between the plunge pool and the pump reservoir or surge tank shall be designed and constructed in accordance with 15.5(10) “a” and “b.”

*g. Swimming pool water level.* If the water slide flume ends in a swimming pool, the water level shall not be lowered more than 1 inch when the flume pump(s) is operating.

*h. Suction outlets.* If a fully submerged suction outlet is in a plunge pool or in a swimming pool, it shall be located away from normal water slide user traffic areas. The suction outlet system shall be designed in accordance with 15.5(10) “b.”

*i. Outlet covers.* Rescinded IAB 6/3/09, effective 7/8/09.

*j. Water slide support structure.* The support structure for a water slide and for any access stairs or ramps shall be designed and constructed to withstand the anticipated structural loading, both static and dynamic, including wind forces.

*k. Stairs.* A stairway providing access to the top of a water slide shall be at least 2 ft wide. Stair surfaces shall be slip-resistant and easily cleanable. The stairway shall comply with the applicable requirements of state and local building codes and Occupational Safety and Health Administration requirements.

*l. Alternate water slide designs.* Water slides differing substantially from the standards in this subrule may be approved if the designer provides sufficient information to demonstrate to the department that the slide and its landing area can be operated safely.

**15.5(18) Multisection water recreation pools.** A multisection water recreation pool shall comply with the applicable provisions of 15.5(1) to 15.5(13) and the following:

*a. Recirculation flow rate.* The minimum recirculation flow rate for a multisection water recreation pool shall be determined by computing the recirculation flow rate for each section of the pool in accordance with 15.5(5) “b” and adding the flow rates together.

*b. Water distribution.* The treated water distribution system shall be designed to return treated water to the sections of the pool in proportion to the flow rates determined in “a” above.

*c. Float lines.* Each section of a multisection water recreation pool shall be separated from the other sections by a float line meeting the requirements of 15.5(13) “f”(4).

**15.5(19) Spray pads.** A spray pad shall comply with the applicable provisions of 15.5(1) through 15.5(13) and the following:

*a.* The surface of a spray pad shall be impervious and durable. Padding specifically designed for spray pads may be used with play features. The padding shall be water resistant or shall permit full drainage without retaining water in its structure. Walking surfaces shall be slip-resistant.

*b.* The spray pad surface shall slope to drain at least 1/8 inch per ft, but no more than 1/2 inch per ft. Deck or other areas outside the spray pad shall not drain into the spray pad.

*c.* A spray pad shall be exempt from fencing requirements (15.5(13) “i”); “No Lifeguard” sign requirements (15.4(6) “d”); safety equipment requirements (15.4(4) “f”); and depth marking requirements (15.4(4) “j”). Unless the spray pad is supervised by facility staff, a sign shall be posted near the spray pad that addresses:

- (1) No running on or around the spray pad.
- (2) No rough play.
- (3) No facility supervision. Parents are responsible for supervising their children.

Facility management may adopt and post other rules deemed necessary for user safety and the proper operation of the spray pad.

*d.* Spray pad drains shall be gravity outlets. At least two drains shall be provided, or a single drain that is unblockable shall be provided.

(1) The drain system and associated piping shall be designed for 125 percent of the flow into the spray pad (play feature and recirculation, as applicable).

(2) Each drain cover/grate shall be flush with the spray pad surface and shall have no opening wider than ½ inch.

(3) Each drain cover/grate shall be designed to be securely fastened to the spray pad so that the drain cover/grate is not removable without tools.

(4) Drain cover/grates that are exposed to foot traffic shall:

1. Have a slip-resistant surface; and

2. Support a 300-pound concentrated load when tested in accordance with the ASME standard, Section 3.3. Structural strength shall be verified by documentation of test results from a testing agency approved by the department or by certification by an engineer licensed in Iowa; and

3. If the drain cover is exposed to sunlight, be resistant to ultraviolet light (UV) in accordance with the ASME standard, Section 3.2.2. UV resistance shall be verified by documentation of test results from a testing agency approved by the department or by certification by an engineer licensed in Iowa.

*e.* Spray pads with independent treatment systems.

(1) The minimum volume of water for a spray pad shall be two minutes of the flow of the play features and the recirculation system combined.

(2) The water storage tank shall have a volume of at least 125 percent of the volume specified in (1). The tank shall be accessible for cleaning and inspection.

(3) The recirculation (treatment) system and the play feature pump and piping system shall be separate.

(4) The recirculation system inlet(s) and outlet(s) within the water storage tank shall be designed to ensure a uniform disinfectant concentration and pH level throughout the water volume of the spray pad.

(5) The play feature pump system shall be designed so that it will not operate if the recirculation system is not operating.

(6) There shall be a readily accessible sample tap in the equipment area that allows sampling of the water in the play feature piping.

*f.* Spray pads using water from an adjacent swimming pool or wading pool.

(1) If there is a suction outlet in the swimming pool or wading pool for the play feature pump(s), the outlet shall be designed as a main drain as specified in 15.5(10). Water velocity through the outlet cover shall be 1½ ft per sec or less.

(2) If the adjacent pool has a volume of 10,000 gallons or less, or if the spray pad water is circulated directly from the swimming pool surge tank, the spray pad pump system shall be equipped for automatic supplemental disinfection in accordance with 15.5(11), except that the disinfection capacity shall be at least one-half of the capacity specified in 15.5(11) "c"; with filtration in accordance with 15.5(6); or both.

*g.* Play features and sprays shall be designed and installed so that they do not create a safety hazard.

(1) Surface sprays shall be flush with the spray pad surface. Spray openings shall have a diameter of ½ inch or less. Noncircular spray openings shall have a width of ½ inch or less.

(2) Aboveground features shall not present a tripping hazard. Features shall have no sharp edges or points and no rough surfaces. Aboveground features shall be constructed of corrosion-resistant materials or provided with a corrosion-resistant coating. Accessible spray openings shall have a diameter of ½ inch or less. Noncircular accessible spray openings shall have a width of ½ inch or less.

**15.5(20) *Leisure rivers.*** A leisure river shall comply with the applicable requirements of 15.5(1) through 15.5(13) and the following:

*a.* The leisure river propulsion system and recirculation system shall be separate.

*b.* Intermittent fixed weir structures may be used for the overflow system. At least two separate fixed weir structures shall be used. The hydraulic capacity of the overflow system using fixed weir

structures shall be at least 125 percent of the recirculation flow rate. Fixed weir structures shall be designed to prevent entrapment of leisure river users.

c. A deck as specified in 15.5(4) is not required in areas where users are not permitted. A leisure river and the area on the inside and outside perimeter of the leisure river shall be designed to ensure that lifeguard staff and emergency personnel can access any part of the leisure river quickly and to provide a sufficient hard surface area for emergency functions.

d. The depth of a leisure river shall be posted conspicuously at the entrance(s) to the leisure river in characters at least 3 inches high. The depth of the leisure river shall be marked on the side wall of the leisure river above the static water level at intervals not to exceed 50 ft on center. The depth of the leisure river shall be marked on the deck in the areas where users are permitted. The depth markers shall be within 3 ft of the edge of the leisure river at intervals not to exceed 25 ft on center.

e. "No Diving" characters or graphics shall be marked every 25 ft on center on the deck in deck areas where users are permitted.

f. At least one user egress point shall be provided for each 500 ft of leisure river length (measured at the centerline) or fraction thereof.

g. Outlets for the leisure river propulsion system shall be designed in accordance with 15.5(10) "b."

**15.5(21) Showers, dressing rooms, and sanitary facilities.**

a. *Facilities required.* Bather preparation facilities shall be provided at each swimming pool facility except where the swimming pool facility is intended to serve living units such as a hotel, motel, apartment complex, condominium association, dormitory, subdivision, mobile home park, or resident institution.

b. *Swimming pool patron load.* If a bathhouse is provided, the patron load for determining the minimum sanitary fixtures (Table 6) is:

- (1) One individual per 15 ft<sup>2</sup> of water surface in shallow areas.
- (2) One individual per 20 ft<sup>2</sup> of water surface in deep areas with the exclusion of 300 ft<sup>2</sup> of water surface for each diving board.
- (3) For each swimming pool slide, 200 ft<sup>2</sup> shall be excluded, and for each water slide which terminates in the swimming pool, 300 ft<sup>2</sup> shall be excluded in determining the patron load.

c. *Bathhouses.*

(1) A bathhouse shall be designed and constructed to meet the requirements of the local building ordinance. If no local ordinance is in effect, the bathhouse shall be designed to meet the requirements of the state of Iowa building code, 661—Chapter 16, Iowa Administrative Code.

(2) Bathhouse floors shall have a slip-resistant finish and shall slope at least 1/8 inch/ft to drain. Except as provided in 15.5(19) "c"(3), floor coverings shall comply with the requirements of 15.5(4) "c."

(3) Olefin, or other approved carpeting, may be permitted in locker room or dressing room areas provided:

- 1. There is an adequate drip area between the carpeting and the shower room, toilet facilities, swimming pool, or other areas where water can accumulate.
- 2. Drip areas shall be constructed of materials as described in 15.5(4) "b" and 15.5(4) "c."

(4) Bathhouse fixtures shall be provided in accordance with Table 6.

Table 6  
Fixtures Required

Patron Load	Male				Female		
	Showers	Toilets	Urinals	Lavatories	Showers	Toilets	Lavatories
1 - 100	1	1	1	1	1	1	1

Patron Load	Male				Female		
	Showers	Toilets	Urinals	Lavatories	Showers	Toilets	Lavatories
101 - 200	2	1	2	1	2	3	1
201 - 300	3	1	3	1	3	4	1
301 - 400	4	2	3	2	4	5	2
401 - 500	5	3	3	2	5	6	2
501 - 1000	6	3	4	2	6	7	2

(5) All indoor swimming pool areas, bathhouses, dressing rooms, shower rooms, and toilets shall be ventilated by natural or mechanical means to control condensation and odors.

*d. Showers and lavatories.*

(1) Showers shall be supplied with water at a temperature of at least 90°F and no more than 110°F and at a rate of no more than 3 gpm per shower head.

(2) Soap dispensers or bar soap trays shall be provided at each lavatory and in the showers. Glass soap dispensers are prohibited.

*e. Hose bibs.* At least one hose bib shall be installed within the bathhouse.

*f. Storage-type hot water heaters.*

(1) Gas-fired storage-type hot water heaters shall comply with the requirements of ANSI/AGA Z21.10.1-2001, or with the requirements of ANSI/AGA Z21.10.3-2001. The heater shall bear the mark of the AGA.

(2) Electric storage-type hot water heaters shall comply with the requirements of ANSI/UL 174-1996. The heater shall bear the mark of UL.

(3) Combustion air shall be provided for fuel-burning water heaters as required by the state plumbing code, 641—Chapter 25, Iowa Administrative Code, or as required by local ordinance.

(4) Fuel-burning water heaters shall be vented as required by the state plumbing code, 641—Chapter 25, Iowa Administrative Code, or as required by local ordinance.