

## Chapter H 71

## PUBLIC BATHING PLACES

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**H 71.01 Public bathing places.** (1) **DEFINITION.** *Public bathing places* shall be construed in these regulations to include any place open to the public for swimming or recreational bathing, together with shores, buildings, equipment and appurtenances pertaining thereto, irrespective of whether a fee is charged for the use thereof.

(2) **BATHING PLACE CLASSIFICATION.** Bathing places are classified as follows:

(a) Natural lakes, ponds, rivers and streams.

(b) Outdoor pools which are partly artificial and partly natural in character.

(c) Outdoor or indoor pools which are entirely of artificial construction.

(3) **LOCAL REGULATIONS.** This regulation shall not limit the power of counties, cities, villages and towns to make, or enforce, additional or more stringent regulations, provided the same do not conflict with this regulation or with any other rules of the board.

**History:** 1-2-56; r. and recr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.02 Applicability to swimming pools.** The regulations as given hereafter shall be the minimum requirements that apply to all new or reconstructed public pools excepting as specifically noted in subsequent sections. Whenever the word "pool" is used, without additional delineation, the section shall apply to swimming, diving, wading, limited purpose and therapeutic pools, or any combination thereof. When additional delineation is used, the section shall apply only to the specific type of pool indicated.

**History:** 1-2-56; r. and recr. Register, June, 1965, No. 114, eff. 7-1-65.

Register, June 1965, No. 114

**H 71.03 Definitions.** For the purpose of this regulation the following terms mean:

- (1) **APPROVAL.** Written approval by the state board of health.
- (2) **BOARD.** The state board of health.
- (3) **BREAKPOINT.** The line of separation between the shallow portion and the diving area of a combination pool which is normally defined by a sharp change in the slope of the floor and marked by a safety rope.
- (4) **DECK.** The paved surface installed around the pool.
- (5) **DEEP PORTION.** The deep side of the breakpoint or that portion of a pool having a design water depth greater than 5.5 feet.
- (6) **FILTER AID.** A type of finely divided media, usually diatomaceous earth, processed perlite, or similar material, used to coat a septum.
- (7) **FILTER AID FEED.** That part of filter aid that is continuously supplied in controlled amounts to maintain a permeable filter cake during a filter cycle.
- (8) **FILTER ELEMENT.** A device within a filter tank consisting of a septum and support.
- (9) **FREEBOARD.** The vertical distance between the normal design level of the surface of the media in a permanent media type filter and the overflow lip of the waste water collector.
- (10) **OWNER.** A municipality, corporation, company, association, firm or individual owning, controlling or operating any public bathing place.
- (11) **PATRON.** A user of the pool.
- (12) **POOL.** The structure, basin, chamber or tank, used for one or a variety of purposes, hereafter defined, together with buildings and appurtenances used in connection therewith.
  - (a) *Combination pool.* A pool used for swimming and diving.
  - (b) *Diving pool.* A pool used exclusively for diving.
  - (c) *Limited purpose pool.* A pool used for purposes not otherwise defined, such as apparatus swimming, diving and underwater photography training or other special uses by the public.
  - (d) *Public pool.* A pool used for swimming, diving, wading, limited purpose or therapeutic purposes other than those serving not more than 10 individual residential quarters as homes or apartments. Public pools include those serving or installed for the state or any political subdivision thereof; motels, hotels, resorts, camps, clubs, associations, schools; religious, charitable or youth organizations; institutions, or any other essentially similar type accommodation.
  - (e) *Reverse flow pool.* A reverse flow pool is one so designed the waters enters from the bottom of the pool and leaves at or near the water line.

- (f) *Swimming pool.* A pool used for swimming purposes only.
- (g) *Therapeutic pool.* A pool used exclusively for physical therapy and having a surface area greater than 600 square feet.
- (h) *Wading pool.* A shallow pool used primarily by non-swimming children.

(13) **PRECOAT.** The coating applied to the septums at the beginning of each cycle.

(14) **SEPTUM.** That part of the filter element consisting of cloth, wire screen, or other porous material on which the filter media or aid is deposited.

(15) **SHALLOW PORTION.** That portion between the shallowest end wall and the breakpoint, or that portion where the design water depth is less than 5.5 feet.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.04 Plans and specifications.** (1) **PREPARATION.** Plans and specifications for new or reconstructed public pools and their equipment, including adequate supporting design data, shall be prepared by a professional engineer or architect holding registration in this state and shall bear his seal and signature.

(2) **APPROVAL.** Every owner, personally or through his engineer or architect, shall obtain approval, prior to award of any contract, of plans and specifications covering construction or reconstruction of pools and installation or alteration of their equipment. The engineer or architect may submit preliminary plans and specifications for review and comment. Design modifications, not in accord with this regulation, will be accepted if the engineer or architect can adequately demonstrate that the deviation will tend to cause no hazard to patrons. Any deviation from the plans and specifications or conditions of approval thereof shall not be made without prior approval of the board.

(3) **REPORT.** A report shall be included with the plans and specifications which shall, where pertinent, present the following information:

(a) The name and address of the owner and of the engineer or architect whose seal and signature appear on the plans.

(b) A description of the existing swimming facilities and the character of the municipality or establishment to be served.

(c) A description of the method followed in arriving at the maximum instantaneous pool attendance.

(d) A brief description of the proposed recirculation and water treatment processes.

(e) The source of the water supply and its iron and manganese content.

(f) A list of the chemicals to be used in the treatment processes and their expected concentrations.

(4) **DETAILED PLANS AND SPECIFICATIONS.** Three identical sets of plans and specifications shall be supplied to the board, one set of

which will be returned to the owner upon approval. The plans and specifications shall include:

(a) *Location and plot plan.* A general map and detailed drawing showing location of the proposed pool. The drawing shall show a floor plan of pertinent portions of the structures, pool orientation, pool area and volume. In addition, the map or plot plan shall show water supply mains and public or private sewers serving the premises. Street grade, sewer invert elevations and the relative elevations of walkways, equipment room floor, and design pool water level shall be shown.

(b) *Construction plans.* Detailed drawings, adequately dimensioned and indexed if needed, shall include but not be limited to:

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

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

3. A location plan and elevation drawings of bathhouse facilities 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; lighting and ventilation.

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

1. All construction details not shown on the drawings, which are necessary to inform the contractor of the requirements as to the quality of materials and workmanship.

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

3. Detailed information with respect to plumbing fixtures and piping.

4. Filter materials such as sand, gravel, anthraflit, or other approved material.

5. Miscellaneous appurtenances.

(5) **CONSTRUCTION CERTIFICATION.** On completion of construction the owner shall certify that the pool was constructed in accordance with approved plans and specifications.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.05 Structural stability.** All pools shall be designed to be structurally sound using suitable and durable materials. Provision shall be made for the relief of stresses which might occur as a result of

unbalanced hydrostatic pressures and to protect the pool structures from stresses which may develop due to freezing.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.06 Water supply.** The water supply for a pool shall be from an adequate and approved source. Equipment design shall take into consideration the quality of water that will be available. No direct connection shall be made between potable water supply piping and a pool or the piping thereof.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.07 Maximum pool attendance.** The maximum instantaneous allowable attendance at a combination, diving or swimming pool shall be based upon the following use factors:

- (1) **SHALLOW PORTION.** Ten square feet per patron.
- (2) **DEEP PORTION.** Twenty-four square feet per patron.
- (3) **INDOOR SCHOOL POOL.** The shallow and the deep portions of pools used for class purposes should be sized to provide 25 and 36 square feet per student patron, respectively.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.08 Pool basin.** (1) **ENTRANCE AND SEPARATION.** The design should require that swimmers gain access to combination or swimming pool decks adjacent to the shallow portion. Where pool layout requires entrance adjacent to the deep portion, the minimum adjacent deck width shall be ten feet. Area, routing and drainage separation shall be provided between the areas used by patrons and those used by spectators.

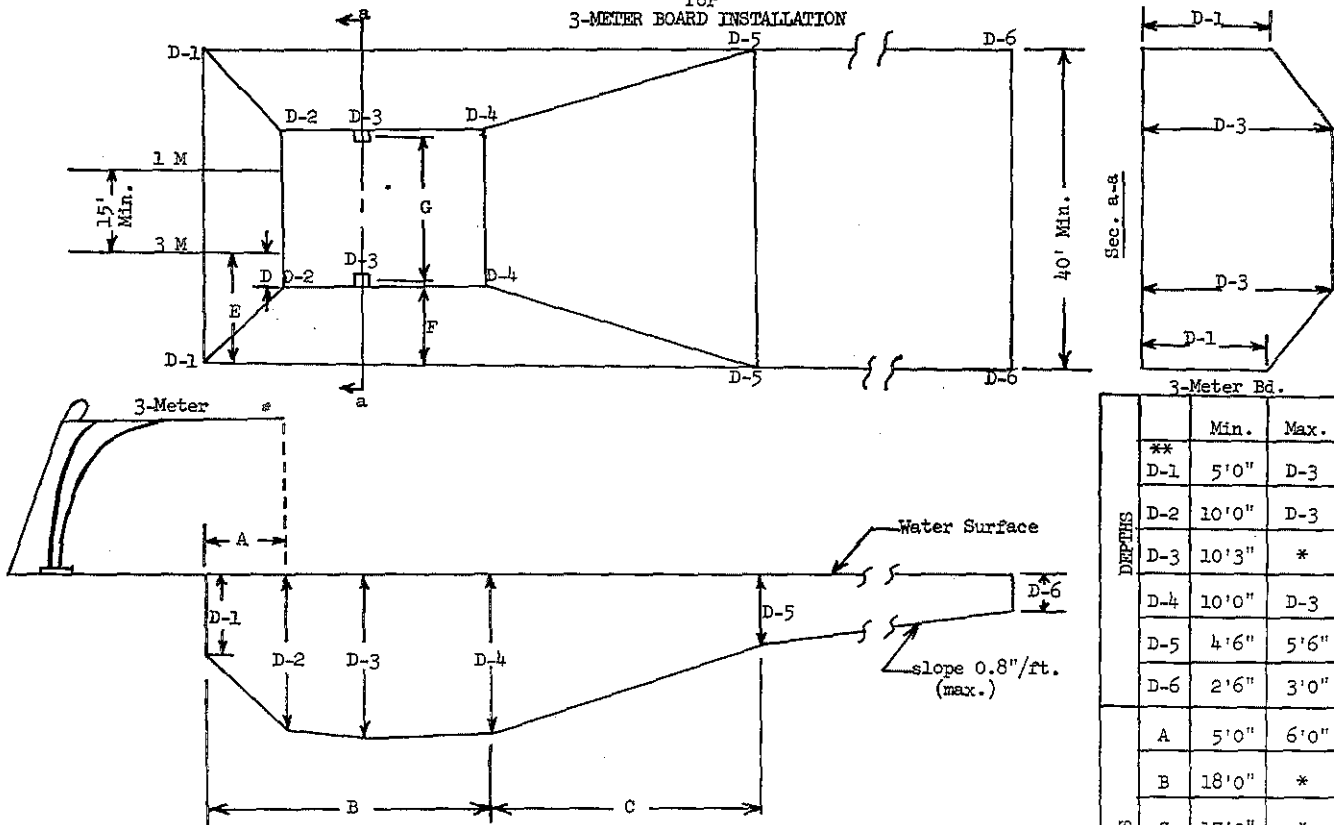
(2) **DEPTHS AND FLOOR SLOPE.** The depth of water above the pool floor at the wall in the shallow end of a combination or swimming pool shall be not less than 30 inches nor more than 36 inches unless special approval is obtained for greater depths. The increase in depth in the shallow portion of a combination pool or those used for swimming or therapeutic purposes shall not be greater than 0.8 inch per foot. The depth of water at the breakpoint or safety rope location in a combination pool shall be not less than 4.5 feet nor more than 5.5 feet.

(3) **VERTICAL WALL DEPTH.** Walls in the shallow portion of a combination or swimming pool shall be vertical. A curved junction between the wall and floor shall have a radius of not more than 6 inches.

(4) **DEEP PORTION.** Where the diving area is not a wholly separate structure, provision shall be made to separate the deep portion from the shallow portion by a safety rope located at the 5.5 foot depth or at the breakpoint if shallower. The diving section of combination or diving pools shall have adequate area and water depth. The minimum depth, length and width clearance from diving boards shall be as indicated by figures I, II, III and IV. The contours of the floor shall not infringe upon the profiles indicated by these figures.

Not to scale

FIGURE I - PLAN AND PROFILE  
for  
3-METER BOARD INSTALLATION



Notes:

\* When maximum or minimum dimension is not indicated there is no limiting dimension.

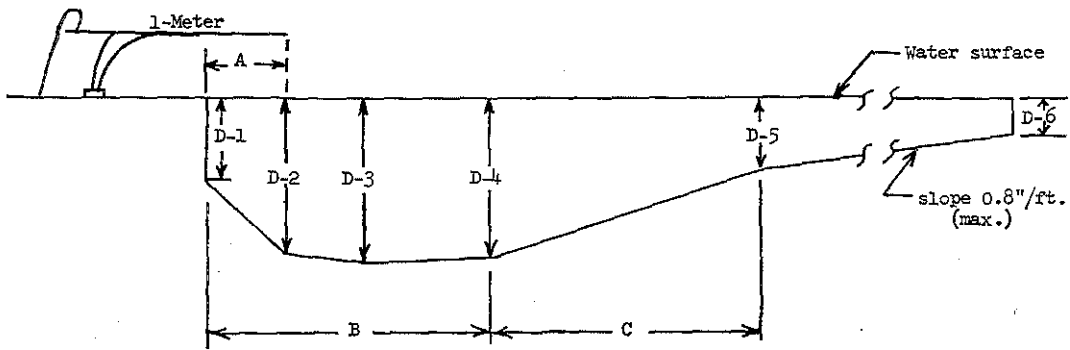
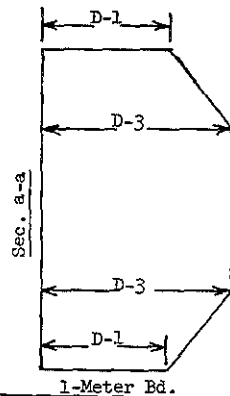
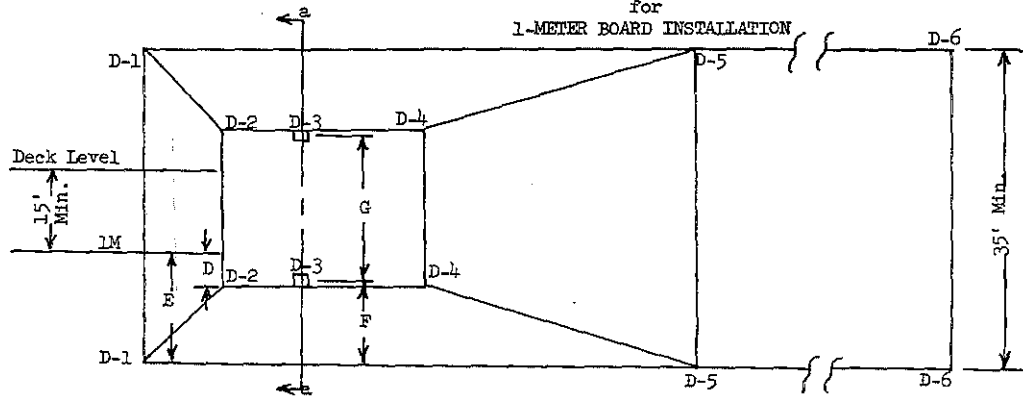
\*\* D-1 shall be at the side wall or not more than 6 inches from the wall.

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Not to scale

FIGURE II - PLAN AND PROFILE  
for  
1-METER BOARD INSTALLATION



	MINIMUM		MAXIMUM	
	D-1	D-3	D-1	D-3
D-2	8'6"	D-3		
D-3	8'9"	*		
D-4	8'6"	D-3		
D-5	4'6"	5'6"		
D-6	2'6"	3'0"		
A	5'0"	6'0"		
B	18'0"	*		
C	12'0"	*		
D	5'0"	*		
E	10'0"	*		
F	*	10'0"		

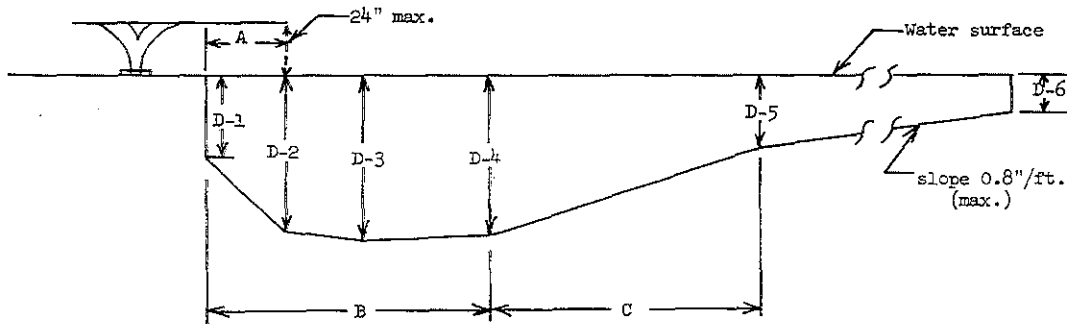
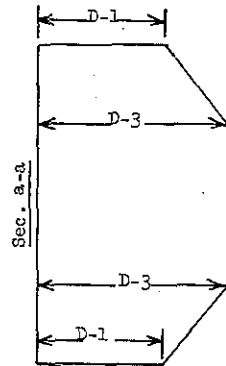
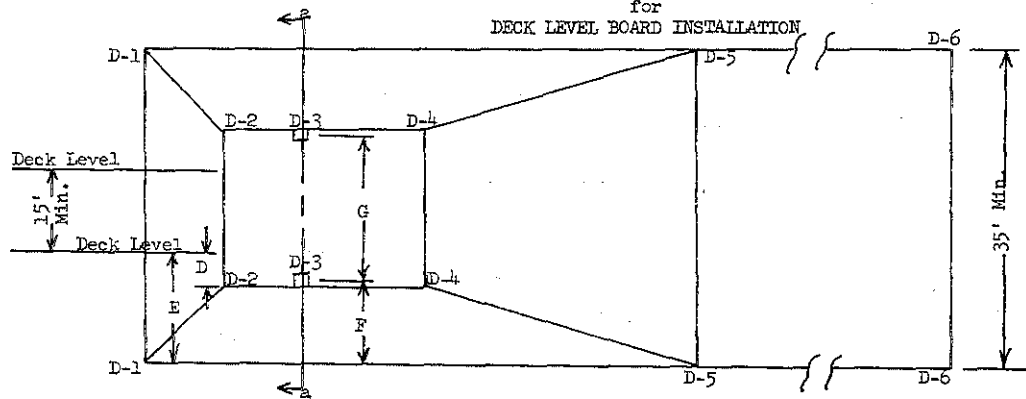
Notes:  
 \* When maximum or minimum dimension is not indicated there is no limiting dimension.  
 \*\* D-1 shall be at the side wall or not more than 6 inches from the wall.

STATE BOARD OF HEALTH

Register, May, 1966, No. 126

Not to scale

FIGURE III - PLAN AND PROFILE  
for  
DECK LEVEL BOARD INSTALLATION



	Min.	Max.	
	**		
D-1	5'0"	D-3	
D-2	8'6"	D-3	
D-3	8'9"	*	
D-4	8'6"	D-3	
D-5	4'6"	5'6"	
D-6	2'6"	3'0"	
LENGTHS	A	2'6"	4'0"
	B	16'0"	*
	C	12'0"	*
	D	5'0"	*
	E	10'0"	*
	F	*	10'0"

Notes:

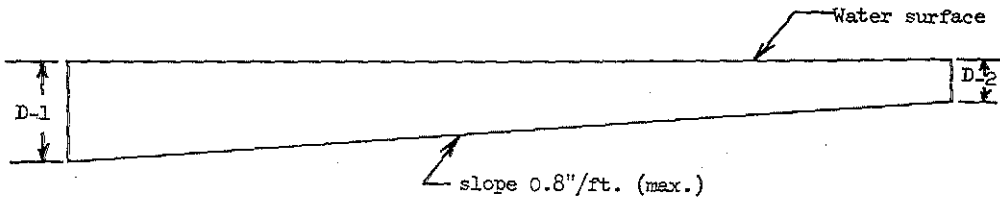
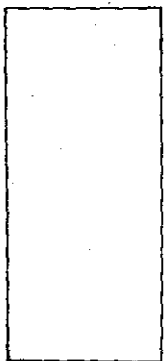
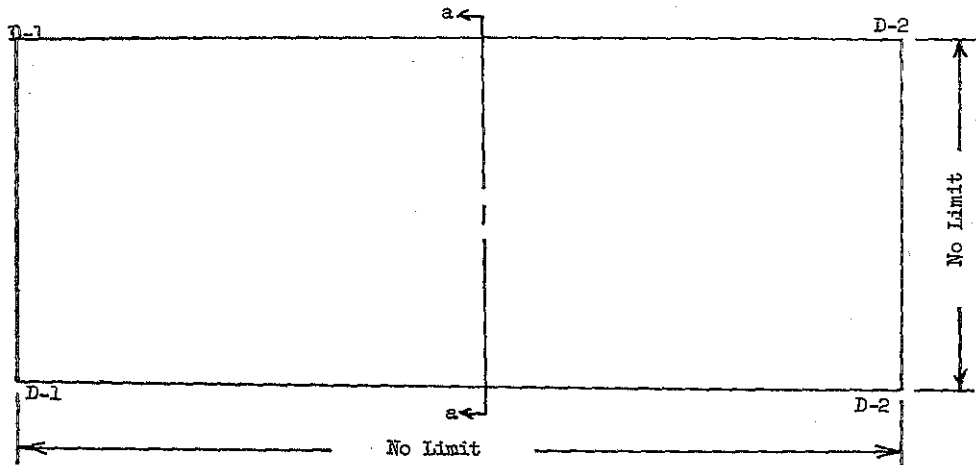
\* When maximum or minimum dimension is not indicated there is no limiting dimension.

\*\* D-1 shall be at the side wall or not more than 6 inches from the wall.



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FIGURE IV - PLAN AND PROFILE  
for  
SWIMMING POOL - NO DIVING BOARDS



No Diving Bd.

DEPTHS	Min.	Max.
	D-1	*
D-2	2'6"	3'0"

(5) **OBSTRUCTIONS.** Except for a safety ledge, safety rope, ladder or side rails, there shall be no obstruction extending from the wall or the floor into the clear area of a pool. A clear vertical distance of not less than 13 feet shall be provided above any diving board.

(6) **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 slope of one-half inch from the wall toward the pool.

(7) **LADDERS AND STAIRS.** At least 2 points of egress shall be provided for any swimming, diving or combination pool, which shall be spaced so that at least one point of egress is in the deep portion and one at or near the shallow end wall. Maximum separation of points of egress, measured along the perimeter, shall be 75 feet. Handrails extending from below the water surface to the deck, curb, or coping shall be provided on each side of ladders. Grab rails may be substituted for handrails. Stairs may be substituted for ladders only at or near the end wall of the shallow portion of a swimming or combination pool. When included, stairs shall be recessed and treads shall have a finish such as to minimize slipping. Stairs shall have a uniform rise of not more than 7.75 inches and uniform treads of not less than 9.5 inches, with all corners rounded to a radius of one-half inch. The treads shall not project beyond the face of the riser. Stairs having more than 3 risers shall have a handrail on each side.

(8) **WALL AND FLOOR FINISH.** Wall and floor finish may be of concrete, cement plaster, tile, paint, or other inert and impervious material, nontoxic to man, and shall be reasonably durable. Paint, when used, shall be of such composition that it will produce neither taste nor odor in the water. Finish shall be reasonably smooth and be white or light in color of a Munsell value of 6.5 or greater.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65; am. (4) and (6), Register, May, 1966, No. 125, eff. 6-1-66.

**H 71.09 Depth markings.** Markers shall be on the edge of the deck along the pool perimeter. The depth of water shall be plainly marked at maximum and minimum points, at points of break 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, June, 1965, No. 114, eff. 7-1-65.

**H 71.10 Deck.** (1) **AREA.** The deck of a combination, diving or swimming pool shall extend completely around the pool and have a minimum width of 6 feet when instantaneous attendance is 200 patrons or less. One additional foot of width shall be provided for each additional instantaneous attendance of 200 patrons or fraction thereof. A minimum deck width of 4 feet shall be provided on the sides and at the back of any piece or diving equipment. Additional area should be provided for sun bathing.

(2) **DRAINAGE.** Outdoor pool decks shall slope away from the pool. For outdoor pools having a surface area greater than 1600 square feet the decks shall slope to deck drains, to other acceptable devices or to channels providing free unobstructed flow. Indoor pool deck drainage may be conveyed to the pool recirculation system, provided a bypass to the drainage system is installed. Drains shall be connected to a storm sewer or discharge to the ground surface at a suit-

able point. Openings in deck drains shall be three-eighths inch or less in width or diameter.

(3) **FINISH.** The deck surface shall have a non-slip texture causing no discomfort to bare feet.

(4) **HOSEBIBS.** A hosebib or hosebibs shall be provided in the equipment room and at such intervals along the deck as necessary to permit adequate cleaning. All hosebibs served by a potable water supply shall be protected against backsiphonage by proper installation of vacuum breakers at a height of at least 7.5 feet above the deck or floor or as near a ceiling as is possible where such limits minimum height. See Wis. Adm. Code, section H 71.21(2) (i).

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.11 Fence.** A wall or fence at least 50 inches high, of such construction as will make access difficult, shall completely enclose combination, diving, swimming and limited purpose pools and the paved areas adjacent thereto. The enclosures shall be so designed that where bathhouse facilities are provided, access to the pool shall be through the bathhouse, dressing room facilities or through controlled openings. The enclosure shall not extend beyond paved areas.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.12 Recirculation system.** (1) **INLETS.** (a) *Type and location.* Inlet fittings shall be of the adjustable type and be located 12 to 18 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.

(b) *Inlets for skimmer type pool.* 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.

(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 board.

(2) **OVERFLOW GUTTERS.** (a) *Where required.* Overflow gutters shall be provided on all pools having a surface area of over 1600 square feet. See Wis. Adm. Code section H 71.12(4) (a).

(b) *Extent and capacity.* Overflow gutters shall extend completely around the pool, except at steps or at recessed ladders. The overflow gutter shall be designed to also serve as a handgrip. The gutter and its appurtenances shall be capable of continuously removing at least 125% of the recirculation rate when the water level in the gutter is at the lip.

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

(d) *Shape and proportions.* The interior width of the gutter shall be not less than 3 inches at the bottom. Sloping gutters shall have a depth of at least 2 inches at the high point and 4 inches at the drain. The minimum depth of a gutter constructed without slope shall be not less than 4 inches. The gutters shall decrease in width from the top of the lip to the bottom. When a gutter has a width of less than 12 inches, the vertical distance from the gutter lip to the deck shall be not less than 0.6 of the horizontal projection from the pool

wall to the back of the gutter. When a gutter has a width of 12 inches or more said vertical distance shall be such as to trap the water. They shall be designed to prevent entrapment of bathers' arms or legs.

(e) *Outlet fittings and pipe.* The gutter outlets shall be connected with pipes which have a diameter of at least 2 inches. The net area of the opening in the grating of outlet fittings shall be at least one and one-half times the area of the outlet pipe. See Wis. Adm. Code section H 71.16 (1) (2) (3) (4).

(f) *Surge tank.* All overflow gutters on combination, swimming and diving pools shall be connected to the recirculation system through a surge tank having an effective capacity of 1.0 gallon per square foot of pool water surface. Each surge tank shall have an overflow pipe of adequate capacity to convey excess water to the clear waste water drain.

(3) **ROLL-OUT TYPE POOL.** Roll-out or deck level type pools shall be designed to meet applicable 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 board in respect to the proposed use of the pool.

(4) **AUTOMATIC SKIMMERS.** (a) *Number, location and quality.* Automatic skimmers may be installed on pools having not more than 1600 square feet of surface area. At least one skimming device, built into the pool walls, shall be provided for each 500 square feet of surface or fraction thereof. Skimmers shall be so located as to provide effective constant skimming in relation to surface movement of the water. On outdoor pools, at least one skimmer shall be located on the leeward side of the pool. Skimmers shall be sturdy and be constructed with corrosion resistant materials. See Wis. Adm. Code section H 71.12 (2) (a).

(b) *Flow-through rate.* Each skimmer 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 required recirculation rate.

(c) *Weir adjustment and controls.* The skimmer weir 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 must pass through an easily removable and cleanable basket or screen before encountering control valves and entering the pump suction. The piping from the recirculating drain shall contain a manual control valve.

(d) *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 to maintain pump suction requirements shall be assured. Equalizer pipes shall be designed to carry the total required recirculation rate. 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 which

will automatically open when the water level drops below the minimum operating level of the skimmer shall be provided on each equalizer pipe.

(e) *Handgrips.* Handgrips shall be installed on every combination, diving and swimming pool having automatic skimmers. The handgrip portion of the bullnosed coping shall not be more than 2 inches wide or shall 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 one-half inch drop in a 6-inch distance.

(5) 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.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.13 Filtration.** (1) **GENERAL.** (a) *Pressure type filter shells.* 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 his head with a safety factor of 4.

*Note:* See Wis. Adm. Code, chs. Ind. 41 and 42.

(b) *Vacuum type filter shells.* Filter shells shall be designed to withstand pressure developed by the weight of the water contained therein, with a safety factor of 1.5. Filters that are closed during any part of the operating cycle, in addition, shall be designed to withstand a vacuum equal to 25 inches of mercury with a safety factor of 1.5.

(c) *Operation instruction and data plate.* A manual of instruction shall be provided 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 as to be easily read and understood, shall be securely attached to the filter shell at an accessible location. The plates shall provide the following information:

1. Manufacturer's name and address.
2. Filter model number.
3. Filter serial number.
4. Effective filter area in square feet.
5. Design flow rate in gallons per minute.
6. Maximum working pressure.
7. Date of manufacture.

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.

(d) *Accessibility-operational and repair facilities.* Each filter unit shall have a suitable access opening to permit the installation and removal of internal filter components such as the upper and lower distribution systems, filter media, filter elements and septums. Provision shall be made for complete draining of the tank.

(2) **PRESSURE TYPE PERMANENT MEDIA FILTERS.** (a) *Pressure loss.* 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 filter discharge openings.

(b) *Construction requirements.* 1. The upper distribution system shall be hydraulically designed to distribute incoming water during the filter cycle so as to prevent any movement or migration of the filter media at the design flow rate 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 be not more than 3 feet. Vertical filters shall have a straight side shell height of 12 inches above the top of the filter bed.

2. The lower distribution system shall be designed to permit adequate flow and distribution of wash water to uniformly expand the filter media during backwashing and to uniformly collect the filtered water during the filter cycle. If a perforated plate is used, it shall be placed 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 not less than 0.25%, nor more than 0.40%. The distribution system shall be non-clogging and shall be constructed of materials resistant to corrosion, physical deformation or wear.

3. The filter media shall be sand, anthracite or other media acceptable to the board. 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. Anthracite shall have such size and uniformity coefficient as to produce a filter effluent equal or better in quality than could be obtained using sand as heretofore specified.

4. Where gravel is used to support the filter media, it shall be rounded material free of limestone and clay 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.

(c) *Filter rate.* The design rate of a sand or anthracite filter shall not exceed 3 gallons per minute per square foot of filter bed area unless filter design to warrant use of higher rates has been amply demonstrated through test data.

(d) *Backwash rate.* With sand media the minimum backwash rate shall be not less than 15 gallons per minute per square foot of filter bed area. With anthracite coal or other filter media, the rate of backwash shall be based upon the specific gravity of the media.

(e) *Chemical feed.* Equipment should be provided for feeding a coagulant into the filter influent having a capacity such that not less than 2 ounces of coagulant per square foot of filter bed area can be applied after backwashing.

(f) *Accessories.* The filters shall be provided with influent and effluent pressure gauges, backwash sight glass and air relief valves.

A rate of flow indicator shall be installed in the recirculation pump discharge piping. Mercury manometers shall be equipped to prevent loss of mercury into the recirculation system. All accessories shall be located in accord with the manufacturer's specifications.

(g) *Disposal of backwash water.* The backwash water from pressure sand or anthracite filters should be discharged to a storm sewer, if available, or to a sanitary sewer.

(3) **GRAVITY FILTERS.** Gravity type sand or anthracite filters may be used in lieu of other approved filtering methods. Before proceeding with final plans of a gravity type filter, the board shall be consulted to determine acceptability of the proposed design.

(4) **FILTER AID FILTERS—VACUUM AND PRESSURE TYPES.** (a) *Filter rate.* The design rate for pressure or vacuum filter aid filters shall be 2.67 gallons per minute per square foot when the turnover rate is 6 hours or less and 2.000 gallons per minute per square foot with an 8-hour turnover.

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

(c) *Re-cycling.* The filter and piping shall be so designed 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.

(d) *Elements.* 1. The effective filter area of a septum shall be that part thereof which will be 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 one-quarter 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. For wire-wound and similar elements, the distance between members of a septum or between the adjacent openings shall not be greater than twice the thickness of the filter aid coat when 0.15 pound of filter aid is applied per square foot of effective filter surface. The design of elements and element assemblies shall be such as to maintain them in proper position.

2. 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 in pressure filters.

(e) *Distributing devices.* A suitable baffle or other device shall be installed in the filter tank to prevent currents that will displace the filter aid coating on the septums during the filtering operation. The design and arrangement of the interior filter components shall provide for uniform distribution of the filter aid over the entire septum area.

(f) *Filter aid feeding equipment.* 1. 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.

2. Continuous feed equipment shall be provided and be capable of applying not less than 0.1 pound of filter aid per square foot of filter area per 24 hours. Pressure filters shall be equipped with an adequate sized positive displacement type pump for the addition of the

filter aid. A slurry tank shall be provided equipped with an agitator, which is capable of holding a one-day supply of filter aid slurry of a 5% mixture. Vacuum filters shall be equipped similar to pressure filters or with a mechanical dry filter aid feeder.

(g) *Cleaning.* Filter and piping design shall permit cleaning by one or a combination of 2 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. Provision shall be made for the retention of the waste solids in a settling tank having adequate volume to store 2 complete dumps of the filter. Decanted settled water may be discharged to either a storm or sanitary sewer. Waste solids shall not be discharged directly to either a storm or a sanitary sewer.

(h) *Accessories. Vacuum type.* The filters shall be provided with a vacuum gauge located between the filter and the recirculation pump. A vacuum limit switch should be provided that is interconnected with the recirculation pump controls.

(i) *Accessories. Pressure type.* The filters shall be provided with influent and effluent pressure gauges and air relief valves.

(j) *Accessories. Vacuum and pressure types.* A rate of flow indicator shall be provided to measure the recirculation rate. Mercury manometers shall be equipped to prevent loss of mercury into the recirculation system. All accessories shall be located in accord with the manufacturer's specifications.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.14 Strainers and screens.** (1) **STRAINERS.** Suitable strainers shall be provided through which all water shall pass before entering the pump suction. The strainers shall be of rigid construction, fabricated on a corrosion resistant material and sufficiently strong to prevent collapsing when clogged. Spare strainers shall be provided. No bypass around the strainer shall be permitted. The line containing the strainer shall be properly valved to allow servicing. The strainer shall have maximum openings no greater than one-eighth inch across and the total clear area of all openings shall be not less than 4 times the area of the connecting pipe. If the strainer is of the pot design, it shall have a quick opening cover.

(2) **SCREENS.** Screens preceding filters of the gravity type sand and anthracite, or vacuum filter aid types shall be readily accessible and removable, constructed of corrosion resistant materials and have openings not greater than one-eighth inch across. Screens shall be of sufficient size to insure minimum head loss through the screen.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.15 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 but not to exceed an 8-hour period. If wading pool water is returned to the combination, diving or swimming pool recirculation system, a 6-hour turnover pump capacity shall be provided. Provision shall be made to insure that the pump does not become air bound. The pump or



pumps shall be capable of providing the necessary quantity of water for backwashing filters. See Wis. Adm. Code section H 71.13 (2) (d). The specifications shall clearly state the operating conditions of the pump at the designed filtration and backwash rates.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.16 Piping.** (1) **SIZE AND SLOPE.** The size of pipe, fittings and valves of the complete pool piping system should be based on flow velocities of 4 feet or less per second under suction or 6 feet or less per second under pressure. Gravity 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. See Wis. Adm. Code section H 71.12 (2) (e).

(2) **PLASTIC PIPE LIMITATIONS.** Plastic pipe may be used only in outdoor recirculation systems subject, however, to the requirements established in Wis. Adm. Code sections H 63.05 (2) and (3) (b) (c) (d) (e). Use of plastic pipe under the pool floor is prohibited.

(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) **RECIRCULATING MAIN DRAIN FITTING.** The outlet grate shall be designed to carry 100% of the recirculation rate at a velocity not greater than one and one-half feet per second through the clear area of the grate. Outlet grates shall be anchored. Openings in grates shall be three-eighths inch or less in width or diameter. Outlet fittings shall be of the grate type and shall be set flush with the floor or wall. See Wis. Adm. Code section H 71.08 (5).

(6) **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 when feasible. In case the pool is to be maintained full in water, 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.** Exposed soil, waste and other drain age pipe lines in a pool or equipment room shall not pass over the pool, surge tank or open filter. No drain line carrying storm or clear waste water shall be connected to a sanitary sewer nor to a storm sewer if surcharge of the drain line can cause contamination of the pool water or flooding of the equipment room. A pool pump-out line shall be provided with discharge to a storm sewer or the ground surface where gravity drainage is not possible.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.17 Pool water heaters.** Where installed, heaters for tempering pool waters shall be installed in accordance with Wis. Adm. Code, Ch. Ind. 59 (Building Code).

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.18 Disinfection.** (1) **CHLORINATION.** Equipment shall be provided to apply chlorine compounds or liquid chlorine. The equipment shall be of a durable type that is capable of feeding the disinfectant accurately.

(2) **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. The capacity of the positive displacement type pumping equipment shall be based upon an available chlorine concentration, in the solution, of 5% or less by weight.

(3) **POINT OF ADDITION.** Chlorine shall be fed into the pool water circulating system by means of a gas chlorinator or a positive displacement type pump capable of adjustment to meet the conditions as defined in Wis. Adm. Code section H 71.18 (2). The chlorine feeding equipment shall be electrically controlled by the circulating pump control circuit for automatic operation.

(4) **GASEOUS CHLORINE.** (a) *General.* Where gaseous chlorine equipment is provided, the mechanical proportioning device with required scales and cylinders of chlorine shall be housed, preferably above grade, in a reasonably gas-tight corrosion resistant and mechanically vented room with a door opening outward. 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 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 opening at least 18 inches square, glazed with clear glass, shall be provided so that operation of the chlorine equipment may be observed. 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 U. S. Bureau of Mines, shall be provided. A closed cabinet, accessible without a key, 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.

(b) *Alkali feed.* A positive displacement feeder should be provided for the feeding of an alkali.

(5) **RESIDUAL CHLORINE 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 non-fading, 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	8.4	

(6) **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 non-toxic in the concentrations employed and is approved by the board.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.19 Wading pool.** (1) **DESIGN.** (a) *Turn-over cycle.* A wading pool shall have a maximum turn-over cycle of 2 hours.

(b) *Recirculation system.* The water supply for a wading pool should preferably be obtained from an independent filtration system. A flow meter shall be provided on the wading pool inlet line. See Wis. Adm. Code section H 71.15.

(c) *Inlets and outlets.* At least 2 submerged inlets shall be provided. If the perimeter of the wading pool exceeds 40 feet, one inlet shall be provided for each 20 feet of perimeter or fraction thereof. Each wading pool shall be provided with 2 or more overflow devices equipped with a removable grate and having a combined capacity at a one-inch head equal to the recirculation rate. As an alternate, an over-flow gutter may be installed on one or more of the side walls. A waste outlet shall be provided at the deepest point of the wading pool to permit complete emptying. Inlet and outlet gratings shall preferably have slotted openings one-eighth inch or less in minimum dimension.

(d) *Depth.* The 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 floor into the wading pool shall be avoided.

(3) **WALL AND FLOOR FINISH.** The wall and floor finish shall conform to requirements of Wis. Adm. Code section H 71.08 (8).

(4) **FLOOR SLOPE.** Wading pool floors shall slope toward the drains with a minimum of one in 40 and a maximum of one in 15 feet.

(5) **PAVED DECK.** An unobstructed paved deck, conforming to requirements of Wis. Adm. Code section H 71.10 (2) (3), and at least 5 feet wide, shall extend completely around each wading pool.

**H 71.20 Electrical.** (1) **GENERAL.** All electrical wiring and equipment shall be installed in compliance with the latest issue of the Wisconsin State Electrical Code, Volume 2 and Ch. E 680.

(2) **AREA LIGHTING.** All pools and pool enclosures 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 decks, walkways and all parts of the pool and the water therein. Arrangement and design of lights must be such that life-guards may see clearly every part of the pool, diving boards, towers, floats and other appurtenances without being blinded by the light.

Submarine lighting may be used in conjunction with windows and/or skylight areas. Any exposed electrical wiring, insulated or bare, shall be located at least 20 feet horizontally beyond the perimeter of the pool enclosure. See Wis. Adm. Code Ch. Ind. 19, Illuminating Code.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.21 Bathhouse facilities.** (1) **WAIVER.** The requirements relating to bathhouse facilities may be waived when dressing, shower and toilet facilities, such as exist at motels, hotels, apartments and country clubs, are otherwise provided and are readily available by paved walkways. Requirements at wading pools may be limited to toilet facilities.

(2) **LAYOUT.** (a) *Separation and routing.* Bathhouses to be used simultaneously by both sexes shall be divided into 2 parts designated by sex and separated by a tight partition. The entrance and exits shall be screened to break line of sight. The layout of the bathhouse shall be such that the bathers on leaving the dressing room pass by the toilets and through the showers enroute to combination, swimming or diving pools.

(b) *Floors.* Floors of bathhouse shall be of smooth, impervious material with nonslip surface and slope one-quarter inch per foot toward drains. Junctions between walls and floors shall be coved. Drain openings shall be three-eighths inch or less in width or diameter.

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

(d) *Roofs.* The dressing room area serving outdoor combination, swimming or diving pools should be unroofed. When unroofed, the floor drains serving this area shall be connected to a storm sewer or the floor pitched to drain to the surrounding ground surface.

(e) *Lockers.* Lockers shall be set either on solid masonry bases 4 inches high or on legs with bottom of locker at least 10 inches above the floor.

(f) *Soap dispensers.* Soap dispensers providing either liquid or powdered soap shall be installed so as to serve each lavatory and each shower head. Dispensers shall be of durable material.

(g) *Shower water temperature and volume.* Heating and storage equipment shall provide water at a temperature of at least 90° F. and not greater than 120° F. at a minimum rate of 2.5 gallons per minute per shower head.

(h) *Drinking fountain.* One or more drinking fountains shall be provided in the immediate pool area.

(i) *Hosebibs.* Hosebibs shall be provided in dressing room and bathhouse interiors. See Wis. Adm. Code section H 71.10 (4).

(3) **SCHEDULE OF FIXTURES.** The criteria for minimum bathhouse plumbing facilities shall be based upon the maximum instantaneous loading. Facilities shall be based upon a ratio of 50% of total patrons as males and 50% females, excepting where the combination, swimming or diving pool use is limited to one sex only, wherein 100%

of plumbing facility requirements shall be provided for that sex. Plumbing fixtures shall be provided on the basis of the following schedule:

**COMBINATION, SWIMMING OR DIVING OUTDOOR POOLS**

Patrons Each Sex	Number Toilets Females	Number Toilets Males	Number Urinals	Number Lavatories Each Sex	Number Showers Each Sex
1- 75.....	2	1	1	1	2
76- 150.....	3	1	2	2	3
151- 350.....	4	2	2	3	7
351- 550.....	5	2	3	4	11
551- 750.....	6	3	3	5	15
751- 950.....	7	3	4	6	19
951-1150.....	8	4	4	7	23
1151-1350.....	9	4	5	8	27

**COMBINATION, SWIMMING OR DIVING INDOOR POOLS**

Patrons Each Sex	Number Toilets Females	Number Toilets Males	Number Urinals	Number Lavatories Each Sex	Number Showers Each Sex	
					General Use Pools	School Pools
1- 60.....	2	1	1	1	2	1 for each
61-120.....	3	1	2	2	3	3 patrons
121-180.....	5	2	3	3	4	in maximum
181-240.....	6	3	3	4	5	class

*Note:* All indoor pools, bathhouses, dressing rooms, shower rooms, toilet spaces and lockers must be adequately ventilated either by natural or mechanical means. See Wis. Adm. Code, Ch. Ind. 59.

(4) **SPECTATOR TOILETS.** Separate toilet facilities should be provided for spectators.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.22 Safety requirements.** (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 located so 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.

(2) **EQUIPMENT.** Each pool shall have at least one ring buoy having a minimum diameter of 20 inches and be attached to one-quarter inch rope having a length not less than one and one-half times the maximum width of the pool. Where more than one lifeguard chair is provided, each shall be provided with a ring buoy.

(3) **LOCATION OF EQUIPMENT.** Lifesaving equipment shall be mounted in conspicuous places, ready of access, and its function

plainly marked. It shall not be used for any other purpose nor shall it be removed from its established locations.

(4) **DIVING TOWERS.** Diving towers in excess of 3 meters in height shall not be acceptable in a combination or diving pool without provisions adequate to permit safe use.

(5) **FIRST AID KIT.** Every pool shall be equipped with a standard Red Cross fully stocked 24-unit first aid kit, a stretcher and 2 woolen blankets.

(6) **TELEPHONE.** A telephone shall be available in the immediate pool area.

(7) **FOOD AND DRINK HAZARD.** No food or drink shall be permitted within the pool enclosure.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.23 Approval on experimental basis.** The board may approve materials, equipment and designs different than those set forth in this chapter for specific installations for experimental or trial purposes. Equipment complying with this regulation or bearing the seal 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, June, 1965, No. 114, eff. 7-1-65.

**H 71.24 Inspection and enforcement.** Authorized representatives of the board shall be allowed to enter and inspect at reasonable hours, pools and equipment thereof, require necessary corrections and proper maintenance to reasonably comply with the applicable sections of this regulation.

**History:** Cr. Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.25 Establishment and construction.** Public bathing places shall be established and constructed in such locations and such manner as may be prescribed by the state board of health to safeguard properly the health and safety of users thereof.

**History:** 1-2-56; renum. from H 71.05, Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.26 Operation.** (1) **RULES.** Public bathing places shall be operated in accordance with such rules as the state board of health may prescribe to adequately protect the health, safety and welfare of the users thereof. The state board of health recommends and approves a type of poster setting forth the bathing place regulations and rules of conduct, which should be prominently displayed in dressing rooms and in several conspicuous places about the premises.

(2) **ATTENDANT.** Every public bathing place shall be under the supervision of a competent operator or lifeguard who shall require careful observance of sanitary regulations.

**History:** 1-2-56; from H 71.04, Register, June, 1965, No. 114, eff. 7-1-65.  
Register, June 1965, No. 114

**H 71.27 Water.** The sanitary quality of water supplied to or in public bathing places shall at all times meet such requirements or standards of quality as may be established by the state board of health.

**History:** 1-2-56; renum. from H 71.05, Register, June, 1965, No. 114, eff. 7-1-65.

**H 71.28 Records.** The owner of any public bathing place shall keep such records of operation and other information as the state board of health may specify and shall submit copies of such records and information to the state board of health when and as directed by the said board of health.

**History:** 1-2-56; renum. from H 71.06, Register, June, 1965, No. 114, eff. 7-1-65.