Chapter HSS 171

PUBLIC SWIMMING PLACES

Note: Chapter H 71 as it existed on November 30, 1975 was repealed and a new chapter H 71 was created effective December 1, 1975; chapter H 71 was renumbered to be chapter HSS 171 effective June 1, 1982.

HSS 171.01 Purpose and applicability. These regulations shall be the minimum requirements that apply to all new, reconstructed or altered public swimming places herein defined for the prescribed purpose of safeguarding the health and safety of the patrons thereof.

Note: Local regulations may be more stringent.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.01, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.02 Classification. Swimming places are classified as follows:

(1) Natural. Lakes, ponds, rivers and streams created by nature or impoundments thereof.

(2) Partially artificial. Outdoor swimming places that are partially man-made and partially natural.

(3) Artificial. Outdoor or indoor pools which are entirely man-made.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.02, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.03 Definitions. (1) Department means the department of health and social services.

(2) Approved means acceptable to the department based on its determination as to conformance with appropriate standards and good public health practices.

(3) Breakpoint means the line of separation between the shallow portion and the deep portion of a pool which is defined by a sharp change in the slope of the bottom.

(4) Deck means the approved walking surface around the pool.

(5) Deep portion means the deep side of the breakpoint or that portion of a pool having a design water depth greater than 5.5 feet.

(6) Owner means a municipality, corporation, company, association, firm or individual owning, controlling or operating any public swimming place.

(7) Patron means a user of the pool.

(8) Pool means the structure, basin, chamber or tank, used for one or a variety of purposes, hereafter defined:

(a) Combination pool means a pool used for swimming and diving.

(b) Diving pool means a pool used exclusively for diving.

(c) Exercise pool means a pool small in area and of shallow depth usually associated with health spas.

(d) Limited purpose pool means a pool used for purposes not otherwise defined, such as apparatus swimming, diving and underwater photography training, medically administered therapy, other special uses by the public or for use by physically or mentally handicapped persons.

(e) Reverse flow pool means a pool of a design in which the water enters at or near the bottom and leaves at or near the water line.

(f) Swimming pool means a pool used for swimming purposes only.

(g) Wading pool means a pool used primarily by non-swimming children.

(h) Whirlpool means a pool, relatively small in area utilizing high velocity and high temperature water.

(9) Preliminary plan review means the review of plans and specifications, not intended for final approval action, or an office conference relating to such plans and specifications with the intent of informing the engineer or architect on code requirements and involving mathematical and/or hydraulic computations. It does not include an office or telephone consultation requesting rule clarification.

(10) Public swimming beach means any designated body of water or portion thereof not contained in a pool structure, basin, chamber or tank used for the purposes enumerated in sub. (8). It includes natural lakes, artificial water impoundments, ponds, rivers, streams and similar outdoor facilities that are partially natural in character and partially manmade.

(11) Public swimming place means a pool or beach used for the purposes defined in subs. (8) and (10) excepting those serving less than 3 individual residential quarters such as homes or apartments. Public pools include those serving or installed for the state or any political subdivision thereof, including school districts; those serving or installed at motels, hotels, resorts, camps, clubs, associations, housing developments, schools; religious, charitable or youth organizations; institutions or similar establishments. Included are shorelines, buildings, equipment and appurtenances, irrespective of whether or not a fee is charged for the use thereof.

(12) Reconstructed or altered pool means a pool that requires replacement of or modification to a pool shell, recirculation system or its appurtenances so that the pool may continue to be operated in a manner considered by the department to be free from health or safety hazards. It does not include the replacement of equipment previously approved by the department, providing the type and size of equipment is not revised nor does it include normal maintenance or repair.

(13) Revised submittal means the submission of revised plans and/or specifications which either shows changes in the pool shell or recirculation system design necessitating additional mathematical or hydraulic computations or such a number of other items that in the opinion of the department, could not be rectified by specification addenda.

(14) Sanitary beach survey means an on-site survey for evaluation of the physical features of a watershed area to determine the existence or absence of conditions that may render the facility unsuitable for full body contact water activities because of bacteriological, chemical, physical or biological water quality factors.

(15) Shallow portion means the shallow side of the breakpoint or that portion of a pool having a design water depth of 5.5 feet or less.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.03, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.04 Plans and specifications. (1) APPROVAL. (a) Every owner, personally or through his or her engineer or architect, shall obtain the department's approval for plans and specifications covering construction, alteration or reconstruction of public swimming places or installation or alteration of their equipment prior to the start of construction or installation. No deviation from the plans and specifications or conditions of approval may be made without prior approval of the department except as provided in s. HSS 171.03 (12). Preliminary plans and specifications may be submitted for review and comment.

(b) Within 60 days after receiving complete plans and specifications for approval, the department shall either approve the plans and specifications or deny approval to the plans and specifications.

Note: See s. HSS 171.24 for fee schedule.

(2) PREPARATION. (a) *Prepared within Wisconsin.* Plans and specifications for all public swimming places and their equipment, including adequate supporting design data, shall be prepared by a Wisconsin registered architect or professional engineer and bear his seal and signature.

(b) *Prepared outside Wisconsin.* 1. Plans, specifications and calculations prepared in a state other than Wisconsin by an architect or engineer not registered in Wisconsin will be reviewed providing they are submitted in the following form:

a. The plans, specifications and calculations bear the signature and seal or stamp of an architect or engineer registered in a state other than Wisconsin; and

b. The plans, specifications and calculations have attached thereto a certificate dated, signed and sealed or stamped by an architect or engineer registered in Wisconsin which states that the attached plans, specifications and calculations were prepared in a state other than Wisconsin

by an architect or professional engineer registered in that state, specifically describes the work performed by the Wisconsin registered architect or engineer in reviewing the plans, states that the design is structurally safe, and states that the plans and specifications comply with all applicable state codes.

(3) SUBMISSION. Three identical sets of plans and specifications shall be submitted to the department, 2 of which are retained by the department and one transmitted to the owner. If the designing engineer or architect desires an additional approved set or sets of plans and specifications, the necessary number shall be initially submitted.

(4) DETAILS. The plans and specifications shall include:

(a) *General.* The following information shall be shown on the plans or be submitted in a separate report:

1. The name and address of the owner.

2. The location of the public swimming place by street address or if none is available, by quarter-quarter section, section, town, range, township and county.

3. A description of any existing swimming facilities and the population of the municipality or establishment to be served, including non-residents or guest patrons.

(b) *Location.* Each public swimming place shall be located at a site conducive to good operation, maintenance, safety and freedom from contamination. It shall have suitable site drainage and separation from sources of harmful environmental factors. Artificial or partially artificial swimming places shall not be located in the regional floodplain of rivers, streams or flow-through lakes. For areas bounding a landlocked lake, the highest historic water level shall be used.

(c) *Plot plan.* A general map and detailed drawing showing the floor plan of pertinent portions of the structure, pool orientation, pool surface area and volume shall be included. Water supply facilities, public or private sewers and relative elevations of paved or other walkways, equipment room floor, and design pool water level shall be shown. When public water and sewer systems are proposed to serve the public swimming place, elevations of storm and sanitary sewer inverts and street grade shall be shown.

(d) *Construction plans.* Detailed scaled and dimensional drawings shall include but not necessarily be limited to:

1. A pool layout plan; longitudinal and transverse cross-sections of the pool through the main drain outlet; location and type of inlets, overflows, pool drains, vacuum fittings, deck drains, drinking fountains, piping, hosebibbs, fences and telephones; design of deck, curb or walls enclosing pool, paved walkways, overflow gutters or devices; and the location and design of ladders, stairs, diving boards and artificial lights.

2. A flow diagram, showing the location, plan and elevation of filters, pumps, chemical feeders, ventilation devices, heaters, surge tanks including operating levels, backflow preventers, valves, piping, flow meters, pressure gauges, thermometers, test cocks, sight glasses and the drainage system for disposal of pool and filter washwater.

3. Location, plan and elevation drawings of any bathhouse facilities provided including dressing rooms, lockers, basket storage, showers, toilets and other plumbing fixtures; partitions and devices for routing of swimmers; storage facilities for first-aid and maintenance equipment; floor construction; and means of lighting and ventilation.

(e) *Specifications.* Complete technical specifications for the construction of the pool and all appurtenances shall accompany the drawings and shall include but not necessarily be limited to:

1. All construction details not shown on the drawings.

2. Detailed requirements as to the type, size, operating characteristics and rating of all mechanical and electrical equipment.

3. Detailed information with respect to plumbing fixtures and piping, when applicable such as in bathhouses or floor drains utilized as deck drains.

4. The sources of all water supplies.

5. Filter media such as diatomaceous earth, sand, gravel or other approved material.

6. Miscellaneous appurtenances.

(5) CONSTRUCTION SUPERVISION AND CERTIFICATION. (a) *Supervision.* 1. Every public swimming place shall be constructed under the supervision of a Wisconsin registered architect or professional engineer. Said architect or engineer shall be responsible for the facility being in substantial conformance with the drawings, plans and specifications approved by the department. Should the supervising architect and/or engineer or the department, be confronted with a nonconformance to the code during construction said parties together with the designing architect and/or engineer shall confer on a decision to effect compliance.

2. Prior to the start of construction the owner of the improvement or his authorized agent shall designate to the department in writing the name and registration number of the supervising architect or engineer retained for the improvement.

3. Said supervision is a professional service, as distinguished from supervision of construction by a contractor, and means the performance of an architect's or engineer's service of reasonable on-the-site observation to determine that the completed construction is in substantial compliance with approved plans and specifications. No change in plans or specifications which involve any provisions of this code shall be made unless such change is signed, sealed and dated by the architect or engineer under whose supervision the change was made and approved by the department.

(b) *Certification.* On completion of the construction, the supervising architect or engineer shall file a written statement with the department, on the form it provides at the time of approval, certifying that, to the best of his or her knowledge and belief, construction has been performed in substantial compliance with the plans and specifications approved by the department.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.04, Register, May, 1982, No. 317, eff. 6-1-82; r. and recr. (1), Register, November, 1985, No. 359, eff. 12-1-85.

HSS 171.05 Structural stability. All pools shall be designed to be structurally sound using suitable and durable materials which are inert, nontoxic to humans and watertight. Provision shall be made for the relief of stresses which may occur as a result of unbalanced hydrostatic pressures and to protect the pool structures from stresses which may develop due to freezing. All metal pools shall be protected against corrosion by galvanic action or aggressive water by provision of appropriate grounding devices, bonding, insulation and/or sacrificial rods or other units.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.05, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.06 Water supply. (1) GENERAL. The source and quality of the potable and non-potable water supplied to a public swimming place shall at all times meet the approval of the department.

(2) POTABLE SUPPLY. The source of supply shall be in accord with the applicable standards of the department of natural resources. Equipment design shall take into consideration the quality of water to be used.

(3) POOL SUPPLY. The supply for a pool shall be from an adequate and approved source. The total alkalinity, pH, iron and manganese of the supply shall be indicated. No direct connection shall be made between potable water supply piping and a pool or the piping thereof.

(4) BEACH SUPPLY. See s. HSS 171.21 (2).

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.06, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.07 Maximum pool attendance. (1) COMBINATION, SWIMMING OR EXERCISE POOLS. The shallow and deep portions of the pools shall be based upon 10 and 24 square feet per patron, respectively.

(2) INDOOR INSTRUCTIONAL POOL. The shallow and deep portions of the pools used for class purposes shall be based upon 25 and 36 square feet per student patron, respectively.

(3) WADING POOL. Wading pools shall be based upon 10 square feet per patron.

(4) MAXIMUM POOL LOADING. A sign indicating maximum allowable pool loading shall be permanently and conspicuously mounted with the pool enclosure.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.07, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.08 Pool basin. (1) ENTRANCE AND SEPARATION. Swimmers shall gain access to combination, swimming, limited purpose or exercise pool decks adjacent to the shallow portion unless the pool deck width at the point of access is at least 10 feet. This requirement does not prevent provision of emergency exits at other locations. Area, routing and drainage separation shall be provided between the areas used by patrons and those used by spectators.

(2) DEPTHS. Water depth at the end wall in the shallow portion of a combination, limited purpose, exercise or swimming pool shall be between 30 and 36 inches unless a variance in depth is approved by the

department. Water depth at the breakpoint in a combination, limited purpose, exercise or swimming pool shall be between 4.5 and 5.5 feet.

(3) BOTTOM SLOPE. The bottom slope in the shallow portion of a combination, limited purpose, exercise or swimming pool shall be uniform and shall not be greater than 0.8 inch per foot and shall slope to the main drain. The bottom slope in the deep end of the pool from the breakpoint to the next change in slope shall not exceed 1:1 and shall be uniform.

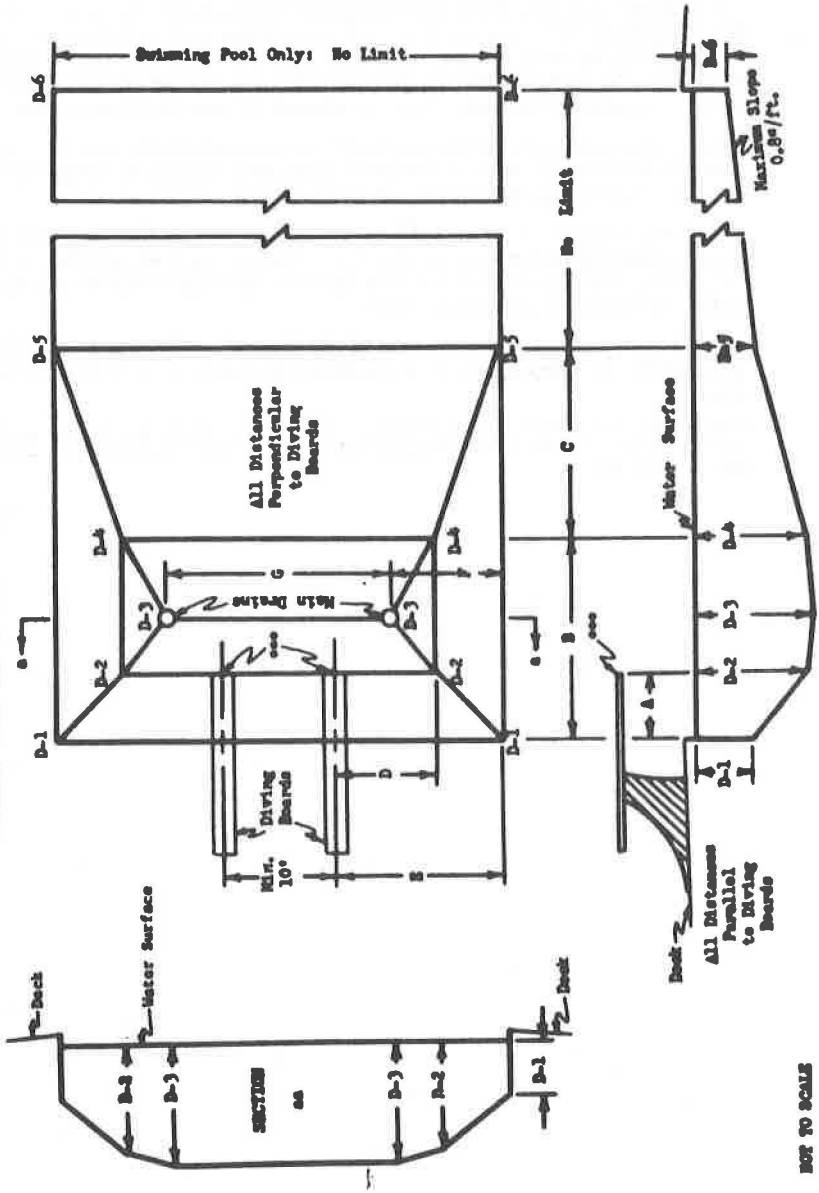
(4) SAFETY ROPE. A safety rope shall be located at the breakpoint or at a depth between 4.5 and 5.5 feet excepting that it may be temporarily removed during supervised special purpose use.

(5) VERTICAL WALL DEPTH. Walls in the shallow portion of a diving, combination, limited purpose, exercise or swimming pool shall be vertical. There shall be a curved junction between the wall and floor having a radius of between one and 3 inches.

(6) DEEP PORTION. The contours of the floor of combination or diving pools shall not infringe upon the profiles indicated in the following table:

Note: The measurements in the table apply to pools constructed after the effective date of this chapter. For competitive swimming or diving, consult the appropriate national or international guidelines.

FIGURE I
PLAN and PROFILE
SWIMMING POOL and DIVING BOARD INSTALLATION



TYPE OF SWIMMING POOL INSTALLATION		DEPTHS						LENGTHS							
		D-1**	D-2	D-3	D-4	D-5	D-6	A	B	C	D	E	F	G
SWIMMING POOL ONLY	Min.	*	X	X	X	X	2'6"	X	X	X	X	X	*	*
	Max.	*	X	X	X	X	3'0"	X	X	X	X	X	10'0"	20'0"
WITH DIVING HOPPER [NO DIVING BOARD]	Min.	5'0"	8'6"	8'9"	8'6"	4'6"	2'6"	X	16'0"	12'0"	X	X	*	*
	Max.	D-3	D-3	*	D-3	5'6"	3'0"	X	*	*	X	X	10'0"	20'0"
FOR TWO FOOT DECK LEVEL BOARD INSTALLATION	Min.	5'0"	8'6"	8'9"	8'6"	4'6"	2'6"	2'6"	16'0"	12'0"	5'0"	10'0"	*	*
	Max.	D-3	D-3	*	D-3	5'6"	3'0"	4'0"	*	*	*	*	10'0"	20'0"
FOR 1-METER BOARD INSTALLATION	Min.	5'0"	8'6"	8'9"	8'6"	4'6"	2'6"	5'0"	18'0"	12'0"	5'0"	10'0"	*	*
	Max.	D-3	D-3	*	D-3	5'6"	3'0"	6'0"	*	*	*	*	10'0"	20'0"
FOR 3-METER BOARD INSTALLATION	Min.	5'0"	10'0"	10'3"	10'0"	4'6"	2'6"	5'0"	18'0"	17'0"	5'0"	15'0"	*	*
	Max.	D-3	D-3	*	D-3	5'6"	3'0"	6'0"	*	*	*	*	10'0"	20'0"

NOTES: * When maximum or minimum dimension is not indicated, there is no limiting dimension.
** D-1 shall be at the side wall or not more than six (6) inches from the wall.
*** A five (5) foot radius circle at 13 feet clear vertical distance above the plummet of the diving board.

(7) OBSTRUCTIONS. Except for a safety ledge, safety rope, ladder or access side rails, there shall be no obstruction extending into the pool from walls or the bottom. A clear vertical distance of not less than 13 feet shall be provided above any diving board for an area circumscribed by a 5-foot radius around the plummet.

(8) SAFETY LEDGE. When included, the safety ledge shall be at a constant depth of 30 to 60 inches and shall be 6 inches in width, with a downward slope of ½ inch from the wall. All corners shall be rounded.

(9) LADDERS, RECESSED STAIRS AND HANDRAILS. (a) *General.* At least 2 points of egress shall be provided for any swimming, diving, limited purpose, exercise or combination pool with the maximum separation of said egress, measured along the pool's perimeter, shall be 75 feet.

(b) *Ladders.* At least one ladder, recessed or protruding, shall be placed in the deep portion and one at or near the shallow end wall.

(c) *Recessed stairs.* Recessed stairs may be substituted for ladders only at or near the shallow end wall. Stairs shall have a uniform rise of not more than 10 inches and uniform treads of not less than 10 inches. All corners shall be rounded to a radius of ½ inch. Treads shall not project beyond the face of the riser.

(d) *Handrails.* 1. Handrails extending from below the water surface to the deck, curb or coping shall be provided on each side of ladders. Stairs shall have a handrail on each side with a maximum separation of 5 feet. Grab rails may be substituted for handrails where recessed step holds or recessed vertical ladders are provided.

2. Handrails on one- and three-meter boards and diving platforms shall be available on each side from deck level to a point one foot beyond the vertical projection of the pool wall.

Note: See whirlpools, s. HSS 171.17.

(10) WALL AND BOTTOM FINISH. Finish shall be of materials which are inert, reasonably durable, nontoxic to humans and of such composition as to not produce taste or odor in the water. It shall be reasonably smooth, easily cleaned and white or light in color.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.08, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.09 Depth markings. Markers shall be on the edge of the deck slong the pool perimeter. The depth of water shall be plainly marked at maximum and minimum points, at points of change in slope and at equal intermediate intervals of 25 feet or less. Depth marker numerals shall be at least 6 inches high and be of a color contrasting with the background.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.09, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.10 Deck. (1) AREA. (a) *General.* There shall be an unobstructed deck which extends completely around all pools. At least 6 feet of deck shall be provided between any 2 adjacent pools except that the minimum deck width between a wading pool and any other pool shall be 11 feet. Approved deck equipment shall not be considered an obstruction.

(b) *Combination, diving, swimming and exercise pools.* The deck shall have a minimum width of 6 feet when the maximum instantaneous attendance is 200 patrons or less. An additional foot in width shall be provided for each additional 200 patrons or fraction thereof.

(c) *Wading pool.* The deck shall have a minimum width of 5 feet.

(d) *Limited purpose pools and whirlpools.* The deck shall have a minimum width of 6 feet on at least 2 contiguous sides. The point of ingress to the pool area shall be on one of those sides. The deck on the other 2 contiguous sides may be as narrow as 3 feet.

Note: See s. HSS 171.17.

(e) *Restriction.* A minimum deck width of 4 feet shall be provided on the sides and at the back of any piece of diving equipment. Additional area should be provided for sun bathing.

(2) DRAINAGE. (a) *General.* Openings in deck drains and channel grates shall be ½-inch or less in width or diameter. Decks shall be sloped between ⅛ and ½-inch per foot.

(b) *Outdoor pools.* The decks shall slope away from the pool to the ground surface or to drains. Drains shall discharge to the storm sewer with a positive air-gap connection, or to the ground surface at a point where it will not create a hazard or nuisance with a positive air-gap connection if subject to inundation.

(c) *Indoor pools.* Drainage shall be conveyed to a sanitary sewer or to the gutter pool recirculation system, provided a bypass, appropriately valved, is installed to the sanitary sewer. Any connection to a sanitary sewer shall be of the positive air-gap type. Deck drains need not be trapped or vented unless discharge is directly to the building drainage system. In such case ch. H 62, Wis. Adm. Code requirements must be adhered to.

(3) SURFACE. The deck surface shall have a nonslip texture causing no discomfort to bare feet. Deck surfacing may include concrete, tile or other manufactured surfacing. If other manufactured surfacing is to be used, a sample of the material, the specifications, the installation procedures to be followed and the manufacturer's trade name shall be submitted to the department. Only materials approved by the department shall be used.

(4) DRINKING FOUNTAIN. One or more drinking fountains, installed in accord with ch. H 62, Wis. Adm. Code, shall be provided in the immediate pool area.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.10, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.11 Outdoor pool enclosure. An enclosure at least 48 inches high of such construction as will make access difficult shall completely enclose all outdoor pools and any adjacent pool associated paved areas. Access shall be through self-closing and latching gates at the shallow end of the pool. Any openings except controlled accesses shall not exceed 5 inches in width or diameter. The enclosures shall be so designed, where bathhouse facilities are provided, that patron access to the pool shall be

through the bathhouse. Controlled openings for maintenance purposes, capable of being locked, are permitted.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.11, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.12 Recirculation system. Provision for complete drainage of the recirculation system shall be made. Any connection to a storm or sanitary sewer or drain shall be through a positive air-gap.

(1) OVERFLOW SYSTEMS. Overflow gutters or skimmers shall be provided on all pools. Overflow gutters shall be provided on all pools having a surface area of 3500 square feet or greater. See (3) (a).

(2) GUTTERS. (a) *Extent.* Gutters shall extend completely around the pool except at recessed steps, ladders or ramps and the gutter lip shall be level within a tolerance of plus or minus ⅛ of an inch.

(b) *Slope and drains.* Gutter bottoms may be flat or sloping. Gutter drains shall be located not more than 15 feet apart.

(c) *Size and shape.* The interior width of the gutter shall not be less than 3 inches. The gutter and its means of drainage shall be capable of continuously removing at least 125% of the recirculation rate when the water level is at the lip of the gutter. Gutters shall be designed to serve as a handgrip and to prevent entrapment of arms or legs.

(d) *Outlet fittings and pipe.* The gutter outlets shall be connected with pipes having a diameter of at least 2 inches. The net area of the opening in the grating of outlet fittings shall be at least 1.5 times the area of the outlet pipe.

(e) *Surge tank.* All overflow gutters shall be connected to the recirculation system through a surge tank having an effective capacity of at least 1.00 gallon per square foot of pool water surface. If an overflow pipe is provided, it shall be of adequate capacity to convey excess water to the clear waste water drainage system (storm sewer).

(f) *Roll-out type pool.* Roll-out or deck level type pools shall be designed to meet the safety and hydraulic provisions applying to gutter type pools. The design of the curb and handgrip shall conform to accepted standards of construction which shall be evaluated by the department in respect to the proposed use of the pool.

(3) SKIMMERS. (a) *General.* Automatic skimmers may be installed on pools having less than 3500 square feet of surface area.

(b) *Number, location and quality.* At least one skimming device, built into the pool walls, shall be provided for each 400 square feet of surface or fraction thereof for indoor pools and for each 500 square feet of surface or fraction thereof for indoor pools. Skimmers shall be so located as to provide effective constant skimming in relation to water surface movement. Skimmers shall be sturdy and be constructed of corrosion resistant materials. Access cover shall be securely fastened.

(c) *Flow-through rate.* Skimmers shall be designed for a flow-through rate of at least 30 gallons per minute. The combined capacity of all skimmers in a pool shall be equal to or greater than the total required recirculation rate.

(d) *Weir adjustment and control.* The weirs shall adjust automatically and shall operate freely and continuously with variations of at least 4 inches in water level. All skimmers shall be provided with individual flow controls. All skimmed water shall pass through an easily removable and cleanable basket or screen before encountering control valves and entering the pump suction. The piping from the recirculating main drain shall contain a manual control valve.

(e) *Air-lock prevention.* If a skimmer is connected directly to the recirculation pump suction pipe, it shall include a device to prevent an air-lock in the suction line. If equalizer pipes are used, they shall pass an adequate amount of water to meet pump suction requirements should the water in the pool drop below the weir level. If any other device or arrangement is used, a sufficient amount of water shall flow to maintain pump suction. Equalizer pipes shall be designed to carry the design flow of the skimmers. The equalizer pipes shall be located at least one foot below the lowest overflow level of the skimmer. A valve or equivalent device that will remain tightly closed under normal operating conditions, but automatically opens when the water level drops below the minimum operating level of the skimmer weir shall be provided on each equalizer pipe.

(f) *Handgrips.* Handgrips shall be installed on every pool having automatic skimmers (except whirlpools). The handgrip portion of the bullnosed coping shall not be more than 2 inches wide or may be formed by sloping the deck adjacent to the pool wall. The handgrip shall not be more than 9 inches above the minimum skimmer operating level. When the handgrip is formed by the pool deck it shall slope away from the pool with a 0.5-inch drop in a 6-inch distance.

(4) CONTINUOUS SKIMMING. All pools shall be designed to provide essentially continuous skimming. For pools having gutters, make-up water supply equipment shall be provided to automatically maintain continuous skimming.

(5) RECIRCULATING MAIN DRAIN. (a) *Fitting.* Main drain fittings shall be of the grate type and shall be set flush with the floor or wall. They shall be designed to carry 100% of the recirculation rate at a velocity not greater than 1½ feet per second through the clear area of the grate. Outlet grates shall be anchored. Openings in grates shall be 0.5 inch or less in width or diameter.

(b) *Piping.* The piping shall be designed to carry 100% of the recirculation rate at a velocity not greater than 8 feet per second.

(c) *Operation.* With designs other than reverse flow, at least 25 percent of the recirculated water shall be drawn through the main drain.

(6) STRAINERS AND SCREENS. Suitable strainers or screens shall be provided through which all water shall pass before entering the pump suction. The strainers or screens shall be of rigid construction, fabricated of a corrosion resistant material and sufficiently strong to prevent collapsing when clogged. The openings in the strainer or screen shall be no greater than ⅛ inch in any dimension. The total clear area of all openings shall be at least 4 times the area of the connecting pipe. If the stainer is of the pot design, it shall have a quick opening cover. One spare strainer basket shall be provided for each strainer. No bypass around

the strainer or screen shall be permitted. The line containing the strainer shall be properly valved to allow servicing.

(7) PUMPING EQUIPMENT. The recirculation pump or pumps shall have adequate capacity to discharge the volume of water necessary to provide a complete turnover of the pool water in a 6-hour period for rapid sand, high-rate sand or cartridge filter installations and an 8-hour period for diatomaceous earth filter installations. When wading pool water is returned to the combination, diving or swimming pool recirculation system, the turnover time of the main pool shall be reduced by 25%. Provision shall be made to insure that the pump does not become air bound. Where necessary, self-priming pumps shall be installed. The pump or pumps shall be capable of providing the necessary quantity of water for backwashing filters.

(8) FILTRATION. (a) *General.* 1. Pressure filter shells and piping shall be designed and constructed for a minimum working pressure of 50 pounds per square inch using a four-to-one safety factor. When the maximum shut-off head of the pump used with the filter tank exceeds 50 pounds per square inch, the tank shall be designed for this head with a safety factor of 4.

2. Vacuum type filter shells shall be designed to withstand pressure developed by the weight of the water contained therein, with a safety factor of 1.5. In addition, filters that are closed during any part of the operating cycle shall be designed to withstand a vacuum equal to 25 inches of mercury with a safety factor or 1.5.

3. A manual of instruction shall be provided to the owner with each filter or group of filters which shall include all drawings, illustrations, operating procedures, charts and parts lists. Data plates of a permanent nature, so inscribed and located as to be easily read and understood, shall be securely attached to the filter shell. The plates shall provide the following information:

a. Manufacturer's name and address.

b. Filter model number.

c. Filter serial number.

d. Effective filter area in square feet.

e. Design flow rate in gallons per minute.

f. Maximum working pressure.

g. Date of manufacture.

4. Each valve shall have a permanent identifying label or tag attached to it. The sequence of operation, briefly stated, shall be prominently and permanently displayed.

5. Each filter unit shall have a suitable access opening to permit the installation and easy removal of internal filter components such as the upper and lower distribution systems, filter media, cartridges, filter elements and septums. The filter or filters and associated piping shall be equipped with sufficient valves to permit individual backwashing of filters, isolation of individual filters for repair while other filters are in

service and, when diatomaceous earth filters are employed, recycling during the precoat operation.

(b) *Sand filters—pressure type.* 1. The design filtration rate of rapid sand filters shall not exceed 3 gallons per minute per square foot of bed area. With high-rate sand filters the rate shall not exceed 15 gallons per minute per square foot.

2. The initial head loss through any filter with a permanent media when operating at the design flow rate shall not exceed 3 pounds per square inch. The head loss shall be the difference between pressures at the filter inlet and discharge openings.

3. a. The upper distribution system shall be hydraulically designed to distribute incoming water during the filter cycle so any movement or migration of the filter media at the design flow rate is prevented and to properly collect water during the backwash cycle. Its total open area shall be equal to or greater than the area of the backwash effluent piping. The backwash water collection openings shall be located not less than 18 inches above the design level of the filter media. The maximum horizontal travel of suspended particles to reach the draw-off point shall not be more than 3 feet. Vertical filters shall have a straight side shell height of 12 inches above the filter bed.

b. The lower distribution system shall be designed to permit adequate flow and distribution of wash water to uniformly expand the filter media during the backwashing and to uniformly collect the filtered water during the filter cycle. If a perforated plate is used, it shall be place horizontally across the bottom of the filter or arched so that it will cover the entire cross-sectional area of the filter shell. The ratio of total underdrain orifice area to total area of bed shall be between 0.25 and 0.40%. The distribution system shall be designed to prevent clogging. It shall be constructed of materials resistant to corrosion, physical deformation and wear.

c. Sand shall be hard siliceous material free of carbonates or other foreign material with an effective particle size of between 0.45 and 0.60 millimeters and a uniformity coefficient not exceeding 1.75. The filter sand bed shall have a minimum depth of 20 inches.

d. Where gravel is used to support the filter media, it shall be rounded washed material free of limestone and fines and be placed in layers properly graded to prevent intermixing. The total gravel bed depth shall be not less than 10 inches. A reduction in depth of gravel or its elimination may be permitted where equivalent performance and service by other means can be demonstrated.

4. With sand media the minimum backwash rate shall be not less than 15 gallons per minute per square foot of filter bed area nor be so great as to cause loss of the media.

5. Equipment shall be provided for feeding a coagulant into the rapid rate filter influent after backwashing. The unit shall be capable of applying not less than 2 ounces per square foot of filter bed area.

6. The filters shall be provided with the following appropriately located accessories where applicable: influent and effluent pressure gauges, vacuum gauges, backwash sight glass on the waste discharge line

and air relief valves at the high point of the filter. Means of determining flow rates shall be installed in the recirculation pump discharge piping in such manner as to register both filtering and backwashing rates. Mercury manometers shall be equipped to prevent loss of mercury into the recirculation system.

7. The backwash water from pressure sand filters shall be discharged to a storm sewer, if available, through a positive air-gap connection or to the ground surface at a point where it will not create a nuisance of health hazard.

(c) *Diatomaceous earth filters—pressure and vacuum types.* 1. The design filtration rate for pressure or vacuum filters shall be 1 to 1.5 gallons per minute per square foot of effective filter aera with a turnover rate of 8 hours or less.

2. The initial head loss between the filter inlet and discharge openings of a pressure filter, when operating with the required precoat and at the design flow rate, shall not exceed 3 pounds per square inch.

3. The filter and piping shall be so desinged that during precoating the effluent will be refiltered or be wasted unless it can be demonstrated that the filter septums are of such construction that no perceptible suspended solids are present in the filtered water.

4. a. The effective filter area of a septum shall be that part that is active during filtration. Septum support members shall not be considered as reducing the effective filter area provided the dimension of the cross section does not exceed ¼-inch. The design distance between the side walls of the filter shell and the septum surfaces and between surfaces of the septum shall be at least one inch. Elements and element assemblies shall be firmly installed in the tank.

b. Elements shall be capable of withstanding a test pressure differential of 20 pounds per square inch in vacuum filters and 75 pounds per square inch pressure filters.

5. A suitable baffle or similar device shall be installed in the filter tank to prevent undesirable water currents. The design and arrangement of the interior filter components shall provide for uniform distribution of the filter aid over the entire septum area.

6. a. For pressure type filters, precoat feed equipment shall be provided to apply not less than 0.1 pound of filter aid per square foot of filter area after each backwash.

b. Continuous feed equipment capable of applying not less than 0.1 pound of filter aid per square foot of filter area per 24 hours shall be provided. An adequately sized positive displacement type feeder for the addition of filter aid shall be provided for pressure type filters. A slurry tank, capable of holding a one-day supply of a 5% mix of filter aid slurry, with agitator shall be provided. Vacuum filters shall be equipped similar to pressure filters or with a mechanical dry filter aid feeder. Recirculated filtered pool water or water from an acceptable source shall be used to flush the slurry feeder pump head.

7. a. Filter and piping design shall permit cleaning by one or more of the following methods: backwashing, air bump assist backwashing,

spray rinse (mechanical or manual) or agitation. Means shall be provided for removal of the wash water, dislodged filter aid and dirt from the filter tank.

b. Waste backwash or wash water shall be discharged to a sanitary sewer except discharge to a storm sewer or the ground surface is permitted if the solids are first allowed to settle in a pond on the property or in a setting tank provided with baffles and mechanical equipment to collect the solids. The connection to the sewer shall be of the positive air-gap type. Settled solids shall be disposed of as a solid waste.

8. Accessories shall be provided in accord with par. (b) 6. The vacuum gauge shall be located between the filter and the recirculation pump. A vacuum limit switch that is interconnected with the recirculation pump controls should be provided.

(d) *Cartridge filters.* 1. The design filtration rate for cartridge filters of the depth type shall be 3 or less gallons per minute per square foot of cartridge cylinder surface area. For surface types, the filtration rate shall be no greater than 0.375 gallons per minute per square foot of the pleated area of the cartridge.

2. The initial head loss through filters shall not exceed 3 pounds per square inch at the design flow rate.

3. The units shall be designed and fabricated in accord with the applicable portions of pars. (a) and (b) 6.

4. Cleaning of the cartridges shall be accomplished according to manufacturer's recommendations either in place or by cartridge removal depending on the type unit installed.

5. All waste water, including solids, resulting from cartridge cleaning shall be discharged to a sanitary sewer or disposed of on the owner's property in such manner as to not create a health hazard or nuisance.

6. Ten percent of one complete set of replacement cartridges shall be provided.

(e) *Gravity filters.* Gravity type sand and filters may be used. Before proceeding with final plans of such a unit, the department shall be consulted.

(9) INLETS. (a) *Type.* Inlet fittings shall be of the adjustable type. Directional flow inlets shall be used with skimmer type pools. They shall be designed to cause a rotation of the water surface and to prevent short circuiting within the pool.

(b) *Location.* Inlets shall be located at least 5 inches below the design water surface. They shall be spaced not over 15 feet apart, with one inlet within 5 feet of each corner of the pool. Inlet piping should be sized on the basis of the flow each must carry. If a pool is over 60 feet in width, inlets must be located 6 inches above the pool bottom.

(c) *Reverse flow pool.* The above requirements do not preclude the use of a reverse flow pool providing the design meets the approval of the department.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.12, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.13 Disinfection. (1) CHLORINATION. (a) *General.* Equipment shall be provided to apply chlorine compounds or liquid chlorine. The adjustable gas chlorinator or positive displacement type feeder equipment shall be durable and capable of accurate feeding.

(b) *Capacity.* Equipment for feeding chlorine, or compounds of chlorine, shall be of such minimum capacity that based on pool volume it is capable of feeding not less than 5 milligrams per liter (parts per million) of free available chlorine per 24 hours for indoor pools and 20 milligrams per liter per 24 hours for outdoor pools and whirlpools.

Note: The capacity of the positive displacement type pumping equipment may be based upon the design available chlorine concentration.

(c) *Point of addition.* Chlorine shall be fed into the pool water recirculating system at a point downstream from any heater. The chlorine feed equipment shall be electrically interlocked with the recirculating pump control circuit.

(d) *Gaseous chlorine.* Where gaseous chlorine equipment is provided, the mechanical proportioning device with required scales and cylinders of chlorine shall be housed above grade, in a reasonably gas-tight, corrosion resistant and mechanically vented room with a door opening outward to the outside. Chlorine cylinders shall be securely fastened in place. Keys or valves shall be provided on the chlorine cylinder so the supply can be shut off quickly in case of an emergency. The chlorine feeding device shall be designed so that during accidents or interruptions of the water supply, leaking chlorine gas will be vented to the building exterior and away from the pool proper. An air-tight duct beginning near the floor and terminating at a safe point of discharge at least 8 feet above the outside surrounding grade shall be provided. The mechanical exhaust system shall be capable of providing at least one air change per minute. A mechanical louvered air intake shall be provided. An observation window at least 18 inches square shall be provided. Electrical switches for the control of artificial lighting and ventilation shall be on the outside of the room. A gas mask designed for use in a chlorine atmosphere, of a type approved by the appropriate federal agency, shall be provided. A closable, unlocked cabinet shall be located outside of the room in which the chlorinator is housed for storage of the gas mask, a replacement canister and mask usage record book.

(e) *Dry chlorine compounds.* A minimum of 2 solution tanks, one for mixing chemicals and the other for feeding the decanted solution, shall be provided.

(f) *Tank capacity.* The minimum capacity of any solution tank shall be such as to provide one day's maximum usage.

(g) *Residual chemcial and pH test.* A corrosion resistant test set shall be provided for the determination of free chlorine or other disinfectant residual and the pH content of the pool water. A supply of appropriate reagents for making each type of test shall be provided. Color standards, which shall be reasonably permanent and nonfading, shall be furnished for each of the following test values:

Chlorine color standards	0.4 0.6 0.8 1.0 1.5 2.0
pH color standards	6.8 7.2 7.6 8.0 8.2

(2) OTHER DISINFECTANTS. A disinfectant other than chlorine may be used if it is demonstrated to be effective, provides a residual that can be readily determined by simple test procedures, is applied by means of a positive displacement pump or suitable gas feeder, is nontoxic in the concentrations employed and is approved by the department.

(3) OTHER CHEMICALS. Approved type chemical feed equipment of the positive displacement or dry feed type, capable of chemical application proportional to flow, shall be used and all chemical applications shall be approved by the department.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.13, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.14 Piping. (1) SIZE AND SLOPE. The size of pipe, fittings and valves of the complete pool piping system shall be based on flow velocities of 6 feet or less per second under suction and 8 feet or less per second under pressure. Gutter drain lines around the pool shall be capable of continuously removing at least 125% of the recirculation water. All waste water piping shall be sized to freely carry the maximum flows without surcharge or back pressure.

(2) MATERIALS. Acceptable materials for pool recirculation systems are NSF approved rigid PVC or ABS Schedule 40 or heavier plastic, approved copper, galvanized steel, cement asbestos, aluminum and cast iron, suitable for water service or water distribution.

(3) EXPANSION—CONTRACTION. The design shall permit expansion and contraction of the piping system as needed.

(4) FITTINGS. All pool fittings shall be of corrosion resistant materials.

(5) HOSEBIBBS. A hosebibb or hosebibbs shall be provided in the equipment room, the dressing, shower and toilet facility, and at such intervals along the deck as necessary to permit adequate cleaning using a maximum of 100 feet of hose. A hosebibb in the equipment room or dressing, shower and toilet facility may be used for deck cleaning if located so no more than 100 feet of hose is needed to reach the entire deck. All hosebibbs served by a potable water supply shall be protected against backsiphonage by proper installation of approved backflow prevention devices.

(6) INSTALLATION AND DRAINING OF PIPES. All equipment and piping shall be designed and fabricated to drain completely by removal of drain plugs, manipulating winter drain valves or by other means. All piping shall be supported continuously or at sufficiently close intervals to prevent sagging. All suction piping shall be sloped in one direction, preferably toward the pump. In case the pool is to be maintained full of water during the period of freezing temperatures, all submerged inlets, vacuum cleaner fittings and other openings into the pool shall be provided with insertable plugs or valves to allow the piping connected thereto to be drained to a point below the frost line. Draining instructions shall be furnished to the owner by the engineer or architect together with drawings showing pipe and valve locations as tagged by the contractor which clearly define the required procedure.

(7) SEWERS AND SEWER CONNECTIONS. (a) *Restrictions.* 1. Exposed soil, waste and other drainage lines shall not pass over the pool, surge tank, open filter or deck.

2. Clear water drain lines shall not discharge to a sanitary sewer but to a storm sewer or the ground surface at a point where a nuisance or health hazard will not be created.

3. Clear water drain lines shall not be connected to a storm sewer if surcharge of the drain line can cause contamination of the pool water or flooding of the equipment room.

(b) *Pumpout.* A pool pumpout line or portable pump for draining the pool shall be provided if gravity drainage is not possible.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.14, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.15 Pool water heaters. When provided, heaters shall be installed in accordance with all applicable Wisconsin Administrative Codes of the department of industry, labor and human relations.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.15, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.16 Wading pool. (1) DESIGN. (a) *Turnover.* The maximum turnover time shall be 2 hours.

(b) *Recirculation system.* An independent filtration system is preferred. A flow meter shall be provided on the inlet line. A separate disinfection system shall be provided.

Note: See s. HSS 171.12 (7).

(c) *Inlets and outlets.* 1. At least 2 submerged inlets shall be provided. One inlet shall be provided for each 20 feet of perimeter or fraction thereof.

2. One or more overflow devices equipped with a removable grate and having a combined capacity at a one-inch head, equal to the recirculation rate shall be provided. When skimmers are used, one shall be provided for 400 square feet of surface area or fraction thereof. An overflow gutter may be installed on one or more of the side walls in lieu of skimmers.

3. A waste outlet shall be provided at the deepest point to permit complete emptying.

4. Inlet and outlet grating shall have slotted openings ¼ inch or less in width.

(d) *Water depth.* A maximum depth shall not exceed 30 inches.

(2) OBSTRUCTIONS. Except for centrally located spray piping extending 2 feet or more above the water level, obstructions extending from the walls or the bottom shall not be permitted.

(3) WALL AND BOTTOM FINISH. The finish shall conform to s. HSS 171.08 (10).

(4) BOTTOM SLOPE. The bottom shall slope toward the drains with a minimum and maximum slope of 0.25″/ft. and 0.75″/ft., respectively.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.16, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.17 Whirlpools. (1) DESIGN. (a) *Location.* Whirlpools located in the same room with other pools shall be near the shallow end of such pools. If located in a separate room, the wall design shall provide for a clear observation by the owner or operator from outside the room.

(b) *Turnover.* The maximum turnover time shall be 2 hours.

(c) *Recirculation system.* A separate system including filter, piping, chlorinator and other necessary appurtenances shall be provided.

(d) *Inlets and outlets.* 1. At least 2 submerged inlets shall be provided. One inlet shall be provided for each 15 feet of perimeter or major fraction thereof.

2. At least one skimmer or other approved overflow device shall be provided for each 300 square feet of water surface area.

3. The bottom shall be sloped to a main drain having an anti-vortex drain cover. Openings in the fitting shall be 0.5 inch or less in width or diameter.

(e) *Depth.* The maximum water depth shall be 36 inches. The maximum height between the top of any seats and the design water depth shall be 18 inches.

(f) *Seats.* The width shall be between 16 and 24 inches and have coved junctions and rounded edges.

(g) *Steps.* Ingress by means of steps is required and shall be designed in accord with s. HSS 171.08 (9) except they need not be completely recessed but shall not extend into the basin beyond the seat. A rail, anchored into the tread of the bottom step and into the deck, shall be provided on each side of the steps.

(h) *Wall and bottom finish.* Finish shall conform to s. HSS 171.08 (10).

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75.

HSS 171.18 Building construction. (1) GENERAL. All applicable requirements of the department of industry, labor and human relations shall apply to indoor pool housing and to bathhouses.

(2) DRESSING, SHOWER AND TOILET FACILITIES. (a) *Waiver.* The following requirements may be waived when dressing, shower and toilet facilities, such as exist at motels, hotels, apartments, country clubs and campgrounds are otherwise provided and are readily available by paved walkways. Requirements at wading pools may be limited to toilet facilities.

(b) *Layout.* 1. Facilities to be used simultaneously by both sexes shall be divided into 2 parts designated by sex and separated by a tight opaque wall. Entrances and exits shall be screened to break line of sight. The layout shall be such that the patrons on leaving the dressing room pass by the toilets and through the showers enroute to pools.

2. Floors shall be of smooth impervious material with nonslip surface and slope ¼ inch per foot toward drains. Junctions between walls and floors shall be coved. Drain openings shall be ½ inch or less in width or diameter.

3. Walls and partitions shall be reasonably smooth and be made of durable material. A space of 10 to 12 inches shall be left between the floor and the bottom of partitions forming compartments within dressing, shower and toilet rooms.

4. The dressing room area serving outdoor pools should be unroofed. The floor drains serving unroofed areas shall be connected to a storm sewer or the floor pitched to drain to the ground surface.

5. Lockers shall be set either on solid masonry bases at least 4 inches high or on legs extending at least 10 inches above the floor.

6. Liquid or powdered soap dispensers should be installed so as to serve each lavatory and each shower head. Dispensers shall be of durable material and solidly mounted.

7. Heating and storage equipment of adequate capacity to supply water at a temperature between 90°F. and 120°F. to all showers and lavatories shall be provided.

(c) *Schedule of fixtures.* The criteria for minimum bathhouse plumbing facilities shall be based upon the maximum instantaneous pool attendance. Facilities shall be based upon a ratio of males to females of 1:1. When pool use is limited to one sex, 100% of the plumbing facility requirements shall be provided for that sex. Plumbing fixtures shall be provided on the basis of the following schedule:

Note: Separate toilet facilities should be provided for spectators.

COMBINATION SWIMMING OR DIVING POOLS

Number of Patrons Each Sex	Females Number of Toilets	Males Number of Toilets	Males Number of Urinals	Females Number of Lavatories	Males Number of Lavatories	Females Number of Showers **	Males Number of Showers **
1-100	2	1	1	1	1	2	2
101-200	3	1	2	2	2	4	4
201-400	4	2	2	2	2	7	7
401-700	4	2	3	3	3	10	10
Over 700	5	3	3	3	3	12	12

Note: * * Requirement for INDOOR SCHOOL pools: 1 for each 3 patrons in maximum class.

All indoor pools, bathhouses, dressing rooms, shower rooms, toilet spaces and lockers must be adequately ventilated either by natural or mechanical means. See ch. Ind 64, Wis. Adm. Code.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.18, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.19 Electrical. (1) GENERAL. All electrical wiring and equipment shall be installed in compliance with the Wis. State Electrical Code, Volume 2, E 680.

(2) LIGHTING. All pools and adjacent associated paved areas which are intended to be used after daylight hours shall be provided with area lighting. Lights shall be of such number, design and location as to illuminate the pool and associated areas in accordance with ch. Ind 19 Wis. Adm. Code. Submarine lighting may be used.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.19, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.20 Safety and deck accessory equipment. (1) LIFEGUARD CHAIR. Each combination, swimming or diving pool, other than one reserved for training or competitive purposes, having an area of more than 2000 square feet shall be provided with one elevated lifeguard chair. Additional chairs shall be provided on the basis of one per each additional 5000 square feet of pool surface area or major fraction thereof. Where more than one lifeguard chair is required, and the pool width is 40 feet or more, they shall be located on opposite sides of the pool. The chairs shall be so located as to provide a clear, unobstructed view of the pool bottom in the area under surveillance. One chair shall be located near the diving well. For outdoor pools, one tilting umbrella at least 42 inches in diameter shall be provided at each lifeguard chair.

(2) EQUIPMENT. Each pool shall have one ring buoy of U.S. Coast Guard approved type having a minimum diameter of 20 inches attached to ¼ inch rope having a length not less than 1½ times the maximum width of the pool or 50 feet, whichever is less. Where more than one lifeguard chair is provided, each shall be provided with a ring buoy. On pools under 30 feet in width a shepherd's crook type pole may be substituted for the ring buoy and rope.

(3) LOCATION OF EQUIPMENT. Lifesaving equipment shall be mounted in a conspicuous place and be readily accessible.

(4) FIRST AID EQUIPMENT. Every pool shall be equipped with a standard Red Cross 24-unit first aid kit and 2 durable blankets.

Note: An oxygen resuscitator shall be provided.

(5) TELEPHONE. A telephone shall be available in the immediate pool area. A list of numbers of the nearest rescue squad, physician, ambulance, police and hospital shall be posted at the telephone.

(6) FOOD AND BEVERAGES. Facilities for serving food or beverages shall not be permitted on the deck under any circumstances or within the pool enclosure unless a physically separated area is provided.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.20, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.21 Public swimming beaches. (1) SANITARY SURVEY. (a) *General.* A sanitary survey shall be conducted by the department or by a person or agency acceptable to the department.

(b) *Frequency.* A sanitary survey should be conducted annually, before the start of the swimming season, or more frequently if necessary at existing beaches. At proposed beaches, a sanitary survey shall be conducted before construction or development is started.

(c) *Scope.* The sanitary survey shall include the entire watershed if possible. In the instance of a large watershed, the area to be surveyed should be based on knowledge of the area. In all instances, any discharge that may have an effect on the water quality in the swimming beach shall be included. Other agencies monitoring water in the watershed shall be contacted for information on possible contaminating discharges.

(2) WATER QUALITY. (a) *Bacteriological.* 1. As determined by multiple fermentation or membrane filter procedures and based on a minimum of not less than 5 samples taken over not more than a 30-day pe-

riod, except as permitted in subd. 2., a fecal coliform count shall not exceed a log mean of 200 per 100 milliliter sample, nor shall more than 10 percent of the total samples during any 30-day period exceed 400 per milliliter sample. When the fecal coliform density of any sample collected from an operating beach exceeds 1,000 per 100 milliliters, samples shall be collected and analyzed for fecal coliform for at least 2 consecutive days and if the count exceeds 200 per 100 milliliter sample consideration shall be given to closing the beach.

2. The department may approve requests for less frequent sampling of the water at particular beaches if:

a. A request is specific to a given beach;

b. The request includes a proposed sampling frequency;

c. The sampling history for the beach is provided and shows safe bacterial levels in terms of the standards in subd. 1 for at least the past 3 swimming seasons; and

d. The request includes agreement that the standard minimum 5-times-in-30-days sampling of water will be resumed immediately if unsafe bacterial levels are found, if any significant change in land use takes place in the watershed or if there is any significant change in land use upstream from the beach including, but not limited to, construction of sewage treatment facilities, construction of residences or the siting of a town dump.

(b) *Chemical.* The water shall be free of chemical substances capable of creating toxic reactions or irritations to the skin or membranes of the patrons.

(c) *Physical.* A black disc 6 inches in diameter on a white field placed at a depth of at least 4 feet in water should be readily visible from the surface of the water. Physical determinations shall show the water to be free of excessive color, deposits, growths, oils, greases or other substances in the water capable of creating a health or safety hazard or a nuisance to patrons.

(d) *Biological.* Algae and aquatic weeds should be controlled so that no hazard to patrons results.

Note: Application of chemicals for biological control must be approved by the department of natural resources.

(3) DESIGN. (a) *Location.* The suitability of the beach shall be established by a sanitary survey.

(b) *Area.* The water surface area shall be at least one acre. When the area is less than 2 acres and natural flow through is lacking, a source of acceptable quality dilution water of at least 100 gallons per day per patron shall be provided.

(c) *Attendance.* A minimum of 25 square feet of water surface per patron shall be provided. At least 75 square feet per patron shall be provided in the area over 4 feet in depth.

(d) *Land area.* At least 35 square feet per patron should be provided.

(e) *Bottom slope.* For depths up to 4 feet, the slope should be uniform and should not exceed 1:15 and shall not exceed 1:10. For greater depths the slope should not exceed 1:3. There shall be no dropoffs or radical changes in slope nor underwater obstructions.

(f) *Bottom material.* The bottom to a depth of 6 feet shall consist of sand, pea gravel or other approved material.

(g) *Markers.* The perimeter of the swimming beach and water area shall be clearly designated by means of lines. The shallow portion of the swimming area shall be separated from the remainder of the facility in a similar manner, at a depth of between 3 and 4 feet. Any area specifically designated for diving purposes shall also be separated by means of lines. A separate wading area with a maximum water depth of 2 feet, designated by lines is recommended. The lines shall be buoyed and securely anchored. Buoys shall be located no more than 25 feet apart and at all points where lines are joined. Clearly visible water depth markings shall be provided at the points of maximum depth of all previously designated areas and at all diving boards, platforms, etc.

(h) *Diving facilities.* Floating and fixed diving platforms shall be constructed with a visible 12-inch air space under maximum feasible load. There shall be as little underwater construction as is consistent with adequate support and all braces and struts shall be designed to prevent entrapment of patrons.

(i) *Water depth—diving.* The minimum water depth surrounding floating or fixed diving platforms, without special diving apparatus within a distance of 12 feet from the float, shall be at least 8 feet. For diving boards, towers or similar devices, 3 or less feet above the water, the depth at the end of the device and for 12 feet from the device shall be 10 feet. For heights greater than 3 feet, the depth at these locations shall be 12 feet. No diving apparatus shall be installed more than 10 feet above the water.

(j) *Drinking water supply.* A supply of potable water meeting the standards of the department of natural resources should be provided at all beaches. The water shall be obtained from a municipal water supply if it is available. At least one drinking fountain for every 1,000 users or fraction thereof should be provided.

(k) *Liquid waste disposal.* Waste water from a bathhouse and/or related facilities shall be discharged to a municipal sewerage system when available. If not available, discharge shall be to a system approved by the department.

(l) *Toilet facilities.* Toilet facilities shall be provided within 500 feet of all public swimming beaches.

(m) *Bathhouse.* Construction shall be in accord with s. HSS 171.18.

(n) *Treatment of water.* If treatment is necessary to meet the water quality standards, the department shall be consulted.

(4) SAFETY. (a) *Lifeguards.* When there are 25 or more swimmers at swimming beaches, one or more certified lifeguards should be on duty during all swimming hours. They shall be capable swimmers, competent in lifesaving methods and in methods of artificial resuscitation. Life-

guards shall not be in the water except in the line of duty. A minimum of one lifeguard for every 300 linear feet of beach should be provided. Lifeguards shall be isolated from beach crowds by occupying elevated seats on stands or towers, high enough to give them a complete and unobstructed view of the swimming and beach area for which they are responsible. When no lifeguard is on duty, a legible sign or signs reading "NO LIFEGUARD ON DUTY" should be posted. Lifeguard stations shall be located as close as practical to the swimming area shoreline and within at least 30 feet of the shoreline.

(b) *Lifeguard certification.* Acceptable certification for a lifeguard shall include but is not limited to holding a current valid Red Cross Senior lifesaving and water safety certification or other equivalent certificates.

(c) *Equipment.* 1. Each lifeguard tower should be provided with a whistle or megaphone, umbrella, sunglasses and a helmet.

2. At least one 24-unit Red Cross first aid kit should be provided at each swimming beach.

3. A spine board or stretcher and 2 durable blankets should be provided at each beach.

4. Where swimming is permitted a distance greater than 150 feet from the swimming shoreline, at least one V-bottom, square stern boat, 12 feet or more in length and equipped with pin oars, one life pole or shepherd's crook type of pole, having blunt ends and one ring buoy should be provided for each 1000 linear feet of beach. Such boats shall be located so as to be immediately available and shall be used for their intended purpose only.

5. One ring buoy not less than 20 inches in diameter to which shall be attached a 75-foot length of ¼ inch rope, a reaching pole with blunted ends with a minimum length of 10 feet, a separate throw line of ¼ inch rope at least 75 feet in length, and minimal first aid equipment should be provided at each lifeguard station.

6. Lifesaving equipment shall be kept in good repair and be readily available.

(d) *Communications.* A telephone or other means of communication with numbers of nearest rescue squad, physician, ambulance, police agency and hospital shall be provided when such service is available to the site.

(e) *Night swimming.* Night swimming shall not be permitted unless the beach area is adequately lighted. All electrical facilities shall be in accord with s. HSS 171.19.

(f) *Emergency care room.* Every swimming beach capable of accommodating 500 patrons should have a readily accessible room or area designated and equipped for emergency care. Such room should be equipped or provided with at least the following: potable water, a cot or bed, an advanced Red Cross first aid kit, a globe air mask and mouth-to-mouth tubes.

(5) SUPERVISION. The operator or another responsible person familiar with the operation of the equipment and facilities and having advanced

first aid training should be on duty at all times a swimming beach serving 25 or more patrons is open.

(6) SANITATION. (a) *Maintenance.* Swimming beaches shall be maintained in a clean, sanitary and safe condition. Diving towers, springboards, platforms, slides and other equipment shall be properly maintained so as to prevent injury to the patrons.

(b) *Suits and towels.* All swimming suits and towels furnished or rented by the operator or concessionaire shall be washed with soap and hot water, rinsed and thoroughly dried after each use.

(c) *Solid waste.* An adequate number of leakproof solid waste receptacles with self-closing lids shall be placed in the beach area. They shall be emptied twice weekly or more frequently if necessary and the contents disposed of in a manner consistent with applicable state and local requirements. Plastic or paper bags suspended on racks or stands may be used in place of receptacles if daily removed from the beach area.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.21 and am. (2) (a), Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.22 Operation. Public swimming places shall be operated in accord with such rules as the department may prescribe to adequately protect the health, safety and welfare of the users. The owner may prescribe such other rules as are deemed necessary.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.22, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.23 Supervision. Every public pool shall be under the supervision of a competent operator or lifeguard. This person shall require careful observance of sanitary and safety regulations. Natural swimming places should be supervised in the same manner.

Note: See HSS 171.21 (5).

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.23, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.24 Plan review fee schedule. (1) APPLICABILITY. The fees required by this secton shall be fixed and collected by the department for the examination for approval of plans and specifications of public swimming places defined in s. HSS 171.03 and bathhouses for which authority to fix and collect such fees is provided in s. 140.05 (17), Stats.

(2) PAYMENT OF FEES. The owner of a proposed pool, beach and/or bathhouse or his agent shall make payment of the fee or fees as set forth in this chapter by submission of a check in the appropriate amount made payable to the department of health and social services.

(3) REVIEW FEES. Fees submitted shall be in accord with the following schedule:

Pool (new construction)—initial submittal	$25.00 plus $.02 per square foot of water surface—maximum of $100.00
Pool (reconstructed or altered)—initial submittal	$25.00
Beach—initial review (includes field sanitary survey)	$50.00

Beach or pool (new, altered or reconstructed) revised submittal.....$15.00

Bathhouse—initial submittal.....$10.00

Preliminary plan review—submittal or office conference.....$15/hr.

Experimental installation with field evaluation.....$50.00

Fees may be adjusted biennially commencing on July 1, 1975 in direct proportion with the salary increases granted staff review engineers.

(4) PROCEDURE. (a) *When submitted.* The facility owner or his agent shall provide the required fee or fees when each plan is submitted or resubmitted.

(b) *Fee acceptability.* The department shall determine whether the required fee or fees have been submitted.

(c) *Restrictions.* The department shall not accept any plan for review until all required fees are received. If the department determines upon review of the plans that inadequate fees were provided, the necessary additional fee shall be provided prior to departmental approval.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.24, Register, May, 1982, No. 317, eff. 6-1-82.

HSS 171.25 Approval on experimental basis. The department may approve materials, equipment and designs different than those set forth in this chapter for specific installations for experimental or trial purposes. Equipment listed as approved in the annual or supplement publication of the National Sanitation Foundation shall be considered acceptable unless installation experience proves otherwise. Equipment found satisfactory by other independent recognized testing laboratories shall be considered acceptable providing complete reports of tests with the specifications for the pool equipment are submitted to verify such findings.

History: Cr. Register, November, 1975, No. 239, eff. 12-1-75; renum. from H 71.25, Register, May, 1982, No. 317, eff. 6-1-82.