

481—485.52(135I) Construction and reconstruction. A spa that is constructed or reconstructed shall comply with the following standards. Nothing in these rules is intended to exempt spas and associated structures from any applicable federal, state or local laws, rules or ordinances. Applicable requirements include but are not limited to handicapped access and energy requirements, fire and life safety requirements, the rules of the department of workforce development, and the rules of the department of natural resources.

485.52(1) Construction permits.

a. Permit required. No spa 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 a written extension is granted by the department.

b. Permit application. The owner of a proposed or existing spa or a designated representative of the owner shall apply for a construction permit on forms provided by the department.

c. Plan submission. Three sets of plans and specifications shall be submitted with the application. A nonrefundable plan review fee shall be remitted with the application for each spa as required in subrule 485.12(4).

d. Exception. After receiving a construction permit application, the department may authorize construction on a project to start before issuance of a permit. The authorization will be in writing to the owner or the owner's authorized representative.

e. Notification of completion. The owner of a newly constructed or reconstructed facility or the owner's designated representative shall notify the department in writing at least 15 business days prior to opening the spa.

485.52(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.

(1) 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.

(2) If the requirement for engineering plans is waived, the owner of the spa assumes full responsibility for ensuring that the construction or 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 shall contain sufficient information to demonstrate to the department that the proposed spa will meet the requirements of this chapter. The information shall include but 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 contractor applies for a construction permit, the name, address and telephone number of the contractor shall be included.

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

(3) A site plan showing the spa in relation to buildings, streets, any swimming pool within the same general area, water and sewer service, gas service, and electrical service.

(4) Detailed scale drawings of the spa and its appurtenances, including a plan view and cross sections. The location of inlets, overflow system components, main drains, deck and deck drainage, the location and size of spa piping, and the spa steps and handrails shall be shown.

(5) A drawing(s) showing the location, plan, and elevation of filters, pumps, chemical feeders, ventilation devices, and heaters, 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 and 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 spa, for the spa equipment and for the spa 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.

485.52(3) General design.

a. A spa shall be constructed of materials that are inert, stable, nontoxic, watertight, and durable.

b. The maximum water depth for a general-use spa shall not exceed 4 ft measured from the overflow level of the spa. The maximum depth of any seat or sitting bench shall not exceed 2 ft measured from the overflow level. A special-use spa may be deeper than 4 ft with written approval from the department.

c. A spa shall be designed and constructed to withstand anticipated structural loading for both full and empty conditions.

d. A spa may be immediately adjacent to a swimming pool or maintain the minimum required deck width for a swimming pool. The distance shall be measured from the outside edge of a ladder support or handrail on the deck, a lifeguard stand, a swimming pool slide, or a similar obstruction.

e. The water supplied to a spa shall comply with paragraph 485.51(1) "g."

f. No part of a spa recirculation system may be directly connected to a sanitary sewer. An air break or an air gap shall be provided.

485.52(4) Decks. A spa shall have a deck around at least 50 percent of the spa perimeter. The deck shall be at least 4 ft wide and meet the following criteria:

a. Deck materials. The deck is constructed of stable, nontoxic, and durable materials.

b. Deck drainage. The deck drains away from the spa at a slope of at least 1/8 inch/ft, but no more than 1/2 inch/ft to deck drains or to the surrounding ground surface. The deck is constructed to eliminate standing water.

c. Deck surface. The deck is provided with a slip-resistant, durable, and cleanable surface.

d. Deck covering. A deck covering may be used provided that:

(1) The covering allows drainage so that the covering and the deck 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.

e. Steps or ramp required. When the top rim of a spa is more than 24 inches above the surrounding floor area, stairs or a ramp shall be provided to the top of the spa. Stairs or a ramp shall be designed in accordance with the state building code or the building code adopted by the jurisdiction in which the spa is located.

485.52(5) Recirculation.

a. Separate recirculation required. A spa shall have a recirculation system separate from another spa or any swimming pool.

b. Recirculation flow rate. The recirculation system shall be capable of processing one spa volume of water within 30 minutes. For spas with skimmers, the recirculation flow rate shall be at least 3.8 gpm per lineal inch of skimmer weir or the flow rate required above, whichever is greater.

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

(1) The pump(s) supply the recirculation flow rate required by paragraph 485.52(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 hydraulically appropriate. A valve for regulating the rate of flow is 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) A separate pump or pumps is provided for the spa agitation system.

(3) For sand filter systems, the pump and filter system are designed so that each filter can be backwashed at a rate of at least 15 gpm/ft² of filter area.

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

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

(6) A compound vacuum-pressure gauge is 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 is installed on the pump discharge line as close to the pump as practical. Gauges are of such a size and located so that they may be easily read by the operator.

(7) On pressure filter systems, a hair and lint strainer is installed on the suction side of the recirculation pump. The hair and lint strainer basket is readily accessible for cleaning, changing, or inspection. A spare strainer basket is provided. This requirement may be waived for systems using vertical turbine pumps or pumps designed for solids handling.

d. Water heaters. Spa water heaters shall meet the following criteria:

(1) A heating coil, pipe, or steam hose is not installed in a spa.

(2) Gas-fired spa water heaters comply with the requirements of ANSI/AGA Z21.56-2001, ANSI/AGA Z21.56a-2004, and ANSI/AGA Z21.26b-2004.

(3) Electric spa water heaters comply with the requirements of UL 1261 (2017) and bear the UL mark.

(4) A spa water heater with an input of greater than 400,000 BTU/hour (117 kilowatts) has a water heating vessel constructed in accordance with ASME Boiler Code, Section 8 (2007). The data plate of the heater bears the ASME mark.

(5) A thermometer is installed in the piping to measure the temperature of the water returning to the spa. The thermometer is located so that it may be read easily by an operator.

(6) Combustion air is provided for fuel-burning water heaters as required by the state plumbing code, 481—Chapter 425, or as required by local ordinance.

(7) Fuel-burning water heaters are vented as required by the state plumbing code, 481—Chapter 425, or as required by local ordinance.

(8) Fuel-burning water heaters are equipped with a pressure relief valve sized for the energy capacity of the heater.

e. Flow meters. Spa flow meters shall meet the following criteria:

(1) Each spa recirculation system is provided with a permanently installed flow meter to measure the recirculation flow rate.

(2) A flow meter is accurate within 5 percent of the actual flow rate between ± 20 percent of the recirculation flow rate specified in paragraph 485.52(5) "b" or the nominal recirculation flow rate specified by the designer.

(3) A flow meter is installed on a straight length of pipe with sufficient clearance from valves, elbows or other sources of turbulence to attain the accuracy required by subparagraph 485.52(5) "e"(2). The flow meter is installed so that it may be easily read by the facility staff, or a remote readout of the flow rate is installed where it may be easily read by the staff.

485.52(6) Filtration. A filter shall be listed by NSF or by another listing agency as complying with the requirements of Standard 50 and comply with the following requirements:

a. Each pressure filter has a pressure gauge on the inlet side. Gauges are of such a size and located so that they may be read easily by the operator. A differential pressure gauge that gives the difference in pressure between the inlet and outlet of the filter may be used in place of a pressure gauge.

b. An air relief valve is provided for each pressure filter.

c. Backwash water from a pressure filter discharges through an observable free fall, or a sight glass is installed in the backwash discharge line.

d. Backwash water is discharged indirectly to a sanitary sewer.

e. Rapid sand filter.

(1) The filtration rate does not exceed 3 gpm/ft² of filter area.

(2) The backwash rate is at least 15 gpm/ft² of filter area.

f. High-rate sand filter.

(1) The filtration rate does not exceed 15 gpm/ft² of filter area.

- (2) The backwash rate is at least 15 gpm/ft² of filter area.
- (3) If more than one filter tank is served by a pump, the designer demonstrates that backwash flow rate to each filter tank meets the requirements of subparagraph 485.52(6)“f”(2), or an isolation valve is installed at each filter tank to permit each filter to be backwashed individually.

g. Vacuum sand filter.

- (1) The filtration rate does not exceed 15 gpm/ft² of filter area.
- (2) The backwash rate is at least 15 gpm/ft² of filter area.
- (3) An equalization screen is provided to evenly distribute the filter influent over the surface of the filter sand.

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

h. Sand filter media complies with the filter manufacturer’s specifications.

i. Diatomaceous earth filters.

- (1) The filtration rate is not greater than 1.5 gpm/ft² of effective filter area except that a maximum filtration rate of 2.0 gpm/ft² may be allowed where continuous body feed is provided.

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

(3) Waste diatomaceous earth is discharged to a sanitary sewer. The discharge may be subject to the requirements of the local waste water utility.

j. Cartridge filters.

- (1) The filtration rate does not exceed 0.38 gpm/ft².

- (2) A duplicate set of cartridges is provided.

485.52(7) Piping.

a. *Piping standards.* Spa piping shall conform to applicable nationally recognized standards and be specified for use within the limitations of the manufacturer’s specifications. Spa piping shall comply with the applicable requirements of NSF/ANSI Standard 61 (2020), “Drinking Water System Components—Health Effects.” Plastic pipe shall comply with the requirements of NSF/ANSI Standard 14 (2016b), “Plastic Piping Components and Related Materials,” for potable water pipe.

b. *Pipe sizing.* Spa recirculation piping shall be sized so that water velocities do not exceed 6 ft/sec for suction flow and 10 ft/sec for pressure flow.

c. *Skimmer pipe capacity.* The piping for the skimmer system shall be designed to convey 100 percent of the recirculation flow rate.

d. *Main drain pipe capacity.* The main drain piping shall be designed to convey 100 percent of the recirculation flow rate. If the spa agitation system uses the same suction piping as the recirculation system, the piping shall be designed for the combined flow within the requirements of 15.52(7)“b.”

e. *Separate piping required.* The piping from the spa agitation system pump to the spa shall be separate from the recirculation system piping.

485.52(8) Inlets. Spa inlets shall meet the following criteria:

a. Wall inlets are provided for a spa.

b. The inlets are adequate to ensure effective distribution of treated water and the maintenance of a uniform disinfectant residual throughout the spa. At least two recirculation inlets shall be provided.

- (1) Inlets are located at least 6 inches below the design water surface.

(2) Inlets are directional flow-type inlets. Each inlet has a fitting with an opening of 1 inch diameter or less.

c. Each agitation system opening has a fitting with an opening of 1 inch diameter or less.

485.52(9) Skimmers. A recessed automatic surface skimmer shall be listed by NSF or by another listing agency as complying with the requirements of Standard 50, except that an equalizer is not required for a skimmer installed in a spa equipped with an automatic water level maintenance device. Spa skimmers shall meet the following criteria:

a. A spa has at least one skimmer for each 100 ft² of surface area or fraction thereof.

b. Each skimmer is designed for a flow-through rate of at least 3.8 gpm per lineal inch of weir. The combined capacity of all skimmers in a spa is not less than the total recirculation rate.

- c. Skimmers have weirs that adjust automatically to variations in water level of at least 4 inches.
- d. Skimmers are equipped with a device to control flow through the skimmer.
- e. If a spa is not equipped with an automatic water level maintenance device, each skimmer has an operational equalizer. The equalizer opening in the spa is covered with a fitting listed by a listing agency as meeting the requirements of the ASME/ANSI standard.

f. The skimmer(s) is or are not connected to the agitation system.

485.52(10) Main drain system. Each spa shall have a convenient means of draining the water from the spa for service. Spa main drains may be on the sidewall of a spa near the spa bottom.

a. If a spa pump is directly connected to a main drain or another fully submerged outlet, the pump shall be connected to two or more fully submerged outlets or to a single fully submerged outlet that is unblockable. The recirculation system and the agitation system may use the same fully submerged outlet(s).

(1) Two fully submerged outlets that are directly connected to one or more pumps in the same outlet system shall be at least 3 ft apart on center or on different spa surfaces. If three or more fully submerged outlets that are all directly connected to one or more pumps in the same outlet system are installed, the distance between the outlets farthest apart shall be at least 3 ft on center or the outlets shall be installed on different spa surfaces.

(2) If there is only one fully submerged outlet in an outlet system, the flow rating of the outlet cover/grate, sump and the associated piping shall be at least 100 percent of the maximum system flow rate. If two or more fully submerged outlets are installed in an outlet system, the combined flow rating of the cover/grates, the sumps and the associated piping shall be at least 200 percent of the maximum system flow rate. Multiple outlets in an outlet system shall be plumbed in parallel.

The maximum system flow rate for the recirculation system is the flow rate specified in paragraph 485.52(5)“b” or the design flow rate, whichever is greater. The maximum system flow rate for the agitation system is the specified design flow rate. If a flow rate is not specified, the maximum system flow rate shall be the flow capacity of the pump(s) at 50 feet TDH, based on the manufacturer’s published pump curves.

b. If a main drain is connected to the recirculation system, there shall be a control valve to adjust the flow between the main drain and the overflow system.

c. Each main drain or other fully submerged outlet shall be covered with a cover/grate that is listed as complying with the requirements of the ASME/ANSI standard by a listing agency. A listed cover/grate shall be used in accordance with its listing.

(1) The flow rating for the cover/grate(s) shall comply with subparagraph 485.52(10)“a”(2).

(2) The mark of a listing agency 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/ANSI standard by a professional engineer licensed in Iowa. A certificate of compliance shall be provided to the spa owner and to the department.

(4) The fully submerged outlet cover/grate shall be designed to be securely fastened to the spa so that the cover/grate is not removable without tools.

d. For outlet systems with manufactured sumps, the sumps shall be listed by a listing agency for compliance with the ASME/ANSI standard. Field fabricated sumps shall be designed in accordance with the ASME/ANSI standard and be certified by an engineer licensed in Iowa.

485.52(11) Disinfection and pH control.

a. A spa recirculation system shall be equipped with an automatic controller for maintenance of the disinfectant level and pH in the spa water. The control output of the controller to the chemical feed systems shall be based on the continuous measurement of the ORP and the pH of the water in the spa recirculation system.

b. No disinfection system designed to use di-chlor or tri-chlor shall be installed for an indoor spa.

c. A continuous feed disinfectant system shall be provided. The disinfectant feed system shall have the capacity to supply at least 10 mg/L chlorine or bromine based on the recirculation flow rate required in paragraph 485.52(5)“b.”

d. A disinfectant feeder shall be listed by NSF or by another listing agency as complying with the requirements of Standard 50.

e. Gas chlorine shall not be used as a disinfectant for a spa.

f. 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 paragraph 485.52(11) "c."

g. The storage capacity of an erosion feeder shall be at least one day's supply of disinfectant at the rate specified in paragraph 485.52(11) "c."

h. Each spa shall have a metering pump for the addition of a pH control chemical to the spa recirculation system or a CO₂ gas feed system. A metering pump shall be listed by NSF or another listing agency as complying with the requirements of Standard 50.

i. The chemical feed systems shall be designed so that chemical feed is automatically and positively stopped when the recirculation flow is interrupted.

485.52(12) Safety.

a. *Spa entry.* A spa shall have at least one stairway, ramp, ladder, or set of recessed steps designating a point of entry and exit for every 50 ft of perimeter or fraction thereof.

(1) Stair steps leading into a spa shall be at least 12 inches wide, the tread depth shall be no less than 10 inches, and the riser height shall be no more than 12 inches. If a bench or seat is used as a part of the stair, the first riser height from the bottom of the spa to the seat or bench shall be no more than 14 inches. Except for the first riser, the riser height shall be uniform.

1. Stair steps shall be provided with a slip-resistant surface.

2. The stair steps shall be provided with two handrails or grab rails, one on each side of the steps.

(2) Ladders.

1. Ladders shall be provided with a handrail that extends from below the water surface to the top surface of the deck on each side of the ladder.

2. Ladders shall be of a color contrasting with the spa walls.

(3) 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. Recessed steps shall be provided with a handrail or with deck-level grab rails on each side of the recessed steps.

3. Recessed steps shall drain to the spa.

(4) Ladders, handrails and grab rails.

1. Ladders, handrails, and grab rails shall be designed to be securely anchored and so that tools are required for their removal.

2. Ladders, handrails, and grab rails shall be of corrosion-resistant materials or provided with corrosion-resistant coatings. They shall have no exposed sharp edges.

b. *Agitation system control.* The agitation system start control shall be installed out of the reach of persons in the spa. The "on" cycle for the agitation system shall be no more than ten minutes.

c. *Electrical.* New construction or reconstruction shall meet the requirements of the state electrical code, 481—Chapter 404, including Article 680 of the adopted National Electrical Code.

d. *Lighting.* Artificial lighting shall be provided at indoor spas and at outdoor spas that are to be used after sunset, in accordance with the following:

(1) Underwater lighting of at least 60 lamp lumens/ft² or 0.5 watts/ft² of water surface area and area lighting of at least 10 lumens/ft² or 0.6 watts/ft² of deck area.

(2) If underwater lights are not provided, overhead lighting of at least 30 lumens/ft² or 2.0 watts/ft² of spa water surface area shall be provided.

e. *Spa enclosure.* Spa enclosure shall meet the following criteria:

(1) A spa is enclosed by a fence, wall, building, or combination thereof not less than 4 ft high. The spa enclosure is constructed of durable materials. A spa may be in the same room or enclosure as another spa or a swimming pool.

(2) A fence, wall, or other means of enclosure has no openings that would allow the passage of a 4-inch sphere and is not easily climbable by toddlers. The distance between the ground and the top of the

lowest horizontal support accessible from the outside of the facility, or between the two lowest horizontal supports accessible from outside the facility, is at least 45 inches. A horizontal support is considered accessible if it is on the exterior of the fence relative to the spa, or if the gap between the vertical members of the fence is greater than 1 $\frac{3}{4}$ inches.

(3) At least one gate or door with an opening of at least 36 inches in width is provided for emergency purposes. When closed, gates and doors comply with the requirements of subparagraph 485.52(12)“e”(2). Gates and doors are lockable. Except where lifeguard or structured program supervision is provided whenever the spa is open, gates and doors are self-closing and self-latching.

(4) For indoor spas, if there are sleeping rooms, apartments, condominiums, or permanent recreation areas used by children that open directly into the spa area, the spa is enclosed by a barrier at least 3 ft high. No opening in the barrier permits the passage of a 4-inch sphere. There is at least one 36-inch-wide gate or door through the barrier. Gates and doors are lockable. Except where lifeguard supervision is provided whenever the spa is open, gates or doors are self-closing and self-latching.

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