

Adoption of the Glenview Swimming Pool, Spa and Hot Tub Code

Amended Glenview Swimming Pool, Spa and Hot Tub Code was adopted by the Village of Glenview through Ordinance #6347 on August 18, 2020.

Building codes are adopted to provide a means to enforce building standards of construction and use, and are periodically updated to reflect the latest standards of life-safety and construction technology. These amendments are established on particular physical and aesthetic conditions within the Village as well as to provide consistency between Village, State and County codes.

MUNICIPAL CODE ARTICLE IX. - SWIMMING POOLS, SPAS AND HOT TUBS CODE

Section 18-591. - Administration and enforcement.

- (a) *Purpose.* This article provides the minimum requirements and standards for the protection of the public health, safety and welfare.
- (b) *Scope.* The provisions of this article shall apply to the erection, installation, alteration, addition, repair, relocation, replacement, maintenance or use of any private pool system, including swimming pools, wading pools, spas, hot tubs, hydrotherapy spas, soaking tubs and jacuzzis.
- (c) *Existing installations.*
 - (1) Any pool system lawfully installed prior to the effective date of the ordinance from which this article is derived may have its existing use, maintenance or repair continued if the use, maintenance or repair is in accordance with the original design and location, and no hazard to the public health, safety or welfare has been created by such system.
 - (2) The owner or his designated agent shall be responsible for maintaining the pool system in a safe and sanitary condition.
- (d) *Nuisance declared, abatement.*
 - (1) Any portion of a pool system found by the director of development or designee (referred to in this article as the "director") to be unsanitary, as defined in this article, is hereby declared to be a nuisance.
 - (2) Where a nuisance exists or a pool system is maintained in violation of this article or any notice issued pursuant to this article, the director shall require the nuisance or violation to be abated and, where necessary, shall be subject to the general penalty provided in section 1-16 for violations of this Code or laws.
- (e) *Right of entry.*
 - (1) Whenever necessary to make an inspection to enforce any of the provisions of this article, or whenever the director, has reasonable cause to believe that there exists in any building or upon any premises any condition which makes such pool system unsafe, the director, may enter such building or premises at all reasonable times to inspect the building or premises, or to perform any duty imposed upon the director by this article, provided that, if such building or premises shall be occupied, they shall first present proper credentials and demand entry, and if such building or premises shall be unoccupied, they shall first make a reasonable effort to locate the owner or other persons having charge or control of the building or premises and demand entry.

If such entry is refused, the director, shall have recourse to every remedy provided by law to secure entry.

- (2) No owner or occupant, or any other person having charge, care or control of any building or premises, shall fail or neglect, after proper demand is made as provided in subsection (b)(1) of this section, to properly permit entry therein by the director, for the purpose of inspection and examination pursuant to this article. Any person violating this subsection shall be guilty of a misdemeanor.

Section 18-592. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Accessible, when applied to a fixture, connection, appliance or equipment, means having access thereto, but which first may require the removal of an access panel, door or similar obstruction. The term "readily accessible" means direct access without the necessity of removing any panel, door or similar obstruction.

Airbreak means a physical separation which may be a low inlet into the indirect waste receptor from the fixture, appliance or device indirectly connected.

Airgap means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture receptor or other device and the flood level rim of the receptacle.

Approved means accepted or acceptable under an applicable specification stated or cited in this article, or accepted as suitable for the proposed use under procedures and the power of the director of development (director).

Bather means any person using the pool system and adjoining deck area for the purpose of water sports, recreation, therapy or related activities.

Body feed means the continuous addition of small amounts of filter aid during the operation of a diatomaceous earth filter.

Cartridge filter means a filter which operates through a disposable cartridge. There are two general types of such filters as follows:

- (1) The surface or area type, where the suspended matter is removed at the surface; and
- (2) The depth type, in which the interstices vary from large to small in depth.

Circulation piping system means the piping between the pool structure and the mechanical equipment, and usually includes suction piping, face piping and return piping.

Design head means the total head requirement of the circulation system at the design rate of flow.

Design rate of flow and design filter rate mean the rate of flow in a system which is used for design calculation (the volume of the pool, in gallons, divided by the number of minutes in the turnover time).

Diatomite filter means a filter designed to filter water through a thin layer of filter aid, such as diatomaceous earth or volcanic ash. Diatomite filters may be of the pressure, gravity, suction or vacuum type.

Face piping means the piping, with all valves and fittings, which is used to connect the filter system together as a unit.

Filter means any material or apparatus by which water is clarified.

Filter element means the part of a filter which supports the surface upon which the filter aid is deposited.

Filter rate means the rate of application of water to a filter, expressed in gallons per minute, per square foot of effective filter area.

Filter waste discharge piping means piping that conducts wastewater from a filter to a drainage system. Connection to the drainage system is made through an air gap or other approved method.

Hot tub means a hydrotherapy spa, constructed of wood, with the sides and bottom formed separately, and the whole shaped to join together by pressure from the surrounding hoops, bands or rods, as distinct from spa units formed of plastic, concrete, metal and other materials.

Hydrotherapy spa means a unit designed for recreational and therapeutic use, which is not drained, cleaned or refilled for each user, including, but not limited to, hydrojet circulation, hot water, cold water mineral baths, air induction bubbles or any combination thereof. Industry terminology for a spa includes, but is not limited to, "therapeutic pool," "hydrotherapy pool," "whirlpool," "hot spa," "hot tubs," etc. This standard excludes facilities used or under the direct supervision and control of licensed medical personnel.

Indirect waste pipe means a pipe that does not connect directly with the drainage system, but conveys liquid wastes by discharging into a plumbing fixture, interceptor or receptacle which is directly connected to the drainage system.

Inlet fitting means the fitting or fixture through which circulated water enters the pool.

Listed means equipment or materials included in a list published by a listing agency that maintains periodic inspection on current production of listed equipment or materials and whose listing states either that the equipment or material complies with approved standards or has been tested and found suitable for use in a specified manner.

Listing agency means an agency accepted by the director of development or his/her designee, which is in the business of listing or labeling and which maintains a periodic inspection program on the current production of listed models, and which makes available a published report of such listing in which specific information is included that the product has been tested to approved standards and found safe for use in a specified manner.

Main outlet means the outlet fittings at the bottom of a swimming pool, through which water passes to the recirculating pump.

Pool depth means the distance between the floor of the pool and the maximum operating water level.

Pool plumbing means all chemical, circulation and filter waste discharge piping, deck drainage and water filling system.

Pool and pool system include the following:

- (1) Aboveground pool system means a pool of any shape that is deeper than 24 inches, holds more than 2,500 gallons of water or has a water surface area in excess of 150 square feet. The aboveground pool is located entirely aboveground (i.e., with no excavated portions) and has a constant depth.
- (2) Inground pool system means any pool of which the sides reside partially or fully below the natural ground level and meets one of the conditions set forth in the definition of the term "aboveground pool system."
- (3) Nonpermanently installed pool system means any pool that is so constructed that it may be readily disassembled for storage and reassembled to its original integrity.
- (4) Permanently installed pool system means a pool that is constructed in the ground or in a building in such manner that the pool cannot be readily disassembled for storage.
- (5) Residential swimming pool and wading pool mean any constructed pool, whether indoors or outdoors, above or below the surface of the ground, or both, permanent or nonportable, which is intended for noncommercial use as a swimming pool by the owner's family and their guests, and which is over 24 inches in depth and has a surface area exceeding 250 square feet.

Rapid sand filter means a filter designed to be used with sand as the filter media which produces a reading of five gpm in residential pools.

Receptor means an approved plumbing fixture or device of such material, shape and capacity as to adequately receive the discharge from indirect waste piping, and constructed and located so as to be readily cleaned.

Recirculating piping means the piping from the pool to the filter and return to the pool, through which the water circulates.

Return piping means the part of the pool piping between the filter and the pool, through which the filtered water passes.

Safety vacuum release system means a device or combination of devices that has been designed to prevent bather entrapment on a suction fitting in a pool. Methods include, but are not limited to, immediately admitting air into the suction piping, de-energizing the pump upon sensing an increase

in vacuum in the suction pipe, reversing the circulation flow or any combination of these. Drains must meet the requirements of the current CPSC Virginia Graeme Baker (VGB) Act.

Safety Vent Pipe means a piping arrangement designed to admit air into suction piping to break a vacuum caused by a blocked suction fitting in a pool. Drains must meet the requirements of the current CPSC Virginia Graeme Baker (VGB) Act.

Skim filter means a surface skimmer combined with a vacuum filter.

Spa means a hydrotherapy unit of an irregular or geometric shell design (see Hydrotherapy spa).

Suction piping means the portion of the circulation piping located between the pool structure and the inlet side of the pump and usually includes the main outlet piping, skimmer piping, vacuum piping and surge tank piping.

Surface skimmer and recirculating overflow mean a device designed to continuously remove surface film and water, and returns it through the filter as part of the recirculation system, usually incorporating a self-adjusting weir, a collection tank and a means to prevent air lock of the pump (sometimes referred to as a "recirculating overflow," "mechanical skimmer" or "automatic skimmer").

Transition Point means a location in a shallow area of a swimming pool where an area, having a slope of no more than 1 foot vertical in 12 feet horizontal, adjoins an area where the floor slope exceeds 1 in 12.

Trap means a fitting or device that is designed and constructed so as to provide, when properly vented, a liquid seal which will prevent the back passage of air without materially affecting the flow of sewage or wastewater through it.

Turnover time means the time, in hours, required for the circulation system to filter and recirculate a volume of water equal to the pool volume.

Vacuum fitting means the fitting in the wall of the pool which is used as a convenient outlet for connecting the underwater suction cleaning equipment or a recirculating skimmer.

Vacuum piping means the piping which connects the vacuum fitting to the pump suction.

Waste piping. See Filter waste discharge piping.

Width and/or length means the actual water dimension taken from wall to wall at the maximum

Section 18-593. - Compliance required.

It shall be unlawful to construct, install, alter, maintain or use any pool in the Village, except in compliance with the provisions of this article.

Section 18-594. - Permit required; application requirements.

- (a) No person or organization of any kind shall construct, install or alter any pool in the Village, unless a construction permit shall first have been obtained from the director.
- (b) The application for a construction permit shall be in writing, in the form prescribed by the director for a proper understanding of the proposed work.
- (c) The application for a pool construction permit shall be accompanied by two sets of plans, drawings and specifications.
- (d) Clear and detailed drawings, plans and specifications for the construction, installation or alteration of any pool and appurtenances shall be presented to the director for examination and approval as to proper location, construction and use. All plans and drawings shall be drawn to a scale of not less than one-eighth-inch to the foot, on paper or cloth, in ink or by some process that will not fade or obliterate. A plot plan shall be submitted, showing the location of the proposed pool and all buildings and structures on the premises. All distances and dimensions shall be accurately figured and drawings made explicit and complete, showing the lot lines, and including information pertaining to the pool, walk and fence construction, water supply system, drainage and water disposal systems and all appurtenances pertaining to the pool. Detail plans and vertical elevations shall also be provided. Along with such application and plot plan, the owner or agent shall submit drawings and specifications with the following information:
 - (1) Pool dimensions, depths and volume, in gallons.
 - (2) Type and size of filter systems, filtration and backwash capacities.
 - (3) Pool piping layout, with all pipe sizes and valves shown and types of materials to be used.
 - (4) The rated capacity and head at filtration and backwash flows of the pool pump, in gallons per minute, with the size and type of motor.
 - (5) The wiring method and grounding method to be employed, type of electrical equipment to be installed, and circuited, voltage and system to be utilized.
- (e) Structural information, calculations and details must be prepared and signed by an engineer or architect registered in the State.

Section 18-595. - Permit fees.

- (a) The permit fee for the installation, alteration or repair of a pool, pool system or spa shall be as set forth in section 30-1.
- (b) Any person who shall commence any pool work for which a permit is required by this article without having obtained a permit for such work shall, if subsequently permitted to obtain a permit, pay double the permit fee fixed by this section for such work; provided, however, that this subsection shall not apply to emergency work when it shall be demonstrated to the satisfaction of the director that such work was urgently necessary and that it was not practical to obtain a permit for such work before the commencement of the work. In all such cases, a permit must be obtained as soon as it is

practical to do so, and if there be an unreasonable delay in obtaining such permit, a double fee as provided in this subsection shall be charged.

Section 18-596. - Reserved.

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Section 18-598. - Compliance with codes and ordinances; current-carrying electrical conductors.

- (a) All pools regulated by this article shall comply with all codes and ordinances of the Village, including, but not limited to, article III of this chapter relating to the building code, article IV of this chapter relating to electricity, article VI of this chapter relating to the plumbing code, chapter 98 pertaining to zoning and other government agencies who may have jurisdiction.
- (b) No current-carrying electrical conductors shall cross pools, either overhead or underground, nor shall current-carrying electrical conductors cross laterally within ten feet if overhead, or five feet if underground of such pools.

Section 18-599. - Lights.

Lights used to illuminate any pool shall be arranged and shaded so as to reflect light away from adjoining premises in accordance with this code.

Section 18-600. - Electrical requirements.

The National Electrical Code, Article 680, as published by the National Fire Protection Association, and adopted by the Village, shall be used for the wiring and grounding of all electrical equipment associated with a pool and the bonding and grounding of all metallic appurtenances. Electric hot tubs and spas shall also comply with the Underwriter's Laboratories, Inc., Standard UL 1563, Standard for Electric Hot Tubs, Spas and Associated Equipment, dated July 16, 2009.

Section 18-601. - Heaters and temperature requirements.

- (a) Gas-fired pool heaters, oil-burning heaters or electrical heaters must be approved by the Underwriter's Laboratories, Inc., American Gas Association or another nationally recognized testing agency. All such equipment shall carry the corresponding seal of approval by the appropriate agency. When solar heating panels are used, they shall be included on the permit plans, showing location and type of construction.
- (b) Electric heaters for spas or hot tubs shall be tested by a recognized agency and listed for the purpose intended. Current collectors having a separate ground shall be installed at each inlet and outlet of the electric heater. The maximum temperature of the spa or hot tub water shall be 104 degrees Fahrenheit. A thermostatic control is required and must ensure that such limit will not be exceeded. The thermostatic control must be accessible only to the operator. Maximum spa or hot tub water temperature limits shall be included in the consumer use label provided with each spa and shall be posted in a prominent place on or in close proximity to the spa or hot tub itself.

Section 18-602. - Materials and dimensional design.

- (a) The materials of components and accessories used in and around pools shall be compatible with man and the environment in which they are installed. The materials shall be capable of fulfilling the design, installation and intended use requirements.
- (b) The selection of all materials for components and accessories to be used in and around pools shall be such that all parts with external surfaces and edges that may come in contact with the user are assembled, arranged and/or finished (deburred, polished, etc.) so that they will not constitute a cutting, pinching, puncturing or abrasion hazard under casual contact and intended use by users.
- (c) The selection of materials used in components and accessories to be used in and around pools shall be such that the assembled and installed product shall not be harmful to man or the environment under intended use and reasonable foreseeable abuse or disposal.
- (d) Swimming pool walls and floors shall be constructed of any impervious material which will provide a tight tank, with a white or light colored finished, and easily cleanable surfaces. The floor or bottom surface of the pool shall have a nonslip finish, as smooth as possible. The side and end walls of a pool shall present a smooth finish and shall have a slope or curvature meeting one of the following conditions:
 - (1) The pool wall may be vertical for 30 inches from the water level, below which the wall may be curved to the bottom with a radius at any point equal to the difference between the depth, at that point, and 30 inches.
 - (2) To a depth of six feet, except as in subsection (d) (1) of this section, the walls' slope shall not be less than one foot horizontal in six feet vertical.
- (e) Swimming pool walls that are to be lined with plastic or other approved liners shall be constructed of masonry, reinforced concrete or other materials accepted by a federal or State bureau, national technical organization, or the National Board of Fire Underwriters or other testing agencies.
- (f) Spas and hot tubs shall meet the following requirements;
 - (1) The maximum water depth shall be four feet when measured from the water line as determined by the design of the product.
 - (2) The maximum depth of any seat or sitting bench shall be two feet when measured from the water line.
 - (3) The slope of the floor shall not exceed one foot of fall in 12 feet.

Section 18-603. - Construction, structural design and materials.

- (a) The construction, structural design and materials used in pools shall be in accordance with generally accepted good structural engineering practice, providing a sound, durable, watertight structure which will safely sustain all of the dead loads, live loads, liquid, hydrostatic and earth pressures involved in each case.
- (b) The pool shell and appurtenances, piping, filter system, pump and motor, and other components will be designed and constructed so as to be easily winterized and/or protected from deleterious effect of frost and freezing.

- (c) Indoor pools shall comply with all requirements of outdoor pools and shall have such structural materials, ventilation and lighting as may be required by the director to assure health and safety.
- (d) Swimming pools shall be engineered and designed to withstand the water pressure from within, and to resist the pressure of the earth when the pool is empty, to a pressure of 2,200 pounds per square foot. The slope of the bottom of any part of a pool in which the water is less than five feet in depth shall not be more than one foot in each seven feet. The maximum slope where the water is five feet or more in depth shall not exceed one foot in two feet.
- (e) Roofs or canopies over spas or hot tubs shall be constructed so that moisture or condensation from the roof or canopy will not drain into the spa or hot tub.

Section 18-604 (a) - Fences and enclosures. Amend paragraph a) as follows:

- (a) Every pool shall be enclosed to make the pool inaccessible to small children. All fence openings or points of entry to the pool area enclosure shall be equipped with gates or doors having self-closing and self-latching devices placed at the top of the gate or door, or made inaccessible to small children. The fence and gates or doors shall be at least four feet in height above the grade walk level, any openings in the fence shall not allow a four-inch sphere to pass through, shall not have a ladder effect, and shall be constructed of decay or corrosion-resistant material approved by the director. A fence on adjoining property, meeting the requirements specified in this subsection, or a building or existing wall complying with the height requirements set forth in this subsection may be used as part of the enclosure, with the approval of the director, if the resultant enclosure is sufficient to make the pool inaccessible to small children. If, at any time, such existing fence or wall being used as part of the enclosure is removed, the enclosure shall be made complete, meeting the requirements set forth in this subsection, at the pool owner's expense. All gates or doors shall be kept locked when the pool is not attended by a responsible swimmer. Alarms shall be provided on all doors to the home that have access to the pool area.
- (b) Aboveground pools need not be enclosed by a fence if the pool has a side wall at least four feet high, when measured from the ground surface to the top of the side wall. Indoor pools need not be fenced when enclosed by other means so as to make the pool inaccessible to small children. Unless the pool is attended by a responsible swimmer, all ladders or steps of aboveground pools shall be removed and all gates or doors securely locked.
- (c) Outdoor spas and hot tubs shall be protected by a fence, wall, building enclosure, solid wall of durable material or impenetrable cover with hardware for locking. The fence, wall, building enclosure or solid wall should be constructed so as to afford no external handholds or footholds, of materials which are impenetrable by toddlers, and at least four feet in height so that small children cannot grasp its top by jumping or reaching, and equipped with a self-closing and positive self-latching closure mechanism at a height above the reach of small children and provided with hardware for permanent locking.

Section 18-605. - Water supply.

- (a) Water shall be secured either from the Village waterworks distribution system or any other sanitary source approved by the sanitarian. Water shall not be drawn to fill the pool from the Village waterworks system at any time that the Village president may determine that a water shortage exists.

- (b) An over-the-rim spout, if used with compatible equipment, shall be properly shielded so as not to create a hazard. The open end of the spout shall have no sharp edges and shall not protrude more than two inches beyond the edge of the spa or hot tub.

Section 18-606. - Recirculation system and appurtenances.

- (a) Pool recirculation systems shall consist of pumping equipment, hair and lint catcher, filters, together with the necessary pipe connections to the pool inlets and outlets, facilities and pipe connections necessary for backwashing filters, and facilities and equipment for disinfecting the pool water.
- (b) Swimming pools shall be equipped with a recirculating system capable of filtering the entire contents of the pool in 12 hours or less for private residential swimming pools. The recirculating pump shall have a sufficient capacity to discharge the volume of water required for the required turnover of the pool against the maximum head in the recirculation system. The pump shall be capable of backwashing pressure filters at a rate of ten gallons per minute, per square foot of filter area.
- (c) Spa and hot tub equipment shall be sized to turn over the entire spa water capacity at least once every hour and shall be capable of returning the spa water to a turbidity of one-half nephelometric turbidity units (NTUs) at least once during the four hours following the peak bather load. Equipment shall be designed and fabricated to drain the water from the equipment and exposed face piping by removal of drain plugs and manipulating winter drain valves or other methods. A flow meter shall be provided on the effluent side of the filter system and a pressure gauge with an appropriate range shall be provided on the influent and effluent side of all filters. If located in an area subject to freezing temperatures, the spa or hot tub shell and appurtenances, piping, filter system, pump and motor, and other components shall be protected from damage due to freezing.
- (d) A hair and lint catcher or strainer shall be installed in all pools on the suction side of the circulation pump to prevent hair, lint and other extraneous matter from reaching the pump and filters. Hair and lint catchers shall be designed so that they can be easily dismantled for cleaning and inspection, and shall be located so as to be easily accessible for cleaning. The design features shall be as follows:
 - (1) Water passes through the strainer from the outside;
 - (2) The strainer is made of noncorrosive material;
 - (3) The width or diameter of strainer openings is not more than one-eighth-inch;
 - (4) The area of the strainer openings shall be at least five times the cross sectional area of the inlet pipe to the strainer.
- (e) The pool piping, fittings and valves shall be sized to permit the rated flow for filtering and cleaning without exceeding the maximum head available from the pump at that flow.

Section 18-607. - Overflow systems.

An overflow system shall be provided for spas and hot tubs. The overflow system shall be designed and constructed so that the water level is maintained at the operating level of the rim or weir device. When surface skimmers are used as the sole overflow system, one surface skimmer shall be provided for each 200 square feet for residential spas and hot tubs, or fraction thereof, of the surface area. When two or more skimmers are used in a spa or hot tub, they shall be located to maintain effective skimming action over the entire surface area of the spa or hot tub.

Section 18-608. - Filters.

- (a) Filters shall be designed to maintain water under anticipated operating conditions. Filters shall be designed so that filtration surfaces can be easily restored to the design capacity. Filters shall be designed so that filtration surfaces can be inspected and serviced. A means shall be provided to permit release of air which enters the filter tank. This may be automatic or manual, or where upflow design is used, air must be expelled from the filter tank. Any filters and/or separation tanks incorporating an automatic internal air release as its principal means of air release shall have a means to provide a slow and safe release of pressure as a part of its design. All separation tanks shall have a cautionary statement warning the user not to start up the filter pump without first opening the air release. The statement must be visible and noticeable within the area of the air release. Piping furnished with the filter shall be suitable material, capable of withstanding three times the working pressure. The suction piping shall not collapse when there is a complete shutoff of flow on the suction side of the pump. Filter components which require servicing shall be accessible and available for inspection and repair when installed according to the manufacturer's instructions.
- (b) Only cartridge-type filters will be permitted for private residential swimming pools, unless sufficient data is presented to prevent adverse effects to surrounding areas.
- (c) Cartridge-type filters are those where the cartridge itself is the filter aid. Cartridge filters can be either pressure or vacuum type. Replacement cartridges are divided into two types: depth-type and area-type. General specifications are the same for both types of replacement cartridges. Cartridge filters shall not require the addition of any flocculating agents, such as ammonium alum, aluminum sulfate or potassium alum. All types of cartridges shall have sufficient structural strength to resist rupturing, channeling, collapsing or bursting at a maximum pressure differential of 50 pounds per square inch (psi). Cartridge seals shall be designed so as to prevent any bypassing of unfiltered water. If provision is made for backwashing, the discharge shall be properly connected to an approved disposal method and shall be arranged so as to not permit any backwash water or residue to enter the recirculating system. All filters shall be designed so as to permit easy removal of the cartridges. Cartridge elements shall be divided into the following two types:
 - (1) Depth type cartridges are elements where the porosity varies from the inlet to the discharge surface. They shall have sufficient depth to provide adequate dirt-holding capacity and be designed for a flow of no more than one gallon per minute, per five cubic inches of volume with a pressure drop not to exceed two psi across clean cartridges and not to pass any particulate matter larger than 25 microns.
 - (2) Area type or surface type cartridges are those which rely on the surface area for their dirt-holding capacity and they should follow the following flows per square foot of area:
 - a. Three gallons per minute, per square foot of area for pressure filters; and
 - b. Two and one-fourth gallons per minute, per square foot of filter area for vacuum filters.

Section 18-609. - Skimmers.

In every pool, at least one skimming device shall be provided for each 800 square feet of surface area, or fraction thereof. Skimming devices shall be built into the pool wall, except that portable-type, aboveground pools shall adequately remove floating oils and waste, and shall meet the following general specifications:

- (1) Each skimmer shall be designed for a flow-through rate of at least 30 gallons per minute, and a total capacity of all skimmers on any pool shall be at least 50 percent of the required filter flow of the recirculation system.
- (2) The skimmer shall be automatically adjustable to variations in water level over a range of at least three inches.
- (3) An easily removable and cleanable basket or screen through which all overflow water must pass shall be provided to trap large solids.
- (4) The skimmer shall be provided with an automatically controlled equalizer pipe to prevent air lock in the suction line. The equalizer pipe shall not be less than two inches in diameter and be located at least one foot below the lowest overflow level of the skimmer. The automatically controlled valve or equivalent device shall remain tightly closed under normal operating conditions of the skimmer, but shall automatically open when the skimmer becomes starved and the water level drops below the lowest overflow level of the skimmer.

Section 18-610. - Swimming pool inlets.

- (a) The recirculation inlets shall be located so as to produce uniform circulation of water throughout the pool. The inlets shall discharge at a minimum depth of ten inches below the pool overflow level.
- (b) Pools shall be equipped with suitable facilities for adding makeup water, as needed. There shall be no physical connection between the water supply line and the pool system. If the makeup water is added directly to the pool, the outlet shall be at least six inches above the upper rim of the pool, and if there is a discharge to a surge or balancing tank, the outlet shall be at least six inches above the rim of the tank. If a hose connection from a sillcock or other plumbing fixture is to be used for supplying makeup water, then an approved vacuum breaker shall be installed at the sillcock or fixture.

Section 18-611. - Swimming pool outlets.

A main outlet, except for aboveground type pools, shall be provided at the deepest point in every pool for recirculating and emptying the pool. All pool drain outlets shall be equipped with gratings, having an area of openings not less than four times the cross sectional area of the outlet pipe. The gratings shall be installed so they cannot be readily removed by bathers. There shall be no direct connection between the main drain or pool piping and the sewer.

Section 18-612. - Spa and hot tub inlets and outlets.

- (a) A spa or hot tub over-the-rim fill spout shall have an air gap and be properly shielded so as not to create a hazard. The open end shall have no sharp edges and shall not protrude more than two inches beyond the edge of the spa or hot tub. Spa and hot tub inlets and outlets shall be provided and arranged to maintain a uniform circulation of water and disinfectant residual. A means shall be provided to drain the spa or hot tub which may include bottom drains, circulatory systems, etc. The total velocity through suction outlets shall not exceed two inches per second. The open area in the suction outlets shall be of such design as to prevent the physical entrapment of fingers, toes, etc. Outlets, except skimmers, on pump suction shall be covered with suitable protective grates or antivortex covers that cannot be removed, except with tools. The piping shall be sized to permit the rated flows for filtering and cleaning without exceeding the total head developed by the pump at the rated flow. The water velocity in the spa piping shall not exceed ten feet per second for discharge

pipng, except for copper pipe where the velocity for piping shall not exceed eight feet per second. Water velocity in asbestos cement pipe shall not exceed six feet per second. Piping subject to damage by freezing around the spa shall be provided with adequate drainage and support at sufficiently close intervals so that sagging between supports will not trap water. Provisions shall be made for expansion and contraction of pipes.

- (b) Outlets shall be designed so that each pumping system in the spa (filter system, if so equipped) provides one of the following alternatives so as to prevent the physical entrapment of fingers, toes, etc.:
- (1) Two outlets, the pipe diameter sizes of which are equal (this may be two outlet drains or an outlet drain and a skimmer). The system shall be designed so that neither one of the two outlets shall be cut out of the suction line by a valve or other means.
 - (2) One antivortex suction outlet which shall not cause a tripping or stubbing hazard to the feet.
 - (3) A 12-inch by 12-inch or larger square grate.
 - (4) Other approved means that guards against outlet entrapment.

Section 18-613. - Pumps and strainers.

A pump and motor shall be provided for circulation of the pool water. Performance of all pumps shall meet the conditions of the flow required for filtering and cleaning (if applicable) the filters against the total dynamic head developed by the complete system. With all pressure filter systems, a suitable means shall be provided before all circulation pumps to remove solids, debris, hair, lint, etc. Pumps shall be designed to perform the functions for which they are intended. Units must be accessible for inspection and service. Replacement parts must fit with existing parts in the pump without the need for redrilling mounting holes or otherwise altering replacement parts of the pump. The design and construction of the pump and component parts shall provide safe operation. Where a mechanical seal is provided, components of the seal must be corrosion-resistant and capable of operating under conditions normally encountered in spa operation. Proper direction of rotation for the pump shall be clearly indicated on the pump. All motors shall have, as a minimum, an open, drip-proof enclosure (as defined by the National Electrical Manufacturer's Association standards) and constructed electrically and mechanically so they will perform satisfactorily and safely under the conditions of load and environment normally encountered in spa installations. Motors shall be capable of operating the pump under full load, with a voltage variation of at least ten percent from the nameplate rating. If the maximum service factor of the motor is exceeded, at full voltage, the manufacturer shall indicate this on the pump curve. All motors shall have thermal overload protection, or equivalent, either built-in or in the line starter, to provide locked rotor and running protection. The motor frame shall contain adequate provisions for proper grounding.

Section 18-614. - Valves.

When the pump is below the water level of the pool, valves shall be installed on suction and discharge lines and located in an accessible place. All valves shall be located where they will be readily and easily accessible for maintenance and removal. Multiport valves shall comply with the joint National Swimming Pool Institute-National Sanitation Foundation standard covering multiport valves.

Section 18-615. - Air induction systems.

An air induction system, when provided, shall totally prevent water backup that could cause electrical shock hazards. Air intake sources shall be positioned so as to minimize contaminants, such as deck water, dirt, etc., in the pool. Integral air passages shall be pressure tested at the time of manufacture to provide structural integrity for a value of 1.5 times the intended working pressure.

Section 18-616. - Steps, recessed steps, ladders and recessed treads.

- (a) *Swimming pools.* Two or more means of egress, in the form of steps or ladders, shall be provided for all private residential swimming pools. At least one such means of egress shall be located on a side of the pool at both the deep and shallow ends. Treads of steps and ladders shall be constructed of nonslip material and shall be at least three inches wide for their full length. Steps and ladders shall have a handrail on both sides, except on semicircular stairs, where one handrail located through the center of the stairs will be permitted.
- (b) *Spas and hot tubs.*
 - (1) Steps, ladders or recessed treads shall be provided where water depths are greater than 24 inches and contrasting color bands or lines shall be used to indicate breaks in the floor level of the hot tub or spa. A spa or hot tub shall be equipped with at least one handrail, or ladder equivalent, for each 50 feet of perimeter, or portion thereof, to designate points of entry and exit, or with a deck designed to facilitate safe entry or exit. A residential spa or hot tub shall be provided with a means to designate the point of entry and exit.
 - (2) The design and construction of steps and recessed steps, when required, shall conform to the following:
 - a. Uniform step treads shall have a minimum unobstructed horizontal tread depth of ten inches for a minimum continuous width of 12 inches.
 - b. Riser heights shall not be less than seven inches, nor greater than 12 inches. When the bottom tread serves as a bench or seat, the bottom riser may be a maximum of 14 inches.
 - c. The first and last risers need not be uniform in height with other risers, but shall comply with riser height requirements as set forth in subsection (b)(2)b. of this section. The first (top) riser is measured from the finished deck or tub rim.
 - d. Intermediate risers (those between the first and last risers) shall be uniform in height.
 - e. Step treads shall have slip-resistant surfaces.
 - f. Each set of steps shall be provided with at least one handrail serving all treads.
 - g. Handrails shall be installed so that they can be removed only with tools.
 - h. The leading edge of handrails facilitating exit shall be located within 18 inches plus three inches, measured horizontally, of the bottom riser.
 - i. Where steps or seat benches are used in hot tubs, riser heights shall not be less than seven inches, nor greater than 12 inches. When the bottom tread in a hot tub serves as a bench or seat, the bottom riser shall be a maximum of 13 inches above the tub floor.
 - (3) The design and construction of ladders, when required, shall conform to the following:

- a. Ladders shall be made entirely of corrosion-resistant materials.
 - b. Ladder treads shall have slip-resistant surfaces.
 - c. Ladder designs shall provide two handholds or handrails which fully serve all treads.
 - d. The maximum outside diameter of handrails shall be 1.9 inches and the minimum shall be one inch.
 - e. There shall be a clearance of not more than six inches, nor less than three inches between any ladder and the wall of the hot tub or spa.
- (4) The design and construction of recessed treads, when provided, shall conform to the following:
- a. Stepholes at the centerline should have a uniform vertical spacing of 12 inches maximum and seven inches minimum.
 - b. Maximum vertical distance between the coping edge and the uppermost recessed tread shall be 12 inches.
 - c. Stepholes shall have a minimum tread depth of five inches and a minimum width of 12 inches.
 - d. Step hole treads shall drain into the spa or hot tub to prevent the accumulation of dirt.
 - e. Each set of recessed treads shall be provided with two handrails which fully serve all treads.

Section 18-617. - Diving boards.

Diving boards shall not be used in conjunction with pools that do not have a water diving area of at least eight feet in depth. The overhead clearance above the diving board to any obstruction must be such that a diver cannot strike such obstruction at any point of a dive. Diving boards for aboveground swimming pools are hereby prohibited.

Section 18-618. - Handholds.

- (a) Handholds shall be provided for inground swimming pools and consist of a bull-nosed coping not over two and one-half inches thick for the outer two inches or an equivalent approved handhold, which handhold must be no more than nine inches above the normal water line.
- (b) Spas and hot tubs shall be provided with a suitable handhold around the perimeter in areas where water depths exceed three feet, six inches. Perimeter rims may serve as a suitable handhold. Handholds shall be provided no further apart than four feet and may consist of any one or a combination of the following:
 - (1) Coping, ledges, flanges or decks along the immediate top edge of the spa shall provide a suitable slip-resistant handhold when located not over 12 inches above the water line.
 - (2) Ladders, steps or seat ledges.
 - (3) A rope or railing placed at or not over 12 inches above the water line and fastened to the wall.

Section 18-619. - Walkways and drainage.

Unobstructed walk areas not less than 36 inches wide shall be provided to extend entirely around the pool. The walks shall be sloped away from the pool at a pitch of at least one-quarter-inch per foot. Aboveground or portable pools shall not be required to construct such a walkway if the top of

the side wall of the pool is four inches or more above the natural ground surface and if there is no possibility of back-drainage into the pool.

Section 18-620. - Reserved.

Section 18-621. - Swimming pool rescue equipment.

A responsible swimmer shall be present at all times that a pool is in use. Every pool having a wall depth of four feet or more shall be equipped with one or more throwing ring buoys not more than 15 inches in diameter, with an attached three-sixteenths-inch manila line which shall be not less than the longest dimension of the pool, and at least one or more light, strong poles, with blunted ends, not less than 12 feet in length, or two-thirds of the diameter for circular pools, for making a reach assist or rescue.

Section 18-622. - Reserved.

Section 18-623. - Operation and maintenance.

- (a) *Test kit.* A test kit with permanent color standards shall be provided at all pools and be used at frequent intervals to check on the adequacy of disinfectant, alkalinity, cyan uric acid, water hardness and to determine the pH of the water.
- (b) *Equipment maintenance.* All equipment used in connection with the operation of a pool shall be maintained in a satisfactory operating condition during the periods the pool is in use.
- (c) *Sanitation of premises.* All pool facilities, including buildings and grounds, shall be kept clean and in a sanitary condition and maintained free from garbage, trash and other refuse.
- (d) *Wastewater.* The disposal or discharge of pool wastewater must be accomplished in such a way that nuisance or damage to other property is avoided. When discharged into storm or sanitary sewers, the rate of discharge shall be controlled to prevent overtaxing the capacity of such sewers.
- (e) *Health hazard or nuisance prohibited.* No pool shall be used, kept, maintained or operated if such use, keeping, maintaining or operating shall constitute or be the occasion of any nuisance of any kind, or shall be dangerous to life or limb, or detrimental to health in any way.
- (f) *Cover.* A suitable, substantial protective cover shall be provided and installed over all private residential pool surfaces during the non-swimming season.
- (g) *Indoor pools.* The construction around an indoor pool shall incorporate a vapor barrier to isolate the pool area from the rest of the building. The enclosure shall be well ventilated to reduce condensation on walls, windows and the ceiling, with sufficient space heating to keep the temperature of the air at least ten degrees Fahrenheit above that of the pool water.
- (h) *Indoor spas and hot tubs.* Indoor spas and hot tubs shall have a suitable, insulated vapor barrier protective cover provided and installed when such spas or hot tubs are not being used by a bather.

Sections. 18-624—18-626. - Reserved.

Section 18-627. – Water Quality.

(a) Testing Equipment

- (1) Water testing equipment for determining pH and disinfectant level of pool water shall be provided. The equipment for determining pH shall include at least five color standards with a range of pH 6.8 to 8.0, as a minimum.
- (2) If chlorine is used as a disinfectant, a DPD-type test kit shall be provided that includes at least four chlorine color standards with a range of 0.5 to 3.0 p.p.m., as a minimum.
- (3) If bromine is used as a disinfectant, a colorimetric test kit shall be provided that will determine free bromine residual and pH. The test kit shall include at least five bromine standards covering a range of 1.0 to 5.0 p.p.m.
- (4) Pools using chlorinated cyanurates for disinfection shall have a test kit to measure cyanuric acid concentration. The cyanuric acid test kit shall permit readings up to 100 p.p.m.
- (5) Where silver/copper or copper ion generators are used, a test kit to determine the concentration of copper shall be provided.

(b) Disinfectant Residual

- (1) If chlorine is used as a disinfectant, the chlorine residual shall be maintained between 1.0 and 4.0 p.p.m. as free chlorine residual. A free chlorine residual of at least 2.0 p.p.m. shall be maintained when the pool water temperature exceeds 85 degrees F.
- (2) If bromine is used as a disinfectant, a bromine residual shall be maintained between 2.0 and 8.0 p.p.m. as total bromine. A bromine residual of at least 4.0 p.p.m. shall be maintained when the pool water temperature exceeds 85 degrees F.
- (3) If chlorinated cyanurates are used, the cyanuric acid concentration shall not exceed 100 p.p.m.
- (4) When combined chlorine in excess of 0.5 p.p.m. is detected, the pool shall be superchlorinated to attain a free chlorine concentration of at least 10 times the combined chlorine concentration, or oxidized by other means to eliminate the combined chlorine.
- (5) If silver/ copper or copper ion generators are used, the concentration of copper shall not exceed 1.3 p.p.m. and the concentration of silver shall not exceed 0.05 p.p.m.
- (6) If ozone is used, the ambient air ozone concentration shall be less than 0.1 p.p.m. at all times either in the vicinity of the ozonator or at the pool water surface.

(c) pH – The pH of the pool water shall be maintained between 7.2 and 7.6.

(d) Turbidity – The pool water shall be sufficiently clear that the entire pool basin is clearly visible from the pool deck.

(e) Alkalinity – The alkalinity of the pool water shall not be less than 50 nor more than 200 p.p.m. as calcium carbonate.

Section 18-628. - Reserved. .

Section 18-629. - Regulations.

The director may promulgate regulations for the construction, alteration, operation and maintenance of pools to carry out the provisions and purposes of this article. The regulations may provide from time to time for the use of materials, devices, structures and appurtenant equipment substantially equivalent to that required in this article as long as the degree of protection afforded is not less than the protection provided in this article.

Section 18-630. - Inspection authority.

The director and their representatives shall have the right and authority, before or after any permit is issued, to enter upon the real property of the applicant or permittee to inspect any pool and check the operation thereof to assure compliance with all applicable laws, ordinances and regulations. The owner, lessee, occupant and all persons operating and using a pool shall cooperate fully with such inspections and provide pertinent information, as requested.

Section 18-631. - Reserved.

Section 18-632. - Violations; penalties.

Any person who shall violate any provision of this article, or who shall erect, construct, alter or repair a swimming pool in violation of this article, shall be subject to the general penalty provided in section 1-16.

Sections 18-633—18-660. - Reserved.