City of Columbia

701 East Broadway, Columbia, Missouri 65201

Agenda Item Number: B110-15
Department Source: Public Health & Human Services
To: City Council
From: City Manager & Staff
Council Meeting Date: 5/4/15
Re: Amending Chapter 11 of the City Code as it relates to swimming pools; adopting the City of Columbia Swimming Pool Code.

Documents Included With This Agenda Item

Council memo, Resolution/Ordinance, Exhibit to Resolution/Ordinance
Supporting documentation includes: None

Executive Summary

An ordinance amending Chapter 11-277 of the Columbia Code of Ordinances by adopting the City of Columbia Swimming Pool Code.

Discussion

The proposed City of Columbia Swimming Pool Code is modeled from the Centers for Disease Control & Prevention's (CDC) Model Aquatic Health Code (MAHC), which was published August 29, 2014. The MAHC is a set of voluntary standards based on science and best practices developed to help agencies that regulate swimming pools reduce the risk of disease, injury and drowning in their communities.

Public Health and Human Services (PHHS) Environmental Health staff sent notification to more than 150 stakeholders (design professionals, pool operators, and homeowner's/neighborhood associations) inviting them to attend information sessions held on March 25, 2015 and March 27, 2015. A total of 10 stakeholders attended a session. Comments from each session were compiled and presented to the Board of Health on April 9, 2015.

Additionally, Community Development reviewed the proposed code to assure there were no conflicts with existing City codes and regulations.

Currently PHHS routinely grant variances for new pool construction as the 2004 Code does not include design standards for the types of pools that are currently being built. Adoption of the proposed code will reduce the need for Public Health and Human Services to grant variances for new pool construction.

Fiscal Impact

Short-Term Impact: None
Long-Term Impact: None

City of Columbia
701 East Broadway, Columbia, Missouri 65201

Vision, Strategic & Comprehensive Plan Impact

Vision Impact: Health, Social Services and Affordable Housing
Strategic Plan Impact: Health, Safety and Wellbeing
Comprehensive Plan Impact: Not Applicable

Suggested Council Action

Should the Council agree with staff recommendations, an affirmative vote is in order.

Legislative History

The current City of Columbia Pool Code was adopted in 2004, with some minor revisions to the Fecal Accident Policy in 2010.

Stephanie Browning
Department Approved

City Manager Approved

022439

Introduced by McDavid

First Reading 5-4-15 Second Reading 5-18-15

Ordinance No. 022439 Council Bill No. B 110-15

AN ORDINANCE

amending Chapter 11 of the City Code as it relates to swimming pools; adopting the "Swimming Pool Ordinance and Guide for Swimming Pool Design and Operation"; and fixing the time when this ordinance shall become effective.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. Chapter 11 of the Code of Ordinances of the City of Columbia, Missouri, is hereby amended as follows:

Material to be deleted in ~~strikeout~~; material to be added underlined.

Sec. 11-277. Design and operation requirements adopted by reference.

The "~~City of Columbia~~ Swimming Pool Ordinance and Guide for Swimming Pool Design and Operation," ~~2000~~ 2015 Edition, adopted by the city council on ~~February 7, 2000~~ May 18, 2015, is made a part of this Code as fully as if set forth in its entirety. Copies of the guide shall remain on file in the office of the city clerk and in the office of the director and shall be available for public use, inspection and examination.

SECTION 2. The City Council adopts the "Swimming Pool Ordinance and Guide for Swimming Pool Design and Operation," 2015 Edition, a copy of which, marked "Exhibit A," is attached to this ordinance.

SECTION 3. This ordinance shall be in full force and effect from and after its passage.

PASSED this 18th day of May, 2015.

ATTEST:

City Clerk

Mayor and Presiding Officer

APPROVED AS TO FORM:

City Counselor

SWIMMING POOL ORDINANCE
and
GUIDE FOR SWIMMING POOL DESIGN AND OPERATION

2015

COLUMBIA/BOONE COUNTY DEPARTMENT OF PUBLIC HEALTH AND HUMAN SERVICES

Division of Environmental Health

CITY OF COLUMBIA SWIMMING POOL ORDINANCE and GUIDE FOR SWIMMING POOL DESIGN AND OPERATION
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1.0 DEFINITIONS

1.1 SWIMMING POOL - Any artificial basin of water which has been wholly designed, modified, improved, constructed or installed primarily for the purpose of swimming, wading or immersion.

1.2 CLASS A SWIMMING POOL - A swimming pool operated by the city or any other governmental agency.

1.3 CLASS B SWIMMING POOL - A swimming pool operated by a hotel, motel, community association, apartment complex or similar entity which serves merely as an additional service for patrons or residents and which is not otherwise classified as a Class C swimming pool.

1.4 CLASS C SWIMMING POOL - A swimming pool that is maintained by a commercial establishment for which memberships or admissions are sold.

1.5 CLASS E SWIMMING POOL - A non-residential spa.

1.6 CLASS F SWIMMING POOL - A special purpose swimming pool that has a special use or design such as a wave pool, wading pool, zero-depth entry pool, a pool with a water slide or spray feature.

1.7 DEPARTMENT – Columbia/Boone County Department of Public Health and Human Services

2.0 NON CONFORMING SWIMMING POOLS

2.1. APPLICABILITY OF GUIDE - Except where otherwise provided, swimming pools constructed before the adoption of this code shall not be required to comply with the design standards of this part if the swimming pool complies with the design standards of the city ordinances, rules and regulations in effect when the swimming pool was constructed.

3.0 CONFLICTING PROVISIONS - Where any provisions of this Guide is in conflict with other provisions of this Guide or provisions of any other ordinance, whichever provision is more restrictive or imposes a higher standard shall control.

4.0 SUBMISSION OF PLANS

4.1 GENERAL

4.1.1 Conformity– Swimming pool construction plans shall show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules, and regulations, as determined by the Department and to protect the health and safety of the facility's bathers and patrons.

4.1.2 Plans - No person shall begin to construct a new swimming pool or shall substantially alter an existing swimming pool without first having the construction plans detailing the construction or substantial alteration submitted to and approved by the Department.

4.1.3 Required Statements - All construction plans shall include the following statements:

1) "The proposed swimming pool and all equipment shall be constructed and installed in conformity with the approved plans and specifications or approved amendments.", and
2) "No substantial alteration, changes, additions, or equipment not specified in the approved plans or allowed in the code can be made or added until the plans for such substantial alteration, changes, additions, or equipment are submitted to and approved by the Department."

4.1.4 Final Plans - All basis of design reports and construction documents for formal approval of a Class A, B, C, E and F swimming pool shall be submitted at least 30 days prior to the date on which action by the Department is desired.

4.1.5 Approval Required - No approval of a swimming pool for construction shall be issued and no construction begun until final, complete, detailed plans and specifications have been submitted to the Department and found to be satisfactory.

4.1.6 Content - Plans, specifications and reports submitted for formal approval of a swimming pool must be an accurate record of the proposed construction and contain sufficient information to demonstrate to the reviewing authority that the proposed public swimming pool, or modifications thereof, will meet the standards contained herein and shall include, at a minimum, the documentation and information listed in sections 4.2 through 4.3. Engineering summaries provided by the Department must be completed and submitted for review.

4.1.7 Plans Maintained -The swimming pool owner shall maintain at least one set of their own approved plans made available to the Department on-site for as long as the swimming pool is in operation. This provision shall apply to swimming pools constructed after the effective date of this code.

4.2 BASIS OF DESIGN REPORT

4.2.1 Size - The size of the swimming pool shall be indicated on the pool engineering summary and on the blue print diagram. The size of the perimeter, area and volume of water shall be included in these measurements.

4.2.2 Recirculation - Flow rate, turnover, and filtration rate shall be included in the engineering summary sheets.

4.2.3 Use - The anticipated swimmer load, including the maximum and the average, based on maximum peak occupancy shall be enclosed in the set of plans that are submitted to the Department.

4.2.4 Water Supply - All project plans that are submitted to the Department shall include the source, quality, and the quantity of water that is available for use.

4.2.5 Equipment - A detailed description of filtration and recirculation equipment shall be included with the plan submission.

4.2.6 Calculations - Hydraulic computations, including head loss in all piping and recirculation equipment should be indicated in the submitted set of plans.

4.2.7 Pump Sizing - Plans that are submitted should include a pump curve diagram to show the proposed recirculation pump will adequately handle the proposed flows.

4.2.8 Waste Water Disposal - Each project shall indicate the type and capacity of the waste water disposal system.

4.2.9 First Aid - Design and construction of new swimming pools shall include an area designated for first aid equipment and/or treatment.

4.3 PLANS AND SPECIFICATIONS

4.3.1 General Layout Plan

4.3.1.1 Location and Owner - Name and address of the proposed or modified swimming pool facility, and the name, address and phone number of the owner.

4.3.1.2 Scale and Wind Direction - Scale, and north point and direction of prevailing wind.

4.3.1.3 Designer Certification - Name, date, address, phone number, professional seal and signature of the designing engineer or architect, if applicable.

4.3.1.4 Plot Plan - A plot plan of the property to be used, indicating the topography, grade, elevations, arrangement and location of present and proposed structures, location of site utilities and location of the proposed swimming pool, pool enclosure and deck.

4.3.2 Detailed Plans - All detailed plans for all Class A, B, C, E and F swimming pools shall be drawn to a suitable scale. The detailed plans for facilities shall show:

4.3.2.1 Construction Details - Complete construction details, including dimensions, elevations, and appropriate cross sections for the swimming pool, pool deck and pool enclosure.

4.3.2.2 Recirculation System - Schematic diagrams and plan and elevation views of the swimming pool water treatment and recirculation systems, pool equipment room, and pool and equipment room ventilation.

4.3.2.3 Piping - Size and location of all piping, including elevations.

4.3.3 Specifications - Complete, detailed specifications for the construction of the swimming pool, bathhouse, recirculation system, filtration system, disinfection equipment and all other appurtenances shall accompany the plans.

5.0 MAXIMUM PEAK OCCUPANCY - The technical specifications for each swimming pool shall include maximum peak occupancy, respectively. The maximum peak occupancy for a swimming pool shall be used for designing systems that serve bathers and patrons and shall incorporate non-water related areas such as decks and other adjacent portions of the swimming pool not associated with the swimming pool. (Note: The specified density factors are the lower limits for determining maximum peak occupancy.) The maximum peak occupancy shall be calculated by dividing the surface area in square feet of the swimming pool by the density factor (D) that fits the specific swimming pool being considered.

maximum peak occupancy = swimming pool surface area / D

The density factors (D) are:

Water/bather-related:

1) flat water density factor = 20 ft2 (1.9 m2) per bather.
2) agitated water density factor = 15 ft2 (1.4 m2) per bather.
3) hot water density factor = 10 ft2 (0.9 m2) per bather.
4) waterslide landing pool density factor = manufacturer-established capacity at any given time.
5) interactive water play water density factor = 10 ft2 (0.9 m2) Per bather on surface.

Non-water/patron-related:

6) deck density factor = 50 ft2 (4.6 m2) per bather.
7) stadium seating density factor = 6.6 ft2 (0.6 m2) per bather.

The density factors may be modified for higher bather or patron density, but they shall not be modified to be lower than the density factors listed above. The maximum peak occupancy for a swimming pool shall be determined by adding the calculations for each swimming pool in the swimming pool.

6.0 CONSTRUCTION MATERIAL

6.1 MATERIALS - Swimming pools shall be constructed of materials which are inert, stable, non-toxic, watertight and enduring. Sand or earth bottoms are not permitted.

6.2 CORNERS - All corners formed by intersection of walls and floor shall be rounded with at least a 1-inch radius.

6.3 FINISH - Bottom and sides must be a white or a light color, with a smooth and easily cleanable surface. The finish surface of the bottom in shallow areas shall be slip-resistant.

6.4 EQUIPMENT STANDARDS - Where applicable, all equipment used or proposed for use in swimming pools governed under this code shall be:

1) Of a proven design and construction, and
2) Listed and labeled to a specific standard for the specified equipment use by an ANSI-accredited certification organization.

Where standards do not exist, technical documentation shall be submitted to the Department to demonstrate acceptability for use in swimming pools. The Department shall have the authority to require tests, as proof of acceptability.

7.0 DESIGN, DETAIL AND STRUCTURAL STABILITY - All Class A, B, C and F swimming pools shall be designed and constructed to withstand all anticipated loading for both full and empty conditions. A hydrostatic relief valve and/or a suitable under drain system shall be

provided for in-ground pools. The designing architect or engineer shall be responsible for ensuring the stability of the pool design for both full and empty conditions.

7.1 SHAPE - The shape of any swimming pool shall be such that the circulation of pool water and control of swimmers' safety are not impaired. There shall be no underwater or overhead projections or obstructions which would endanger patron safety or interfere with proper pool operation.

7.2 SHALLOW END - The depth of water at the shallow end shall be at least 3 feet, but not more than 3 feet 6 inches, except for Class F pools. Swimming pools existing prior to the effective date of this code shall be grand fathered.

7.3 BOTTOM SLOPE - The bottom of the swimming pool shall slope toward the main drain. Where the water depth is less than 5 feet, the bottom slope shall not exceed 1 foot vertical in 12 feet horizontal (1:12). Where the water depth exceeds 5 feet, the bottom slope shall not exceed 1 foot vertical in 3 feet horizontal (1:3).

7.4 AREA MARKED - The boundary line between the shallow and deep areas shall be marked by a line of contrasting color at least 4 inches wide on the floor and walls of the swimming pool, and by a safety rope and floats equipped with float keepers. Safety rope anchors should be recessed. Safety boundary ropes may be removed for lap swimming during time that is restricted to lap swimming only.

7.5 POOL WALLS - Walls of a swimming pool shall be either: a) vertical for water depths of at least 6 feet, or b) vertical for a distance of at least 3 feet below the water level, below which the wall may be curved to the bottom with a radius not greater than the difference between the depth at that point and 3 feet, provided that the vertical is interpreted to permit slopes not greater than 1 foot horizontally for each 5 feet of depth of sidewall (11 degrees from vertical).

7.5.1 Ledges - Ledges shall not extend into the swimming pool unless they are essential for support of the upper wall construction.

7.5.2 Pools Without Gutters - Bullnose coping not more than 2 inches thick or other handgrip adjacent to the swimming pool wall shall be provided. 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 1-inch drop in a 1-foot distance (1:12).

7.6 DIVING AREAS - Competitive diving boards shall be permitted only when the diving envelope conforms to the standards of the certifying agency that regulates competitive diving at the swimming pool. Such certifying agencies include:

1) National Collegiate Athletic Association *(NCAA)*,
2) the National Federation of State High School Associations *(NFSHSA)*,
3) the Federation Internationale de Natation Amateur *(FINA)*, or
4) U.S.A. Diving

7.6.1 Head room - There shall be a completely unobstructed clear distance of 16 feet above the diving board measured from the center to the front end of the board. This area shall extend at least 8 feet behind, 8 feet to each side, and 16 feet ahead of the measuring point.

7.6.2 Diving Boards and Platforms - If the swimming pool does not have competitive diving, then the diving envelope shall conform to the diving envelope standards of:

1) Table 1: Diving Platform Areas,
2) Table 2: Diving Platform Longitudinal Section, and
3) Table 3: Diving Platform Cross Section

Table 1: Diving Platform Areas

PUBLIC SWIMMING POOLS

Table 1

Diving Areas

Letters below refer to Figure 1		Board height-meters	0.5 Meter	0.75 Meter	1.0 Meter	3.0 Meters
		Board height (feet)	1'8"	2'6"	3'4"	9'11"
		Board length (feet)	10'0"	12'0"	16'0"	16'0"
		Board width (feet)	1'8"	1'8"	1'8"	1'8"
			Minimum dimensions in feet			
A	Distance from plummet back to pool wall		3'0"	4'6"	6'0"	6'0"
B	Distance from plummet to pool wall at side		10'0"	10'0"	10'0"	11'6"
C	Distance from plummet to adjacent plummet		8'10"	8'10"	8'10"	8'6.5"
D	Distance from plummet to pool wall ahead		26'0"	27'10"	29'7"	33'8"
E	Height,board to ceiling at plummet & distances F and G		16'0"	16'0"	16'0"	16'0"
F	Clear overhead distance behind and each side of plummet		8'0"	8'0"	8'0"	8'0"
G	Clear overhead distance ahead of plummet		16'0"	16'0"	16'0"	16'0"
H	Depth of water at plummet		9'6"	10'9"	12'0"	12'6"
J	Distance ahead of plummet to depth K		12'0"	14'3"	16'6"	19'9"
K	Depth at distance J ahead of plummet		8'9"	10'0"	11'3.375"	12'2"
L	Distance at each side of plummet to depth M		8'0"	8'1.5"	8'3"	9'11"
M	Depth at distance L on each side of plummet		9'1	10'4"	11'7.5"	12'2"
N	Maximum slope to reduce height E		30°	30°	30°	30°
P	Maximum floor slope to reduce depth ahead of K, to the sides of M, or back to pool wall behind H		3:1	3:1	3:1	3:1

Table 2: Diving Platform Longitudinal Section

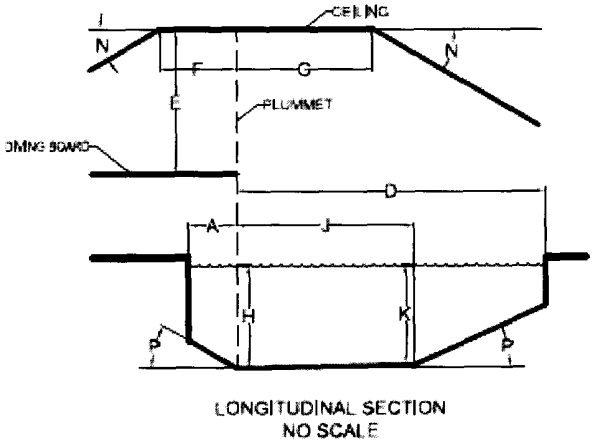
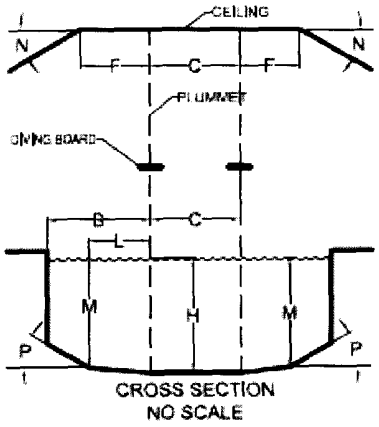


Table 3: Diving Platform Cross Section



7.6.3 Steps and Guard Rails for Diving Boards - Supports, platforms, and steps for diving boards shall be designed and constructed to safely carry the maximum anticipated loads. Steps shall be of corrosion-resistant material, easily cleanable and of non-slip design. Handrails shall be provided at all steps and ladders leading to diving boards more than 1 meter (3.3 ft.) above the water. Platforms and diving boards which are more than 1 meter (3.3 ft.) high shall be protected with guardrails at least 36 inches high, extending at least to the edge of the water. Boards or platforms 3 meters (9.87 ft.) or higher, when permitted, shall have an effective side barrier

7.7 LADDERS, RECESSED STEPS AND STAIRS

7.7.1 Location - Recessed steps, ladders, or stairs shall be provided at the shallow end. Ladders or recessed steps shall be provided at the deep end. If the swimming pool is over 30 feet wide, such steps, ladders, or stairs shall be installed on each side.

7.7.2 Ladders – Swimming pool ladders shall be corrosion-resistant and shall be equipped with slip resistant treads. All ladders shall be so designed as to provide a handhold. There shall be a clearance of not more than 6 inches or less than 3 inches between any ladder and pool wall. Treads shall be no more than 12 inches apart.

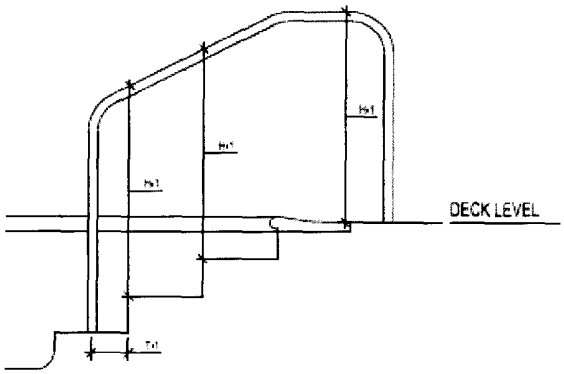
7.7.3 Recessed Steps - Recessed steps shall be readily cleanable, slip-resistant, and shall be arranged to drain into the swimming pool.

7.7.4 Handrails - Where recessed steps or ladders are provided, there shall be a handrail at the top of each side thereof, extending over the coping or edge of the deck. Handrail outside dimensions intended to serve as a means of ADA accessibility shall conform to requirements of Table 4: Stair Handrail Dimensions and Table 5: Stair Handrails.

Table 4: **Stair Handrail Dimensions**

Dimensions	T-1	H-1
Minimum	3 inches *(7.6 cm)*	28 inches *(71.1 cm)*
Maximum	N/A	36 inches *(91.4 cm)*

Table 5: **Stair Handrails**



7.7.5 Deep Water - Where stairs are provided in swimming pool water depths greater than five feet (1.5 m), they shall be recessed and not protrude into the swimming area of the pool. The lowest tread shall be not less than four feet *(1.2 m)* below normal water elevation.

7.7.6 Rectangular Stairs - Traditional rectangular stairs shall have a minimum uniform horizontal tread depth of 12 inches (30.5 cm), and a minimum unobstructed tread width of 24 inches (61.0 cm).

7.7.7 Slip-Resistant - Where provided, stairs shall be constructed with slip-resistant materials.

7.7.8 Dimensions – Dimensions of stair treads for other types of stairs shall conform to requirements of:

1) Table 6: Required Dimensions for Stair Treads and Risers
2) Table 7: Stair Treads and Risers
3) Table 8: Stair Treads
4) Table 9: Unique Stair Treads.

Table 6: **Required Dimensions for Stair Treads and Risers**

Dimensions	T-1 Standard	T-1 Convex, Concave, Triangular	T-2	W-1	H-1
Minimum	12 inches *(30.5 cm)*	21 inches *(53.3 cm)*	12 inches *(30.5 cm)*	24 inches *(61.0 cm)*	6 inches *(15.2 cm)*
Maximum	18 inches *(45.7 cm)*	24 inches *(61.0 cm)*	16 inches *(40.6 cm)*	N/A	12 inches *(30.5 cm)*

Table 7: **Stair Treads and Risers**

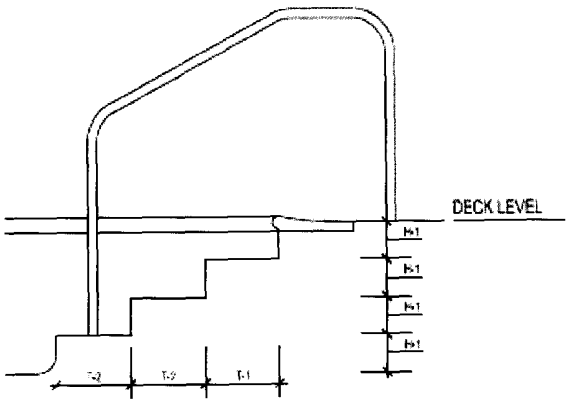


Table 8: **Stair Treads**

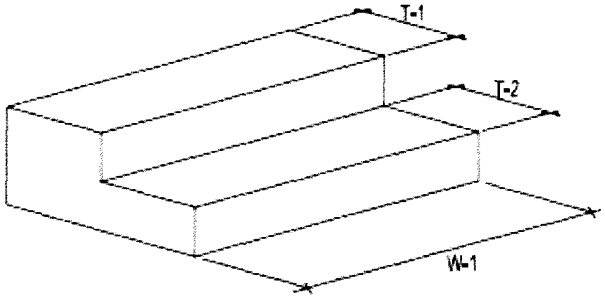
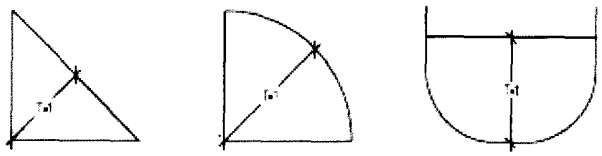


Table 9: **Unique Stair Treads**



7.8 DECKS - An unobstructed deck at least 5 feet wide shall entirely surround the swimming pool. The deck shall be of a uniform, easily cleanable, impervious material with a slip-resistant finish. The deck shall be protected from surface runoff. Infringements or variations are allowed only when specifically permitted by the Department.

7.8.1 Slope - The deck shall be sloped away from the swimming pool, and shall be sloped to provide positive drainage of all deck areas.

7.8.2 Drainage - Deck drains, when used, shall be no more than 25 feet apart, and no single drain shall serve more than 500 square feet of area. There shall be no direct connection between the swimming pool deck drains and the sewer or plumbing drainage systems. They shall not drain to the pool gutter or recirculation systems.

7.8.3 Carpeting - Carpeting shall not be permitted on swimming pool decks unless special design considerations are provided and permitted by the approving authority.

7.8.4 Hose Bibs - Hose bibs with appropriate backflow preventers shall be provided to facilitate cleaning the deck areas.

7.8.5 Spectator Area - There shall be an effective separation or barrier between the spectator area and swimmer areas.

7.8.6 Pool Concessions - Where concessions are provided, an area or areas separated from the swimming pool desk shall be designated for serving and consuming food or drink. Canned or plastic containers of non-alcoholic beverages may be served or consumed in any area except the pool.

7.9 FENCING/BARRIERS – Swimming pools constructed before the effective date of this code shall follow previous standards. Newly constructed Class A, B, C, E & F pools or any remodeled pool must have a fence at least six feet in height. Fences must not have openings that allow a 4 inch diameter sphere to pass thru. All pool entrances shall be self-closing, and self-latching. The latch must be at least 48 inches from the bottom of the door or gate. This provision may be waived if adequate supervision and monitoring is provided at the entrances during operating hours.

7.9.1 Barrier and Location - When a wading pool is in the same enclosure as a supervised swimming pool, there shall be a barrier at least 3 feet high between the wading pool and the swimming pool. When a wading pool is adjacent to a swimming pool, it shall be near the shallow end of the swimming pool.

8.0 SAFETY, MARKING AND SIGN REQUIREMENTS

8.1 DEPTH MARKINGS

8.1.1 Location – Swimming pool water depths shall be clearly and permanently marked at the following locations:

1) Minimum depth;
2) Maximum depth;
3) On both sides and at each end of the pool; and
4) At the break in the floor slope between the shallow and deep portions of the pool.

Depth markers shall be located on the vertical pool wall and positioned to be read from within the pool. Where depth markings cannot be placed on the vertical wall above the water level, other means shall be used so that the markings will be plainly visible to persons in the pool. Depth markers shall also be located on the pool coping or deck within 18 inches (45.7 cm) of the pool structural wall or perimeter gutter. Depth markers shall be positioned to be read while standing on the deck facing the pool. Depth markers shall be installed at not more than 25 foot (7.6 m) intervals around the pool perimeter edge and

according to the requirements of this section. In addition, for water less than five feet (1.5 m) in depth, the depth shall be marked at one foot (30.5 cm) depth intervals.

8.1.2 Design - Markings shall be indicated in feet and inches and may also be indicated in meters. Depth markings (depths in numerals and units in letters) shall be 4 inches minimum height and in color contrasting with the background.

8.2 LIFEGUARD CHAIRS

8.2.1 Number - A lifeguard chair shall be provided for each 2,000 square feet of water surface area of Class A and C swimming pools only. This requirement shall be waived in special-use pools with adequate supervision.

Water Surface Area in Square Feet	Minimum Number of Chairs
Less than 2,000	0
2,000 to 3,999	1
4,000 to 5,999	2
6,000 to 7,999	3

8.2.2 Location and Design - Lifeguard chairs shall be placed at waterside, in locations which will minimize the effects of glare on the water. Locations shall give complete coverage of the swimming pool. Stands should be 5 to 6 feet above the deck. Portable chairs should permit anchoring to the deck.

8.3 LIFESAVING EQUIPMENT - All Class A, B, C and F swimming pools must be equipped with the following items:

8.3.1 Unit Composition - One unit of lifesaving equipment shall consist of the following:

8.3.1.1 Throwable Device - A U.S. Coast Guard-approved ring, 18 inches in diameter, or a throwing buoy, fitted with a 1/4-inch diameter line with a length of 1.5 times the maximum width of the swimming pool, or 50 feet, whichever is less. Approved rescue tubes will be allowed as a substitute for the Coast Guard-approved ring at all Class A and C pools.

8.3.1.2 Reaching Device - A life pole or a shepherd's crook-type of pole, with blunt ends and a minimum length of 12 feet.

8.3.2 Units Required - One unit of lifesaving equipment shall be provided for each 2,000 square feet of water surface area or major fraction thereof. A minimum of one unit shall be provided.

8.3.3 Location - Lifesaving equipment shall be mounted in conspicuous places, distributed around the swimming pool deck. Whenever lifeguard chairs are provided, each chair shall be equipped with one unit of lifesaving equipment. All lifesaving equipment shall be displayed in a manner that is readily available for use at any moment.

8.4 FIRST AID EQUIPMENT - All swimming pools requiring lifeguards shall be equipped with a long spine board with ties and a collar, and with a first aid kit.

8.5 EMERGENCY TELEPHONE –

8.5.1 Existing Pools - All Class A and C swimming pools constructed prior to the effective date of this code shall have a telephone in or immediately adjacent to the pool area.

8.5.2 Newly Constructed Pools and Remodeled Pools - All Class A, B and C swimming pools constructed or remodeled after the effective date of this code shall have an emergency communication system. A cellular phone is not an acceptable form of an emergency communication system. An acceptable form may include a standard telephone line or call box. It must be in working order, available at the pool and must connect directly to emergency services. The telephone number of the emergency service, as well as any instructions necessary to operate the communication system shall be posted in a conspicuous place near the communication device or station. In addition, the address of the pool must be posted next to the communication device or station. The location of the emergency communication device must be in the vicinity of the swimming pool area; available at all times the pool is operational, and available to both the staff and the public.

8.6 EMERGENCY EXIT - An emergency exit from the swimming pool area shall be provided.

8.7 SIGNS

8.7.1 Location and Maintenance - All swimming pool use rules shall be legibly stated on a sign, and posted in at least one conspicuous location within the pool area.

8.7.2 Content - The posted rules should include:

> In case of an emergency dial 911

> Do not bring food or tobacco or tobacco products into the pool enclosure.

> Shower before entering and after use of the toilet facilities.

> No running or rough play.

> No diving, or no diving except in designated diving areas.

> No containers made of glass or shatterable plastic.

> Do not swim if you have open wounds.

> Do not swim if you are ill with diarrhea or have had diarrhea within the past two weeks.

> Diaper changing on the deck is prohibited.

> Hours of operation; swimming pool use prohibited at any other time.

8.7.3 Additional Rules - Whenever the Department determines that additional rules are needed to protect the health and safety of patrons, the management shall post and enforce such rules.

8.7.4 Warning Signs - Whenever the Class B swimming pool area is opened for use and no lifeguard service is provided, warning signs shall be placed in plain view of the entrances and inside the pool area which state, "WARNING - NO LIFEGUARD ON DUTY" with clearly legible letters at least 4 inches high. In addition, the signs shall also state in clearly legible letters at least 2 inches high. "CHILDREN UNDER THE AGE OF 14 SHALL NOT USE THE POOL OR SPA UNLESS ACCOMPANIED BY A RESPONSIBLE ADULT."

9.0 LIGHTING, ELECTRICAL, VENTILATION, ACOUSTICAL AND INDOOR SWIMMING POOL DOOR REQUIREMENTS

9.1 LIGHTING - Artificial lighting shall be provided at all Class A, B, C and F swimming pools which are to be used at night, or which do not have adequate natural lighting, so that all portions of the pool, including the bottom, may be readily seen without glare. Lights shall be installed so as to provide uniform distribution of illumination.

9.1.1 Water Surface - overhead illumination on the water surface shall be a minimum of 30 foot-candles (540 lux) on the water surface shall be maintained, 10 horizontal foot-candles (108 lux) on the outdoor water surface shall be maintained, and 10 horizontal foot-candles (108 lux) on the deck shall be maintained.

9.1.2 Underwater lighting - Underwater lighting, where provided, shall be not less than eight initial rated lumens per square foot of swimming pool water surface area.

9.1.3 Minimum Requirements for Night Swimming with no Underwater Lighting - Where outdoor swimming pools are open for use from 30 minutes before sunset to 30 minutes after sunrise, or during periods of low illumination, underwater lighting may be excluded where:

1) Maintained pool surface lighting levels are a minimum of 15 horizontal foot candles (161 lux), and
2) All portions of the pool, including the bottom and drain(s), are readily visible as required in this code.

9.2 ELECTRICAL - All electrical installations shall conform to the adopted National Electric Code..

9.3 VENTILATION

9.3.1 Room Ventilation - Bathhouses, mechanical equipment rooms, storage areas and indoor swimming pool enclosures shall be heated and ventilated as required by the appropriate regulatory agency. Room ventilation shall prevent direct drafts on swimmers and shall minimize condensation damage. Dehumidifier, air conditioner and heat exchanger installations shall comply with sections 10.6 and 10.7. A fuel-burning heating unit shall be provided with air combustion and vented to the outdoors as required by the regulatory agency..

9.4 ACOUSTICAL CONTROL - Acoustical control should be provided for indoor swimming pools. Surface material and furnishings used for acoustical control shall be cleanable and constructed of nonabsorbent, water-resistant material.

9.5 INDOOR SWIMMING POOL DOOR REQUIREMENTS

9.5.1 Corrosion Resistant – indoor swimming pool doors shall either be constructed of corrosion-resistant materials or have a covering or coating to withstand humid and corrosive environments which is acceptable to the Department.

9.5.2 Condensation – indoor swimming pool doors which may be exposed to temperatures below indoor swimming pool-air dew point shall have thermal breaks, insulation, and/or glazing as necessary to minimize the risk of uncontrolled condensation.

9.5.3 Heating Systems - Other doors shall be acceptable, subject to approval by the Department, where heating systems are so arranged as to maintain such doors above the maximum design dew point of the indoor aquatic facility air.

9.5.4 Biological Contaminants and Air Leakage - indoor swimming pool doors and door-frame construction shall not contribute to the growth of biological contaminants. Indoor swimming pool doors and/or door frames shall be equipped with seals and/or gaskets to minimize air leakage when the door is closed.

9.5.5 Automatic Door Closer and Air Pressure - All pedestrian doors around the indoor swimming pool perimeter shall be equipped with an automatic door closer capable of closing the door completely without human assistance. Door closers must be able to close the door against the specified difference in air pressure between the indoor swimming pool and other interior spaces.

10.0 WATER SUPPLY AND WASTE WATER DISPOSAL

10.1 WATER SUPPLY - Water supplied to a Class A, B, C, E and F swimming pool and all related plumbing fixtures, including drinking fountains, lavatories and showers, shall at all times meet the quality standards of the appropriate regulatory agency.

10.2 CROSS-CONNECTION - All portions of the water distribution system serving a Class A, B, C, E and F swimming pool and related facilities shall be protected against backflow and back siphonage. Water introduced into the pool, either directly or to the recirculation system, shall be through an air gap or an appropriate approved backflow preventer as required by the appropriate regulatory agency.

10.3 SANITARY WASTES - An approved method for disposing of sanitary sewage shall be provided at a Class A, B, C, E and F swimming pool. Where available, a municipal sanitary sewerage system shall be used. If an individual treatment system is used, approval of this system must be obtained from the appropriate regulatory agency.

10.4 POOL WASTE WATER - Waste water from a Class A, B, C, E and F swimming pool shall be discharged in a manner approved by City of Columbia.

10.5 BACKFLOW PREVENTION - In a Class A, B, C, E and F swimming pool, the

recirculation system and pool deck drains shall be protected against the backflow of waste water in a manner approved by the Department.

10.6 CONDENSATE - Condensate shall not be introduced to the swimming pool water any part of the recirculation system.

10.7 HEAT EXCHANGER - Any heating or cooling system which is connected in any way with the swimming pool recirculation system shall contain only nontoxic heat transfer media, or a double-wall-type heat exchanger with vented intermediate space shall be used.

11.0 RECIRCULATION SYSTEM - Each swimming pool shall be provided with a recirculation system which will convey, clarify, chemically balance and disinfect the swimming pool water. The recirculation system shall include pumps, piping, filters, chemical feed equipment, and associated controls and monitoring devices.

11.0.1 Components - Recirculation system components shall comply with NSF/ANSI Standard 50.

11.0.2 Recirculation Rate - A swimming pool recirculation system shall be capable of processing one pool volume of water in six hours or less. A wading pool recirculation system shall be capable of processing one pool volume of water in two hours or less. Spa pools, wave pools and other special needs pools shall have recirculation systems as required elsewhere in this code.

11.0.3 Dye Testing - Dye testing may be required by the Department to evaluate the mixing characteristics of the recirculation system. If a dye test reveals inadequate mixing in the swimming pool after 20 minutes, the recirculation system shall be adjusted or modified to assure adequate mixing.

11.1 MATERIALS - Recirculation system components in contact with the swimming pool water shall be of non-toxic material, resistant to corrosion, and able to withstand operating pressures. Acceptable materials are copper, stainless steel, cast iron, ductile iron, plastics approved for potable water contact by the appropriate regulatory agency, or other materials suitable for potable water contact, subject to approval by the Department.

11.2 PIPE SIZING - Swimming pool recirculation system piping shall be designed so that the water velocity shall not exceed 10 feet per second on the discharge side of the recirculation pump, and 6 feet per second in suction piping. Gravity piping shall be sized in accordance with accepted engineering practice with consideration of available head.

11.3 DRAINAGE AND INSTALLATION - All equipment and piping shall be designed and fabricated to drain completely by use of drain plugs, drain valves or 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. All supply and return pipe lines to the swimming pool shall be provided with insertable plugs or valves to allow the piping to be drained to a point below the frost line. Provision shall be made for expansion and contraction of the pipes.

11.4 PIPE AND VALVE IDENTIFICATION - All exposed piping shall be clearly marked to indicate function. All valves shall be marked to indicate use.

11.5 OVERFLOW SYSTEMS – All swimming pools shall be designed to provide continuous skimming (removal of surface water). Makeup water supply equipment shall be provided to maintain continuous skimming.

11.5.1 Gutters (Perimeter Overflow Systems) - The gutter shall extend around the full perimeter of the swimming pool except at stairways and ramps entering the swimming pool. It shall be level within a tolerance of plus or minus 1/8 inch. Piping connections shall be provided to permit water to flow from overflows to waste, as well as to the recirculation system.

11.5.1.1 Size and Shape - The gutter system shall be designed to allow continuous removal of water from the swimming pool's upper surface at a rate of at least 100 percent, and preferably 125 percent, of the recirculation rate. The gutter shall be designed to serve as a handgrip and to prevent entrapment of arms or legs. It shall permit ready inspection, cleaning and repair.

11.5.1.2 Outlets - Drop boxes, converters, return piping or flumes used to convey water from the gutter shall be designed to handle at least 100 percent, but preferably 125 percent, of the recirculation rate. Drainage shall be sufficient to minimize flooding and prevent backflow of skimmed water into pool.

11.5.1.3 Surge Capacity - All overflow systems shall be designed with an effective surge capacity of not less than 1 gallon for each square foot of swimming pool surface area. Surge shall be provided within a surge tank, in the gutter for filter above the normal flow line, or elsewhere in the system. Surge tanks, gutters and filter tanks should have overflow pipes to convey excess water to waste. Surge tanks shall be provided with means for complete draining. In-pool surge is allowed only with

an engineered perimeter gutter system which includes an integral surge weir for each 500 square feet of water surface, and a tank to allow balancing of main drain and gutter flows.

11.5.2 Skimmers - The use of manufactured direct suction skimmers shall be in accordance with the manufacturer's recommendations. Where skimmers are used, at least one surface skimmer shall be provided for each 500 square feet (46 m2) of surface area or fraction thereof.

11.5.2.1 Construction - Skimmers shall be installed in the swimming pool walls, be sturdy, and be constructed of corrosion-resistant materials. Surface skimmers shall be of a type acceptable to the Department.

11.5.2.2 Number - At least one surface skimmer shall be provided for each 500 square feet of surface or fraction thereof. Additional skimmers may be required to achieve effective skimming. At least two skimmers should be provided.

11.5.2.3 Location - Skimmers shall be so located as to provide effective skimming of the entire water surface with minimum interference and short-circuiting.

11.5.2.4 Flow Rate - The flow rate for the skimmers shall comply with manufacturer data plates or NSF/ANSI 50

11.5.2.5 Control - Skimmers shall have weirs that adjust automatically and operate freely and continuously with variations of at least 4 inches in water level. All skimmed water shall pass through an easily removable and cleanable basket or screen before encountering control valves or entering the pump suction line. Each skimmer shall be equipped with a device to control flow. If a skimmer is connected directly to the recirculation pump suction pipe, it should include a device to prevent an airlock 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 swimming pool drop below the weir level. The equalizer pipes shall be located at least 1 foot below the lowest overflow level of the skimmer. A valve or equivalent device that will remain closed under normal operating conditions, but automatically opens when the water level drops below the minimum operating level of the skimmer, shall be provided on each equalizer pipe.

11.5.3 Balancing - The recirculation system must be a balanced to provide for optimum and uniform skimming. Flotation testing should be used for this purpose.

11.6 MAIN DRAIN SYSTEM (Outlet) - Main drains of the swimming pool shall be installed in the pool floor at the deepest point.

11.6.1 Design and Location - The main drains of all swimming pools shall be installed in the pool floor at the deepest point. Pool drains shall be protected with a proper cover. The main drain shall be designed to protect against suction entrapment; one or more of the following arrangements shall be used:

11.6.1.1 Multiple Drains - Two or more main drains shall be installed. The drains shall be at least 3 feet apart, shall be connected in parallel, and shall not permit any drain to be individually valved off.

11.6.1.2 Single Drain - A single main drain shall have a total area of at least 324 square inches.

11.6.1.3 Antivortex Covers - A main drain cover manufactured to keep a vortex from forming during all drain operations. Covers must comply with the VGB Pool and Spa Safety Act.

11.6.2 Spacing - The drains shall not be greater than 20 feet on centers, and an outlet shall be provided not more than 15 feet from each side wall.

11.6.3 Antivortex Covers on Gratings - Main drains shall be protected by antivortex covers or gratings. The open area shall be large enough so the velocity does not exceed 1 1/2 feet per second through the grating. Openings in grates shall not be over 1/2-inch wide. Gratings or drain covers shall not be removable without the use of tools.

11.6.4 Piping - The piping shall be designed to carry 100 percent of the recirculation rate, and shall be equipped with a valve.

11.7 PUMPS AND STRAINERS

11.7.1 Strainers - Strainers shall be provided through which all water shall pass before entering the pump. The strainers shall be of rigid construction, fabricated of corrosion resistant material, and sufficiently strong to prevent collapsing when clogged. The openings shall be no greater than 1/8 inch in any dimension. The total clear area of all openings shall be at least four times the area of the connecting pipe. The strainer shall have a quick-opening cover. Spare strainer

baskets shall be provided. In systems where the filter is located on the suction side of the pump, strainers are not required.

11.7.2 Pumping Equipment - A pump and motor shall be provided for the recirculation of the swimming pool water. The pump shall provide the recirculation flow rate required in Section 11.0.2, and the filter backwash rater required in Section 12.1.1 against the total dynamic head generated in the recirculation system. The pump shall be self-priming or shall be installed so that there is a net positive suction head on the pump inlet whenever the pump is operating. A gauge which indicates both pressure and vacuum shall be installed on the pump suction header, and a pressure gauge shall be installed on the discharge side of the pump. Pumps and motors shall be readily accessible for inspection and service.

11.8 FLOW MEASUREMENT AND CONTROL

11.8.1 Flow Measurement - A flow meter or other device which gives a continuous indication of the flow rate in gallons per minute in the recirculation system shall be provided. If sand filters are used, a device should be provided to measure the backwash flow rate in gallons per minute. Flow meters shall have a measurement capacity to at least 1.5 times the design recirculation flow rate, and shall be accurate within 10 percent of the actual flow rate. The indicator shall have a range of readings appropriate for the anticipated flow rates, and be installed where it is readily accessible for reading and maintenance and with straight pipe upstream and downstream of any fitting or restriction in accordance with the manufacturer's recommendation.

11.8.2 Flow Regulation - A device for regulating the rate of flow shall be provided in the recirculation pump discharge piping.

11.8.3 Turnover Times – Turnover times shall be calculated based solely on the flow rate through the filtration system. The required turnover time shall be the lesser of the following options:

1) The specified time in Table 10: Swimming Pool Maximum Allowable Turnover Times.
2) The time required for individual components.

Table 10: Swimming Pool Maximum Allowable Turnover Times

Type of Aquatic Venue	Turnover Maximum
Activity Pools	2 hours or less
Diving Pools	8 hours or less
Interactive Play*	0.5 hours or less
Lazy River	2 hours or less
Plunge Pools	1 hour or less
Runout Slide	1 hour or less
Wading Pools*	1 hour or less
Wave Pools	2 hours or less
All Other Pools	6 hours or less
*Shall have secondary disinfection systems	

Spa, Therapy*, & Exercise Pools		
Temperatures	**Load**	**Turnover Maximum**
≤ 72°-93°F (22°-34°C)	> 2500 gals/person (9.46 m^3)	4 hours or less
≤ 72°-93°F (22°-34°C)	> 450 gals/person (1.7 m^3)	2 hours or less
≤ 72°-93°F (22°-34°C)	≤ 450 gals/person (1.7 m^3)	1 hour or less
≥ 93-104°F (34°-40°C)	All	0.5 hours or less
*Shall have secondary disinfection systems		

*Systems identified as requiring secondary disinfection in Table 10 shall comply for swimming pools installed after the date of adoption of this code.

11.9 INLETS - The recirculation system shall have inlets adequate in design, number and location to insure effective distribution of treated water and maintenance of uniform disinfectant residual throughout the swimming pool. All other types of inlet systems not covered below shall be subject to approval by the regulatory authority.

11.9.1 Number - Wall inlets shall be spaced not over 20 feet apart, with one inlet within 5 feet of each corner of the swimming pool and one in each recessed step area.

11.9.2 Location - Wall inlets shall be located at least 12 inches below the design water surface, or not less than 6 inches if designed to provide downward flow. Bottom inlets shall be uniformly spaced, with a separating distance of no greater than 20 feet, with rows of inlets within 15 feet of each side wall. In any swimming pool over 60 feet in width, bottom inlets should be provided.

11.9.3 Type - Inlet fittings shall be of the adjustable rate-of-flow type. Directional flow inlets shall be used with skimmer-type swimming pools. Inlets shall not extend form the floor or wall to create a hazard.

11.9.4 Testing - Dye testing (crystal violet or equivalent) should be performed to determine and adjust the recirculation pattern.

12.0 FILTRATION (General) - A swimming pool water treatment system shall have one or more filters. Filters shall be of a type approved by the Department. They shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and

repair.

12.1 SAND TYPE FILTERS

12.1.1 Filter Rate - The design filtration rate of rapid sand filters shall not exceed 3 gallons per minute per square foot of filter area. High-rate sand filters shall not exceed a filtration rate of 15 gallons per minute per square foot. Higher rates may be used if the filter has been successfully tested against NSF/ANSI Standard 50 at the higher rate. The sand filter system shall be equipped to backwash each filter at a rate of 15 gallons per minute per square foot of filter bed area, or as recommended by the manufacturer. The backwash water shall be discharged to waste through a suitable air gap.

12.1.2 Filter Media - Sand or other media shall be inspected annually and carefully graded to meet the manufacturer's recommendation for swimming pool use.

12.1.3 Accessories - Accessories shall include influent pressure gauge, effluent pressure gauge, backwash sight glass, and air relief valve. The filter system shall have valving and piping to allow isolation, drainage, and back washing of individual filters, if needed for proper operation.

12.2 DIATOMACEOUS EARTH TYPE FILTERS

12.2.1 Filter Rate - The design filtration rate for pressure or vacuum filters shall be not greater than 1.5 gallons per minute per square foot of effective filter area, except that a maximum filtration rate of 2 gallons per minute per square foot may be allowed where continuous "body feed" is provided. Higher rates may be used if the filter has been successfully tested against NSF/ANSI Standard 50 at the higher rate.

12.2.2 Precoating - The filter piping shall be designed to refilter or waste the effluent until a uniform body coat is applied. For pressure type filters, precoat feed equipment shall be provided to apply not less than 0.1 pound of diatomaceous earth per square foot of filter area.

12.2.3 Body Feed Equipment - Body feed equipment capable of applying not less than 0.1 pound of diatomaceous earth per square foot of filter area per 24 hours should be provided.

12.2.4 Regenerative Type Filters - Regenerative-type filters shall meet the same standards as other pressure filters. Bumping by air or manual means must be provided for, and provision for inspection of elements shall be provided.

12.2.5 Accessories - Accessories for vacuum filters shall include a vacuum gauge and a vacuum limit switch interconnected with the pump. Pressure filters require a backwash sight glass, effluent pressure gauge, influent pressure gauge and an air relief valve. Valving and piping shall be provided to allow isolation, drainage, and back washing of individual filters, if needed for proper operation.

12.3 CARTRIDGE TYPE FILTERS

12.3.1 Filter Rate - The design filtration rate for surface-type cartridge filters shall not exceed .375 gallons per minute per square foot.

12.3.2 Cleaning and Disinfection - Equipment and facilities shall be provided for cleaning and disinfection of filter elements in accordance with manufacturers' recommendations.

12.3.3 Accessories - Accessories shall include a pressure gauge or gauges and an air relief valve.

12.3.4 Spare Cartridges - An extra set of cartridges, with at least 100 percent filter area, shall be provided.

12.3.5 Operation - Cartridge filters shall be operated in accordance with the filter manufacturer's recommendation and be listed and labeled to NSF/ANSI 50 by an ANSI-accredited certification organization.

13.0 DISINFECTION AND CHEMICAL APPLICATION EQUIPMENT

13.1 CHEMICAL FEED EQUIPMENT - Feeders shall be of sturdy construction and materials which will withstand wear, corrosion or attack by the chemical to be used therein and which are not adversely affected by repeated, regular adjustments or other normal use conditions. The design shall minimize potential for blockage.

13.1.1 Maintenance - Feeders shall be capable of being easily disassembled for cleaning and maintenance.

13.1.2 Intended Use - The chemical feeder shall be used only for chemicals recommended for use by the feeder manufacturer.

13.1.3 Safeguards - The feeders shall incorporate antisiphonage safeguards so that the chemical cannot continue to feed into the swimming pool piping system, or the swimming pool enclosure if any type of failure of the pool equipment occurs.

Chemical feed systems shall be designed to prevent chemical feed when the recirculation pump is off.

13.2 DISINFECTION - Swimming pools shall be designed to provide for continuous disinfection of the pool water with a chemical which is an effective disinfectant, and which imparts an easily measured, active residual.

13.2.1 Disinfectant Feeders - An automatic feeder which is easily adjustable shall be provided for the continuous application of disinfectant.

13.2.2 Capacity - Feeders shall be capable of supplying disinfectant at a rate of .1 pound chlorine per gallon per minute recirculation flow. The chemical feed system shall be designed to provide a 24-hour supply of disinfectant at the above rate.

13.2.3 Gas Chlorinators - Use of compressed chlorine gas shall be prohibited for new construction and after substantial alteration to existing swimming pools.

13.2.4 Hypochlorinators - Where hypochlorinators are used, the following requirements shall apply.

13.2.4.1 Feed - Feed shall be continuous under all conditions of pressure in the recirculation system.

13.2.4.2 Solution Tanks - If calcium hypochlorite is used, two solution tanks, each with minimum capacity of a one-day supply, should be provided.

13.3 TEST EQUIPMENT REQUIRED - Test equipment shall be provided to permit testing of all water quality parameters affected by chemical addition.

13.3.1 Chlorine/Bromine Test Kit - A DPD (Diethyl-P- Phenylene Diamine) test kit shall be provided. Where chlorine is used, increments of 0.2, 0.4, 0.6, 0.8, 1.0, 1.5, 2.0, and 3.0 as a minimum, shall be provided to measure the free and combined chlorine residuals. If other halogens are used, an appropriate scale shall be provided. Electronic residual monitoring devices may be used in addition to the test kit.

13.3.2 pH Test Kit - A pH test kit with a range from 6.8 to 8.2, accurate to the nearest 0.2 pH unit shall be provided.

13.3.3 Cyanuric Acid Test Kit - Where cyanurates are used, a test kit to measure the

cyanuric acid concentration shall be provided. It shall permit readings at least to 100 parts per million with increments of 25 parts per million.

13.3.4 Alkalinity and Hardness Test Kit - Equipment should be provided to measure alkalinity and calcium hardness. The alkalinity and calcium hardness test range shall be 60 to 400 parts per million.

14.0 BATHHOUSE

14.1 GENERAL - The term bathhouse shall refer to the dressing, shower and sanitary facilities which shall be provided adjacent to all swimming pools. Omission of part or all pool-side shower and toilet facilities may be approved by the Department when adequate facilities are conveniently available as determined by the Department.

14.2 DESIGN CRITERIA

14.2.1 Bathhouse Routing - Location of the bathhouse shall be such that the patrons must pass through the bathhouse to enter the swimming pool. The layout of the bathhouse shall be such that the patrons, on leaving the dressing room, pass the toilets, then the showers on route to the swimming pool. Nonconforming pools existing before the date of this code shall be grand fathered, provided that patrons are supervised for adherence to the shower requirement.

14.2.2 Bathhouse Design - Floors of the bathhouse shall be of smooth-finish material with slip-resistant surface, impervious to moisture, easily cleanable and sloped at least 1/4 inch per foot to drains. Carpeting shall not be permitted in shower and toilet areas. Junctions between walls and floors shall be coved. Walls and partitions shall be of smooth, impervious, materials, free from cracks or open joints. Partitions between dressing cubicles shall terminate at least 10 inches above the floor or shall be placed on continuous raised masonry or concrete bases at least 4 inches high. Lockers shall be set either on solid masonry or concrete bases at least 4 inches high or on legs with bottom of locker at least 10 inches above the floor. Lockers shall be constructed to allow ventilation.

14.2.3 Fixture Requirements - The minimum number of toilets, urinals, and other hygiene fixtures provided, excluding showers, shall be the greater of the following two options:

1) In accordance with applicable state and local codes, or
2) Based upon maximum peak occupancy of each swimming pool.

14.2.3.1 Showers and Lavatories - Showers shall be supplied with water at a temperature of at least 90 degrees Fahrenheit and no more than 115

degrees Fahrenheit and at a rate of at least 1.5 gallons per minutes per shower head. Lavatories should be provided with water at a temperature of at least 90 degrees Fahrenheit and no more than 115 degrees Fahrenheit. All plumbing shall conform to city building codes. Liquid or powdered soap dispensers shall be provided. Glass soap dispensers are not acceptable. Bar soap should not be provided at either showers or lavatories.

14.2.3.2 Diaper Changing - Diaper-changing stations are required in all swimming pools upon adoption of this code. Diaper changing shall only be done at a designated diaper changing station.

14.2.4 Suits and Towels - Where towels and/or swimming suits are furnished, facilities shall be provided for storage of clean and collection of used items.

14.2.5 Foot Baths - The use of foot baths is prohibited.

14.2.6 Hose Bibs - Hose bibs shall be provided and located to enable the entire bathhouse area to be flushed with a 50-foot hose. All hose bibs shall be provided with approved back-siphonage devices to protect the water distribution system for the swimming pool and appurtenant facilities at all times against cross-connection.

14.2.7 Ventilation - Bathhouse facilities shall be provided with mechanical ventilation in accordance with applicable state and local codes.

14.2.8 Electric Receptacles - All bathhouse electrical outlets shall be protected by ground fault circuit interrupters.

15.0 MISCELLANEOUS

15.1 POOL CLEANING SYSTEM - A system shall be provided to remove dirt and other foreign material from the bottom of the swimming pool. When a vacuum system is used as an integral part of the recirculation system, connections shall be located in walls of the swimming pool at least 8 inches below the water line, and at such points that the floor of the pool can be cleaned with no more than 50 feet of suction hose. Nothing in this section shall prohibit the use of surface skimmers for vacuum cleaning purposes.

15.2 MANUAL - A manual for operation of the swimming pool should be provided. Information contained in this manual should include but not be limited to: instructions for the proper installation, operation, cleaning, winterization and maintenance of all pool equipment; parts list, including drawings and applicable codes; illustrations; charts;

and operating instructions.

15.3 STARTING BLOCKS - Starting blocks shall be located where the water depth is at least 5 feet.

15.4 SAND AREA RINSE SHOWERS - Sand areas shall not be allowed inside of the swimming pool enclosure unless separated by an effective barrier to control access to the swimming pool deck and provided with continuous supervision to enforce the showering requirement. Persons entering the swimming pool area from the sand area shall pass through a water spray or shower which effectively removes sand from the bathers.

16.0 SPAS - A spa is swimming pool designed for recreational or therapeutic use of heated water and not to be drained, cleaned and refilled for each individual. A spa may include hydrojet circulation, mineral baths and an air induction system. A pool used under direct supervision of qualified medical personnel is not a spa.

16.1 GENERAL - Requirements for conventional swimming pools may be modified or waived for spas at the discretion of the Department. Except as modified by the following sections, compliance is required with all other applicable sections of these standards.

16.2 PHYSICAL SEPARATION - A spa swimming pool shall be physically separate from any other pool, and there shall be no commingling of water between a spa and another pool.

16.3 PATRON LOAD - The patron load shall not exceed one person per 3 lineal feet of seat or bench measured at the front edge.

16.4 MAXIMUM DEPTHS - The maximum water depth shall be 4 feet measured from the water line. The maximum depth of any seat or sitting bench shall be 2 feet measured from the water line.

16.5 STAIRS, LADDERS AND RECESSED TREADS - Stairs, ladders, or recessed treads shall be provided when spa depths are greater than 2 feet. A spa shall be equipped with at least one means of egress with handrails for each 50 feet of perimeter or portion thereof.

16.6 DECK WIDTHS -All spas constructed before the passage of this ordinance shall be an exception to this standard, unless they undergo a remodeling project. All newly constructed spas shall have a deck with a minimum five foot width, continuous, unobstructed, which may include the coping. The minimum width must be provided on

at least two sides or for 50 percent of the spa's perimeter.

16.7 WATER TEMPERATURE CONTROLS - Controls shall be provided to prevent water temperature in excess of 104 degrees Fahrenheit. The controls shall be accessible only to the swimming pool operator.

16.8 SPA DRAINAGE - Means to completely drain the spa shall be provided to allow frequent draining and cleaning.

16.9 ENTRAPMENT PROTECTION - Outlets shall be designed so that each pumping system prevents patron entrapment and complies with the VGB Pool and Spa Safety Act.

16.10 SURFACE SKIMMERS - One surface skimmer shall be provided for each 100 square feet or major fraction thereof of surface area.

16.11 RECIRCULATION SYSTEM INLETS - A minimum of two inlets shall be provided.

16.12 AIR INDUCTION SYSTEMS - An air induction system, when provided, shall prevent water back-up that could cause electrical shock hazards. Air intake sources shall not permit the introduction of toxic fumes or other contaminants.

16.13 DISINFECTANT FEEDERS - Spas shall conform to the design, operation, and maintenance requirement of swimming pools.

16.14 RECIRCULATION RATE - The recirculation rate shall provide 30 gallons per minute per skimmer, or provide a 30 minute turnover, whichever provides a greater flow rate.

16.15 AGITATION SYSTEMS - The agitation system shall be separate the water treatment recirculation system. The agitation system shall be connected to a 10-minute timer located out of reach of a person in the spa.

16.16 CAUTION SIGNS - A caution sign shall be mounted adjacent to the entrance to the spa or hot tub. It should include the following warnings:

1) Maximum water temperature is 104° F;
2) Children under age five and people using alcohol or drugs that cause drowsiness shall not use spas;
3) Pregnant women and people with heart disease, high blood pressure or other health problems should not use spas without prior consultation with a healthcare provider;
4) Children under 14 years of age shall be supervised by an adult;
5) A shower is required prior to entering;

6) Persons with boils or skin infections not permitted in the spa; and
7) Do not use body lotions prior to entering the spa.

16.17 EMERGENCY SHUTOFF - All spas shall have a clearly labeled emergency shutoff or control switch for the purpose of stopping the motor(s) that provide power to the recirculation system and hydrotherapy or agitation system that shall be installed and be readily accessible to the bathers, in accordance with the NEC.

17.0 WADING POOLS - A wading pool is a swimming pool that is no more than 24 inches deep that is intended for use by young children. Wading pools are special use pools, classified as a Class F pool in this code. Construction, design and operating standards outlined in this code apply.

18.0 WAVE POOLS - A wave pool is a special-use swimming pool with pneumatic wave generating equipment and a design which provides for control of the waves within the side walls and dissipation of the waves at a zero depth shallow end. A wave pool is a Class F swimming pool. In addition to the general swimming pool requirements stated in this code, wave pools shall comply with the additional provisions or reliefs of this section.

18.1 DESIGN - The sides of the wave pool shall be protected from unauthorized entry into the wave pool by the use of a fence or other comparable barrier. A perimeter deck shall not be required around 100% of the wave pool perimeter. Perimeter deck shall be provided where bathers gain access to the wave pool at the shallow or beach end and in locations where access is required for lifeguards. Wave pools shall be provided with handholds at the static water level or not more than six inches (15.2 cm) above the static water level. These handholds shall be continuous around the wave pool's perimeter with the exception of at the zero depth beach entry, water depths less than 24 inches (61.0 cm), if this area is roped off not allowed for bather access. These handholds shall be self-draining. Handholds shall be installed so that their outer edge is flush with the wave pool wall. The design of the handholds shall ensure that body extremities will not become entangled during wave action.

18.2 STEPS, HANDRAILS, LADDERS, FLOAT LINE – Recessed steps shall not be allowed along the walls of the wave pool due to the entrapment potential. Side wall ladders shall be utilized for egress only and shall be placed so they do not project beyond the plane of the wall surface. Wave pools shall be fitted with a float line located to restrict access to the caisson wall if required by the wave pool equipment manufacturer. Safety rope and float lines typically required at shallow to deep water transitions shall not apply to wave pools.

18.3 SAFETY - Proper storage shall be provided for life jackets and all other equipment used in the wave pool that will allow for thorough drying to prevent mold and other

biological growth. A minimum of two emergency shut-off switches to disable the wave action shall be provided, one on each side of the wave pool. These switches shall be clearly labeled and readily accessible to qualified lifeguard. Safety rope and float lines typically required at shallow to deep water transitions shall not apply to wave pools. Caisson barriers shall be provided for all wave pools that prevent the passage of a four-inch (10.2 cm) ball.

18.4 WAVES

16.4.1 Magnitude - The wave generating equipment shall not be capable of producing waves of a magnitude which could cause swimmers to have contact with the swimming pool bottom in the deep end.

18.5 OPENINGS

18.5.1 Inlet - The zero-depth area shall have bottom inlets. They shall be located as required by the Department.

18.5.2 Openings to Wave Generating Equipment - Openings to wave generating equipment shall be designed to prevent entrapment of swimmers.

19.0 ZERO-DEPTH ENTRY POOLS – A zero-depth entry pool is a swimming pool with a sloped entry into the pool from deck level into the interior of the pool as a means of access and egress.

19.1 GENERAL - This section applies to zero-depth entry pools other than wading pools. Except as modified by the following sections, zero-depth entry pool facilities must comply with all other applicable ordinances. A zero depth entry pool is a Class F swimming pool.

19.2 SURFACE SKIMMING - A gutter or trench with a grate cover is required along all zero-depths areas. It shall be at an elevation which allows effective skimming at the trench at all times.

19.3 DESIGN - Where zero depth entries are provided, they shall be constructed with slip-resistant materials. Zero depth entries shall have a maximum floor slope of 1:12,

19.4 BARRIERS - Barrier requirements may be waived by the Director of the Department, if adequate supervision of patrons is provided at all times.

20.0 POOL SLIDES

20.1 SLIDES - All slides used at swimming pools shall be specifically designed and intended

for use with a swimming pool, and for the specific application. Slides shall be permitted only where supervision will be provided in accordance with section 24.4, on operation. Slides shall be installed, maintained and operated to manufacturer's/designer's specifications.
Signs indicating riding instructions, warnings, and requirements in accordance with the manufacturer recommendations shall be posted at the waterslide entry.

20.2 CHILDREN'S ACTIVITY SLIDES - Children's activity slides are small slides with a low exit velocity designed by the manufacturer for use by small children at swimming pools. They must be designated by the manufacturer for use in 24 inches or less of water, and installed accordingly.

20.3 DROP SLIDES - A drop slide is a slide which discharges to a swimming pool with a drop of more than 2 inches to the water surface.

20.3.1 Standard Pool Slides - All slides installed as an appurtenance to a swimming pool shall be designed, constructed, and installed to provide a safe environment for all bathers utilizing the swimming pool in accordance with applicable ASTM and CPSC standards

20.3.2 Entry - Slide entry areas shall be designed so the rider is able to properly enter and position him or herself before sliding down the chute. This area shall be a small platform or a less-sloped portion of chute, with well-placed assist bars.

20.3.3 Handrails - Drop slides shall have handrails on both sides of the ladder or steps. Platforms and landings shall have 42-inch-high guardrails, with at least one intermediate-height rail.

20.3.4 Landing Area - There shall be a drop slide landing area extending 5 feet on either side of the center line of the slide and from the back wall extending 20 feet in front of the slide terminus. This area shall not infringe on the required landing areas for other drop slides, water slides, or diving equipment.

20.3.5 Landing Area Designation - The drop slide landing area shall be separated from the rest of the swimming pool in a manner approved by the Department. A slide mounted in a separate diving area may be allowed to use the diving area separation as long as access to the diving well is restricted to patrons using the slide and the diving equipment.

20.3.6 Slide Terminus - The terminus of the chute shall extend beyond the swimming pool wall, and be so oriented that the safety area in front of the slide does not interfere with the safety area of another slide or other pool equipment.

20.3.7 Exit Angle - The maximum angle of the slide runway at the exit shall be between zero degrees and eleven degrees, measured downward from horizontal.

20.3.8 Water Depth - The minimum required water depth shall be a function of the vertical distance between the terminus of the slide surface and the water surface of the landing pool.

20.3.9 Maximum Drop - The maximum drop height at the terminus of the slide shall not exceed 42 inches.

20.3.10 Pump Intake - If water is pumped form a swimming pool to the slide, the pump intake shall be enclosed or constructed in a manner to prevent injury or entrapment of swimmers. Intake velocity shall not exceed 1 1/2 feet per second.

20.3.11 Safety and Supervision - Slides shall be located and constructed to allow easy supervision. When a slide is not supervised or not open for use, it shall be secured to prevent access.

20.4 FLUME WATER SLIDES - A flume water slide consists of one or more flumes entering a plunge pool landing area.

20.4.1 General - Water slides require special consultation with the Department for consideration or design variations and areas where potential problems may exist. Requirements for conventional swimming pools may be modified or waived for water slides at the discretion of the regulatory agency. Except as modified by the following section, compliance is required with all other applicable standards.

20.4.2 Flumes - "Flume" means the riding channels of a waterslide which accommodate riders using or not using mats, tubes, rafts, and other transport vehicles as they slide along a path lubricated by a water flow.

20.4.2.1 Position- A flume shall be perpendicular to the plunge pool wall for a distance of at least 10 feet from the exit end of the flume.

20.4.2.2 Clearances - The distance between the point of exit and the side of the swimming pool opposite the bathers as they exit, excluding any steps, shall not be less than the waterslide manufacturer's recommendations and in accordance with ASTM F2376.

20.4.2.3 Elevation - A flume shall terminate at a depth between 6 inches below plunge pool operating water surface level and 2 inches above

the water surface level. The flume shall not exceed a one-in-ten slope for a distance of at least 10 feet from its exit end.

20.4.3 Walkways - Refer to section 7.8 of this code.

21.0 WATER QUALITY STANDARDS

21.1 DISINFECTION - Swimming pool water shall be automatically and continuously disinfected. All disinfecting materials and methods shall:

1) Be used only with the approval of the Department;
2) Not create an undue safety hazard when handled, stored and used according to label directions;
3) Be compatible for use with other chemicals normally used in swimming pool water treatment, or be clearly identified as having a used limitation;
4) Not impart toxic properties to the water when used according to direction;
5) Provide an effective residual which can be easily and accurately be measured by a field test procedure; and
6) Only products that are EPA-registered for use as sanitizers or disinfectants in swimming pools or spas in the United States are permitted.

21.1.1 Chlorine - When chlorine is the disinfectant, a free chlorine residual of at least 1.0 PPM (mg/L) shall be maintained throughout the swimming pool. Spas shall maintain a minimum free available chlorine concentration of 3.0 PPM (mg/L). Maximum free available chlorine concentrations shall not exceed 10.0 PPM (mg/L) at any time the swimming pool is open to bathers.

21.1.2 Bromine - Minimum bromine concentrations shall be maintained at all times in all areas as follows:

1) All swimming pools: 3.0 PPM (mg/L), and
2) Spas: 4.00 PPM (mg/L)

Note: Bromine-based disinfectants may be applied to swimming pools and spas through the addition of an organic bromine compound 1,3-Dibromo-5,5-dimethylhydantoin (DBDMH) or 1-bromo-3-chloro-5,5-dimethylhydantoin (BCDMH).

21.1.3 Other Disinfectants - Another disinfecting material or method may be used when it has been demonstrated to provide a satisfactory residual which is easily measured and is as effective as under conditions of use as the chlorine concentrations required herein.

21.1.4 Cyanuric Acid - When chlorinated isocyanuarate is used as the disinfectant, a

free available chlorine concentration of 2.0 PPM (mg/L) shall be maintained throughout the pool. The cyanuric acid concentration in the pool water shall not exceed 100 mg/l. Spas shall maintain a minimum free available chlorine concentration of 3.0 PPM (mg/L).

21.1.5 Salt Electrolytic Chlorine Generators, Brine Electrolytic Chlorine or Bromine Generators - Only swimming pool grade salt shall be used. The saline content of the pool water shall be maintained in the required range specified by the manufacturer. Cleaning of electrolytic plates shall be performed as recommended by the manufacturer. Corrosion protection systems shall be maintained in the pool basin.

21.1.6 Secondary or Supplemental Treatment

21.1.6.1 Ultraviolet Light - UV systems shall only operate while the recirculation system is operating. Secondary UV systems shall be operated and maintained not to exceed the maximum validated flow rate and meet or exceed the minimum validated output intensity needed to achieve the required dose for a 3-log inactivation. Use of UV does not modify any other water quality requirements. UV sensors shall be calibrated at a frequency in accordance with manufacturer recommendations. Records of calibration shall be maintained by the facility.

21.1.6.2 Ozone - Ozone systems shall be operated and maintained according to the manufacturer's instructions to maintain the required design performance. Residual ozone concentration in the swimming pool water shall remain below 0.1 PPM (mg/L). Use of ozone does not modify any other water quality requirements. A printed standard operating manual shall be provided containing information on the operation and maintenance of the ozone generating equipment, including the responsibilities of workers in an emergency. All employees shall be properly trained in the operation and maintenance of the equipment.

21.1.6.3 Copper/Silver Ions - Only those systems that are EPA-registered spas in the United States are permitted. Copper and silver concentrations shall not exceed 1.3 PPM (mg/L) for copper and 0.10 PPM (mg/L) for silver for use as disinfectants in swimming pools and spas.

21.1.7 Special Purpose Pools - The Department reserves the right to require a higher disinfectant residual than stated in 21.1.1, 21.1.2, and 21.1.4 for slide pools,

spas, or other special-purpose swimming pools.

21.2 pH AND ALKALINITY

21.2.1 pH - The swimming pool water pH shall be maintained at a level between 7.2 and 7.8. Approved substances for pH adjustment shall include but not be limited to muriatic (hydrochloric) acid, sodium bisulfate, carbon dioxide, sulfuric acid, sodium bicarbonate, and soda ash.

21.2.2 Feed Equipment - Acceptable disinfectant and pH control chemicals shall be delivered through an automatic chemical feed system upon adoption of this code. All chemical feed system components must be dedicated to a single chemical and clearly labeled to prevent the introduction of incompatible chemicals. Chemical feed system components shall be installed and interlocked so it cannot operate when the recirculation system is in low or no flow circumstances. Chemical feed system components shall incorporate failure-proof features so the chemicals cannot feed directly into the swimming pool, the venue piping system not associated with the recirculation system, source water supply system, or area within proximity of the swimming pool deck under any type of failure, low flow, or interruption of operation of the equipment to prevent bather exposure to high concentrations of swimming pool treatment chemicals. All chemical feed equipment shall be maintained in good working condition.

21.2.3 Alkalinity - Total alkalinity shall be maintained in the range of 60 to 180 PPM (mg/L).

21.3 CLARITY - The water in a swimming pool shall be sufficiently clear such that the bottom is visible while the water is static. To make this observation, the water shall have sufficient clarity that a black and white disc, 3 to 6 inches in diameter shall be visible at all times at any point on the deck up to 30 feet (9.1 m) away in a direct line of sight from the tile or main drain. For spas, this test shall be performed when the water is in a non-turbulent state and bubbles have been allowed to dissipate.

21.4 ALGAE CONTROL - Algaecides may be used in a swimming pool provided:

1) The product is labeled as an algaecide for swimming pool or spa use;
2) The product is used in strict compliance with label instructions; and,
3) The product is registered with the US EPA and applicable state agency.

21.5 SUPERCHLORINATION OR SUPEROXIDATION - The owner shall ensure the swimming pool takes action to reduce the level of combined chlorine (chloramines) in the water when the level exceeds 0.4 PPM (mg/L). Such actions may include but are not limited to:

1) Superchlorination or
2) Water exchange

Superchlorination means the addition of large quantities of chlorine-based chemicals to kill algae, destroy odors, or improve the ability to maintain a disinfectant residual. This process is different from hyperchlorination, which is a prescribed amount to achieve a specific CT value whereas superchlorination is the raising of free chlorine levels for water quality maintenance. "CT Value" means a representation of the concentration of the disinfectant (C) multiplied by time in minutes (T) needed for inactivation of a particular contaminant. The concentration and time are inversely proportional; therefore, the higher the concentration of the disinfectant, the shorter the contact time required for inactivation. The CT value can vary with pH or temperature change so these values must also be supplied to allow comparison between values.

21.5.1 Chlorine Residual - During superchlorination, the free chlorine residual should be raised to a level of at least 10 times the combined chlorine level present.

21.5.2 Pool Use - Swimmers shall not be allowed in the swimming pool during superchlorination. They may be allowed in the pool when the free chlorine residual is less than 10 ppm (mg/L).

22.0 ROUTINE OPERATIONS

22.1 POOL CLEANING - The swimming pool and deck areas shall be cleaned, the pool water surface skimmed, and the pool walls and bottom vacuumed or brushed, all on a daily basis during off-use hours.

22.2 TOILET, SHOWER AND LOCKER FACILITIES - The facilities, including the floors, showers, and toilet facilities, shall be cleaned and disinfected daily. Public lockers shall be inspected and be cleaned as necessary. All fixtures and equipment shall be maintained in operable condition. Liquid soap dispensers shall be filled daily.

22.3 WATER ANALYSIS - Water quality analyses shall be performed daily as set forth in this code. Test kits shall be properly maintained. Reagents shall be renewed semi-annually for indoor swimming pools and prior to annual opening for seasonal use swimming pools.

22.4 MECHANICAL SYSTEM - All items of mechanical equipment and all parts of the mechanical system shall be inspected daily. Necessary repairs to assure proper operation shall be made.

22.5 RECIRCULATION SYSTEM - The recirculation system shall be inspected daily, and maintained in proper operation.

22.5.1 Overflow Systems - Surface skimmers and perimeter overflow systems shall be cleaned daily and shall be adjusted as necessary to assure effective skimming.

22.5.2 Drain Covers- Broken drain covers/grates shall be repaired as soon as possible. If any drain cover/grate is missing or poses a safety risk to patrons, the swimming pool shall be closed until an approved cover/grate is properly installed.

22.5.3 Inlets - Inlet flow rates and directions shall be checked and shall be adjusted as necessary to assure circulation in all areas of the swimming pool.

22.5.4 Surge Tanks - Surge tank controls shall be adjusted as necessary to maintain the water level in the proper operating range. Surge tanks shall be drained and cleaned at least annually.

22.6 WATER LEVEL - Water shall be added as needed to keep the swimming pool water at a level needed to assure effective skimming.

22.7 OTHER EQUIPMENT - All safety equipment, deck equipment, and signs shall be checked daily to assure compliance with the appropriate sections of these standards. Diving boards shall be inspected daily for cracks and loose bolts with cracked boards removed and loose bolts tightened immediately. Required fencing, barriers, and gates shall be maintained at all times.

22.8 RECORDS - Daily operating records shall be maintained by the owner or operator on forms acceptable to the Department. Free available chlorine, combined available chlorine, or total bromine, and pH shall be tested at all swimming pools daily. For heated swimming pools, water temperature shall be recorded at the same time the free available chlorine or total bromine and pH tests are performed.

22.9 CHEMICALS - All chemicals shall be handled in accordance with the manufacturers' recommendations. Chemical containers shall be labeled with chemical name and appropriate hazard designation. Material safety data sheets shall be available on site for all chemicals used.

22.10 ANNUAL FACILITY EVALUATION - A total facility evaluation should be scheduled and conducted at the expiration of the permit. The swimming pool shall be closed as necessary for repairs and maintenance.

23.0 EQUIPMENT MAINTENANCE AND OPERATION

23.1 INSTRUCTIONS - All equipment shall be operated and maintained in accordance with manufacturers' instructions. A manual of operation provided by the consultant, and manufacturer's instructions for operation and maintenance of the equipment, shall be maintained and kept available. When such instructions are not available, the Department should be contacted for advice and consultation.

23.2 CONTINUOUS OPERATIONS - Pumps, filters, disinfectant feeders, flow indicators, gauges, and all related components of the swimming pool recirculation system shall be kept in continuous operation, 24 hours a day.

23.3 RECIRCULATION PUMPS - The pump and motor shall be checked at regular intervals. The pump shall not be throttled on the suction side during normal operation.

23.4 FILTERS

23.4.1 Sand Filters

23.4.1.1 Air Release - The filter air release valve shall be opened daily, or more frequently if necessary, to remove air which collects in the filter.

23.4.1.2 Backwash - Filters shall be backwashed at a proper flow rate in accordance with the manufacturer's recommendations.

23.4.1.3 Internal Components - Inspection of internal components of pressure filters shall be conducted annually or any time the filters fail to produce clear effluent deficiencies shall be corrected. Sand or other media shall be inspected annually and carefully graded to meet the manufacturer's recommendation for swimming pool use.

23.4.2 Pre Coat Filters - The media shall be listed and labeled to NSF/ANSI 50 by an ANSI-accredited certification organization for use in the filter. Precoating of the filters shall be required in closed loop (precoat) mode to minimize the potential for media or debris to be returned to the swimming pool unless filters are listed and labeled to NSF/ANSI 50 by an ANSI-accredited certification organization to return water to the pool during the precoat process. Filter operation shall be per manufacturer's instructions.

23.4.3 Cartridge Filters - Cartridge filters shall be operated in accordance with the filter manufacturer's recommendation and be listed and labeled to NSF/ANSI 50 by an ANSI-accredited certification organization.

23.5 STRAINERS - Strainer baskets shall be removed and replaced by clean baskets frequently. The pump shall be stopped before the strainer is opened. In the case of diatomaceous earth filter, the dirty strainer basket should be replaced with a clean on when the filter is backwashed.

23.6 VALVES - Valves shall be operated through their entire operation range occasionally to prevent corrosion and dirt form sealing them. Valve stem packing glands shall be tightened or repacked as necessary to prevent leakage.

23.7 FLOW METERS - Flow meters shall be maintained in an accurate operating condition. The glass and the connecting tubes shall be kept clean.

23.8 GAUGES - The lines leading to gauges shall be bled occasionally to prevent blockage. Gauges shall be inspected periodically to assure proper operation, and shall be maintained in operating condition.

23.9 POSITIVE DISPLACEMENT FEEDERS

23.9.1 Inspection - Positive displacement feeders shall be periodically inspected and serviced.

23.9.2 Intake - The suction intake should be suspended at least 6 inches above any sludge layer in the solution tank.

23.9.3 Cleaning - Feeder, tubing and valves shall be periodically cleaned or replaced in accordance with manufacturers' recommendations.

23.10 EROSION FEEDERS

23.10.1 Inspection - Erosion feeders shall be periodically inspected and serviced.

23.10.2 Chemicals - Only chemicals recommended by the feeder manufacturer shall be used by the feeder.

23.10.3 Cleaning - Connecting tubes shall be periodically cleaned or replaced to permit continuous free circulation.

23.11 POOL STRUCTURE AND DECKS

23.11.1 Cracks - Cracks in the swimming pool walls, floors, perimeter overflow systems and decks shall be repaired as soon as possible. Seasonal use pools shall have all repairs completed prior to annual reopening.

23.11.2 Painting – The swimming pool walls, floor, and deck equipment shall be painted as often as necessary to keep them in good condition and free of corrosion. Paint for the pool structure shall be white or a light color. Steps or least the front edge of the step treads which lead into a pool should be painted to contrast with the rest of the pool.

23.12 ELECTRICAL SYSTEMS

23.12.1 Electrician - Periodic inspections should be made by a licensed or certified electrician. Repairs to any electrical system shall be made only by a licensed or certified electrician.

23.12.2 Lights - Defective underwater and overhead lights, including their lenses, shall be immediately repaired or replaced.

24.0 STAFF/SUPERVISION

24.1 SUPERVISION – Swimming pools with standing water and with any of the following conditions shall be required to have a qualified lifeguard*(s)* conducting patron surveillance at all times the swimming pool is open.

Note: This list includes but shall not be limited to the following:

1) Any swimming pool with a configuration in which any point on the swimming pool surface exceeds 30 feet (9.1 m) from the nearest deck;
2) Any swimming pool with an induced current or wave action including but not limited to wave pools and lazy rivers;
3) Waterslide landing pools; and
4) Any swimming pool in which bathers enter the water from any height above the deck including but not limited to diving boards, drop slides, starting platforms, and/or climbing walls. This does not include pool slides.

Swimming pools may have the lifeguard requirement waived for events such as lap swimming, athletic competitions, organized classes and other activities approved by the Department. The waiver will only apply to events with adults or children over the age of fourteen and when safety concerns can be adequately addressed. Adequate supervision by staff members shall be substituted in these situations.

24.2 LIFEGUARDS

24.2.1 Number - The number of lifeguards shall be determined based upon anticipated

usage and design characteristics. The Department should be consulted.

24.2.2 Certification - Each lifeguard shall have a valid and current lifesaving or life guarding certificate from a nationally accredited lifesaving course.

24.2.3 Dress - Each lifeguard on duty shall be appropriately dressed and identifiable.

24.2.4 Attention - A lifeguard on duty shall not engage in activities which would distract his or her attention from the lifeguard duties.

24.3 ATTENDANTS

24.3.1 Drop Slides - Attendants shall be stationed at a point where they can control patrons entering the slide. An attendant may supervise no more than two drop slides. Slides shall be located and constructed to allow easy supervision.

24.3.2 Exemption - Slides meeting the construction criteria specified in sections 20.2 or 20.3 may be exempt from the lifeguard and attendant requirement if they meet all of the criteria below.

1) They are 6 feet or less in height from the slide entrance to the slide exit.
2) The discharge is 6 inches or less above the water surface.
3) The user has a clear view of the landing area from all locations on the slide.
4) The slide cannot be a tube or be covered to restrict the view of the landing area.

24.3.3 Flume Water Slides - All Flume water slides must be directly supervised, with attendants at top and bottom areas.

24.4 OPERATOR - A person knowledgeable in swimming pool side testing of the water and in operating the water treatment equipment shall be available whenever the pool is open for use.

25.0 SWIMMING POOL CLOSURE

25.1 HEALTH OR SAFETY HAZARDS - Any of the following conditions shall constitute sufficient grounds to order a swimming pool closed:

25.1.1 Disinfectant Residual - Failure to comply with the disinfectant residual levels established in Section 21.1, pH below 6.5 or pH above 8.0

25.1.2 Water Clarity - Failure to comply with the water clarity requirement established

in Section 21.3.

25.1.3 Treatment Equipment - Inoperable pump, filter, or disinfectant feeder.

25.1.4 Electrical Safety - Presence of bare electrical wires or other obvious electrical deficiency.

25.1.5 Supervision - Absence of supervisor or required lifeguard.

25.1.6 Other Conditions - Existence of any condition creating an immediate danger to the health or safety of the swimming pool patrons or its personnel. If at any time the liner system is damaged or cut in such a way that its integrity is compromised, the pool shall be shut down until the system is fully repaired. The Director of the Department may also revoke an operating permit of a facility that has repeated deficiencies that could affect the health and safety of the pool patrons.

25.2 POOL CLOSURE REQUIREMENTS – All times when the swimming pool is closed for any reason, all entry and exit points shall be properly maintained and secured against unauthorized entry and a sign saying "POOL CLOSED" shall be provided at the entry points.

25.3 REQUIREMENTS FOR COVERS WITH AND WITHOUT BARRIERS

25.3.1 Swimming pools without a barrier and open to the public - Where the swimming pool does not have a barrier enclosing it and other parts of the swimming pool are open to the public:

1) The water shall be recirculated and treated to meet the criteria of this code and the swimming pool shall be staffed to keep bathers out, or
2) An approved SAFETY cover that is listed and labeled to ASTM F1346-91 by an ANSI-accredited certification organization shall be installed.

25.3.2 Swimming pools without a barrier and closed to the public - Where the swimming pool does not have a barrier enclosing it and the swimming pool is closed to the public:

1) The water shall be recirculated and treated to meet the criteria of this code, or
2) The water shall be drained; or
3) An approved safety cover listed and labeled to ASTM F1346-91 by an ANSI-accredited certification organization shall be installed

25.3.3 Swimming pools with a barrier and closed to the public - Where the swimming

pool has a barrier enclosing it and the swimming pool is closed to the public:

1) The water shall be recirculated and treated to meet the criteria of this code, or
2) The water shall be drained; or
3) An approved safety cover that is listed and labeled to ASTM F1346-91 by an ANSI-accredited certification organization shall be installed.

26.0 SAFETY

26.1 ACCIDENT PREVENTION

26.1.1 Decks – Decks shall be kept slip-resistant and in good repair, without litter, obstructions, tripping hazards or sharp edges. Surface crack edges exceeding 1/8 inch (3.2 mm) wide shall be repaired and any sharp edges shall be removed.

26.1.2 Deck Equipment - Ladders, handrails, diving apparatus, lifeguard chairs, slides, and other deck equipment shall be kept secured and in good repair, without sharp edges.

26.1.3 Depth Markings - Depth markings shall be maintained to be plainly visible.

26.1.4 Entrances - Doors and gates at swimming pool entrances shall be kept closed when not in use, and locked when the pool is not open for use. All gates shall be self closing and self latching.

26.1.5 Glass Objects - Glass objects shall not be permitted in a swimming pool enclosure.

26.2 SAFETY EQUIPMENT

26.2.1 Lifesaving Equipment - The lifesaving equipment shall be kept in good repair and ready condition. It shall be kept in its established location and shall be used only for the intended purpose.

26.2.2 First Aid Equipment - First aid equipment shall be kept in good repair and ready condition at the swimming pool.

26.2.3 Life Lines - Life lines separating shallow and deep areas shall be kept in good repair. They should be kept in place.

26.2.4 Breathing Apparatus - Self-contained breathing apparatus, where required, shall be kept in good repair and in ready condition.

26.3 EMERGENCY PLAN - For swimming pools requiring lifeguards in accordance with section 24.1 of this code, a plan of action for emergencies shall be prepared. The emergency response plan shall include:

1) Steps to respond to emergencies (at a minimum, severe weather events, drowning or injury, contamination of the water, chemical incidents); and
2) Communication and coordination with emergency responders as part of an emergency action plan.

26.4 CHEMICAL STORAGE – Swimming pool chemicals shall be stored to prevent access by unauthorized individuals. Containers of chemicals shall be labeled, tagged, or marked with the identity of the material and a statement of the hazardous effects of the chemical according to OSHA and/or EPA materials labeling requirements.

Appendix A

Columbia/Boone County Department of Public Health and Human Services
Fecal Accidents Policy for Swimming Pools and Spas - 2015

In the event that a fecal accident occurs in a swimming pool or spa at any time the following procedures shall be followed:

A. Formed or solid stool:
1) The pool or spa shall be closed and all bathers removed.
2) Remove as much solid matter as possible using a net or bucket. Make sure to clean and disinfect any items used for this purpose.
3) Water chemistry shall be checked. Refer to Table 1 for the specific time and free chlorine levels needed to disinfect the pool.

Table 1: Disinfection Time for a Formed-Stool Fecal Incident

Free Chlorine Level (ppm)	Disinfection Time
1.0	45 minutes
2.0	25 minutes
3.0	19 minutes

- These closure times are based on a pH of 7.5 or less and a water temperature of 77°F or higher.

B. If fecal material is loose (diarrhea):
1) The pool or spa shall be closed and all bathers removed.
2) Remove as much fecal material as possible, for example, using a net or bucket. Make sure to clean and disinfect any item used for this purpose.
3) Water chemistry shall be checked. Refer to Table 2 for the specific time and free chlorine levels needed to disinfect the pool.

Table 2: Disinfection time for a Diarrheal Fecal Incident

Free Chlorine Level (ppm)	Disinfection Time
10	25.5 hours
20	12.75 hours
40	6.5 hours

- These closure times are based on a pH of 7.5 or less and a water temperature of 77F or higher.

For either type of incident, confirm the filtration system is operating while the water reaches and maintained at the proper chlorine level for disinfection. Backwash the filter after reaching the proper disinfection level. Do not return the backwash through the filter, replace filter media if needed. Keep a written log of the time of the accident and the follow-up response.

Appendix B WATER CONTAMINATION RESPONSE LOG

Person Conducting Contamination Response						
Supervisor on Duty						
Date (mm/dd/yyyy) of Incident Response						
Time of Incident Response						
Water Feature or Area Contaminated						
Number of People in Water						
Type/Form of Contamination in Water: **Fecal Accident (Formed Stool or Diarrhea), Vomit, Blood**						
Time that Water Feature was Closed						
Stabilizer Used in Water Feature (Yes/No)						
	Water Quality Measurements					
	Level at Closure	**1**	**2**	**3**	**4**	**Level Prior to Reopening**
Free Residual Chlorine **(1-4 are measurements spread evenly thru the closure time)**						
pH **(1-4 are measurements spread evenly thru the closure time)**						
Date (mm/dd/yyyy) that Water Feature was Reopened						
Time that Water Feature was Reopened						
Total Contact Time **(Time from when disinfectant reached desired level to when disinfectant levels were reduced prior to opening)**						
Remediation Procedure(s) Used and Comments/Notes						

Appendix C

Cleaning Up Body Fluid Spills on Pool Surfaces

Body fluids such as blood, feces and vomit are considered potentially contaminated with bloodborne or other germs. Therefore, spills or incidents involving these fluids on the pool deck should be cleaned up and the contaminated surfaces should be disinfected immediately.

Approved Disinfectant:

Bleach - One of the most commonly used chemicals for disinfection. A solution of 1 part household bleach and 9 parts cool water can be gently mixed. Bleach and water loses strength quickly, so a fresh mixture should be made before each clean up to make sure it is effective.

Clean-up Procedure Using Bleach Solution

1. Block off the area of the spill from patrons until clean-up and disinfection is complete.
2. Put on disposable gloves to prevent contamination of hands.
3. Clean up the spill using paper towels or another absorbent material and place in a plastic garbage bag.
4. Gently pour bleach solution of 1 part household bleach to 9 parts cool water onto all contaminated areas of the deck surface.
5. Let the bleach solution remain on the contaminated area for 20 minutes
6. Wipe up all remaining bleach solution
7. All non-disposable cleaning materials used such as mops and scrub brushes should be disinfected by saturating with bleach solution and allowing to air dry.
8. Remove gloves and put in plastic garbage bags with all soiled cleaning materials
9. Double bag and securely tie up plastic garbage bags and discard.

Appendix D

POOL ENGINGEERING SUMMARY

Contractor:_____ Date Submitted:_____
Swimming Pool For:_____ Date Work Starts:_____
Submitted By:_____ Date Of Completion:_____
Mailing Address:_____

A: Pool Type

Class A Class B Class C Class E Class F

B: Pool Specifications

1. Size: Length:_____ Width:_____ Depth:_____
2. Surface Area:_____ Square Feet.
3. Capacity:_____ gallons.
4. Turnover:_____ hours.
5. Interior Finish:_____
6. Coping – Type:_____

C: Filter and Disinfection Equipment

1. Filter Type: _____Sand _____Pressure DE _____Vacuum DE
2. Gauges: _____Influent _____Effluent _____ROF Meter
3. Air Relief: _____ .
4. Flow Rate:_____GPM.
5. Filter Rate:_____ per square feet of filter area.
6. Filter Area:_____square feet.
   High Rate? _____ NSF Approved? _____
7. Pump and Motor: _____HP _____Volts _____ Phase
8. Hair and lint Strainer: _____ Ratio, Slurry Feeder: _____
9. Filter Waste Water: _____
10. Chlorine Feeder: Pos. Disp. _____Operates up to_____ PSI
    Capacity _____ Gal./day. Make _____Model _____
11. Secondary Disinfection type if applicable:_____

D: Pool Equipment and Pipe Data

1. Pipe Type: _____
2. Surface Skimmers: _____
3. Inlet Fittings: _____Number;_____inches below water surface.
4. Main Outlet: _____ Size.
5. Hydrostatic Relief Valve: _____ Size.
6. Vacuum Fitting: _____

7. Underwater Light: _____Watt.
8. Rope Anchors: _____
9. Safety Rope: _____
10. Rope Floats: _____ Size.

E: General Information

11. Deck: _____ type, _____sq. ft. Size, _____inch per slope, slope away from pool, depth marking _____.
12. Fence: _____ type, _____ ft. height, _____ gate,
13. Vacuum cleaner set: _____.
14. Water test kit: _____.
15. Heater: _____.
16. Other: _____

F: Maximum Peak Occupancy

maximum peak occupancy = swimming pool surface area / D

The density factors (D) are:

Water/bather-related:

1) flat water density factor = 20 ft2 (1.9 m2) per bather.
2) agitated water density factor = 15 ft2 (1.4 m2) per bather.
3) hot water density factor = 10 ft2 (0.9 m2) per bather.
4) waterslide landing pool density factor = manufacturer-established capacity at any given time.
5) interactive water play water density factor = 10 ft2 (0.9 m2) Per bather on surface.

Non-water/patron-related:

6) deck density factor = 50 ft2 (4.6 m2) per bather.
7) stadium seating density factor = 6.6 ft2 (0.6 m2) per bather.

G: Allowable Turnover

Swimming Pool Maximum Allowable Turnover Times

Type of Aquatic Venue	Turnover Maximum
Activity Pools	2 hours or less
Diving Pools	8 hours or less
Interactive Play*	0.5 hours or less
Lazy River	2 hours or less
Plunge Pools	1 hour or less
Runout Slide	1 hour or less
Wading Pools*	1 hour or less
Wave Pools	2 hours or less
All Other Pools	6 hours or less
*Shall have secondary disinfection systems	

Spa, Therapy*, & Exercise Pools		
Temperatures	**Load**	**Turnover Maximum**
≤ 72°-93°F (22°-34°C)	> 2500 gals/person (9.46 m^3)	4 hours or less
≤ 72°-93°F (22°-34°C)	> 450 gals/person (1.7 m^3)	2 hours or less
≤ 72°-93°F (22°-34°C)	≤ 450 gals/person (1.7 m^3)	1 hour or less
≥ 93-104°F (34°-40°C)	All	0.5 hours or less
*Shall have secondary disinfection systems		

*Systems identified as requiring secondary disinfection in the tables above shall comply for swimming pools installed after the date of adoption of this code.

Plans must be submitted to Building and Site Development to verify compliance with the adopted versions of the International Building Code, International Plumbing Code, International Mechanical Code, International Fire Code and the National Electric Code.

I Certify that the above statements are true and accurate. I understand that any and all changes must be submitted in writing to the Department of Public Health and Human Services before work is completed.

_____

(Signature & Date)