



Ord. No. 7464  
File No. 145

**The City of Crystal Lake Illinois**

**AN ORDINANCE AMENDING CHAPTER 422: RESIDENTIAL CODE OF THE CODE OF ORDINANCES OF THE CITY OF CRYSTAL LAKE, ILLINOIS**

**BE IT ORDAINED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF CRYSTAL LAKE** as follows:

**SECTION I:** That Chapter 442: Residential Code be amended to read as follows:

**Chapter 442: Residential Code**

[HISTORY: Adopted by the City Council of the City of Crystal Lake 1-19-1993 as amended 12-17-2002 by Ord. No. 5591 (Art. III, Ch. II, Section B, § 3.44, of the 1993 Code); amended in its entirety 6-17-2008 by Ord. No. 6375. Subsequent amendments noted where applicable.]

**GENERAL REFERENCES**

- Building Code — See Ch. 187.
- Electrical Code — See Ch. 230.
- Existing Building Code — See Ch. 239.
- Fire Code — See Ch. 251.
- Fuel Gas Code — See Ch. 264.
- Housing Code — See Ch. 301.
- Mechanical Code — See Ch. 336.
- Plumbing Code — See Ch. 392.

**§ 442-1. Adoption of standards by reference.**

The International Residential Code 2018 Edition, as amended by § 422-2 of this chapter, published by the International Code Council, Inc., shall be and is hereby adopted by reference as the rules and regulations for the design, construction, alteration, addition, quality of materials, erection, installation, repair, location, relocation, replacement, conversion, movement, enlargement, equipment, use, occupancy, or maintenance of all buildings and structures for detached one- and two-family dwellings, multiple single-family dwellings (townhomes) and buildings and structures customarily accessory to the foregoing in the City of Crystal Lake. All terms and conditions contained in the International Residential Code 2018 Edition and amendments thereto, published by the International Code Council, Inc., shall be part of the ordinances of the City of Crystal Lake the same as if they were adopted verbatim.

**§ 442-2. Additions, insertions and amendments.**

The following sections of the International Residential Code are hereby revised and amended as follows:

- A. Section 101.1: Insert City of Crystal Lake as the name of jurisdiction.
- B. The Building Permits section of Section 105.2, Work exempted from permit is amended as follows:

Building:

1. Painting, papering, tiling, carpentry, cabinets, counter tops and similar finish work.
2. Prefabricated swimming pools that are less than 24 inches deep.
3. Swings and other playground equipment.

C. The Mechanical Permits section of Section 105.2, Work exempted from permits, is amended as follows:

Mechanical:

1. Portable heating appliances.
2. Portable ventilation appliances.
3. Portable cooling units.
4. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
5. Portable evaporative coolers.
6. Portable-fuel-cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

D. The following is inserted as Section 105.2.2.1: Fence repairs. Repair or replacement of up to 2 fence panel sections or 3 support posts.

E. The following is inserted as Section 105.2.2.2: Roof repairs. Repair or replacement of up to an aggregate of 200 square feet of roofing material.

F. The following is inserted as Section 105.2.2.3: Siding repairs. Repair or replacement of up to an aggregate total 200 square feet of siding material.

G. Section 105.5, Expiration, is amended as follows: Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance or after commencement of work if more than 180 pass between inspections. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated. All permits for new single-family construction and additions not specifically listed below shall become invalid if not completed within one year from the date of issuance. Permits for roofing, siding, sheds, decks, windows, furnaces, water heaters, air conditioners, pools, fireplaces, driveways and similar minor projects shall become invalid if not completed within six months from the date of issuance. See Chapter 241 for applicable fees.

H. Section 108.2, Schedule of permit fees, is amended as follows: On buildings, structures, electrical, gas, mechanical and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, see Chapter 241: Fees.

I. Section 108.5, Refunds, is amended as follows: The code official shall not authorize the refunding of any fee paid, except upon written application filed by the original permittee not later than 7 days after the date of fee payment.

J. Section 112.1, General, is amended as follows: In order to hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code, there shall be and hereby is created a board of appeals. The board of appeals shall consist of the City's Administrative Law Judge

K. The remainder of Section 112 after 112.1 is deleted in its entirety.

L. Section 113.4, Violation penalties, is amended as follows: Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code as set forth in Chapter 248: Fines.

M. Section 114.2. Unlawful continuance, be amended as follows: Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition as set forth in Chapter 248: Fines.

N. That the following definitions in Chapter 2 be amended:

Accessible. Signifies access that requires the removal of an access panel or similar removable obstruction.

O. That the following definitions be inserted into Chapter 2 in alphabetical order:

Barrier. A permanent fence, wall, building wall, or combination thereof that completely surrounds the pool or spa and obstructs the access to the pool or spa. The term permanent shall mean not being able to be removed, lifted, or relocated without the use of a tool.

Design waterline. The centerline of the skimmer or other point as defined by the designer of the pool or spa.

Hot Tub. See "Spa"

In-ground Pool. See "swimming pool"

Ladder. A structure for ingress and egress that usually consists of two long parallel side pieces joined at intervals by cross pieces such as treads.

On-ground storable pool. A pool capable of containing 24 inches of water that can be disassembled for storage or transport. This includes portable pools with flexible or nonrigid walls that achieve their structural integrity by means of uniform shape, a support frame or combination thereof, and that can be disassembled for storage.

Safety Cover. A structure, fabric or assembly, along with attendant appurtenances and anchoring mechanisms, that is temporarily placed or installed over an entire pool, spa or hot tub and secured in place after all bathers are absent from the water.

Shallow Areas. Portions of a pool or spa with water depths of less than 5 feet.

Slip Resistant. A surface that has been treated or constructed to significantly reduce the chance of a user slipping. The surface shall not be an abrasion hazard.

Slope Break. Occurs at the point where the slope of the pool floor changes to a greater slope.

Spa. A product intended for the immersion of persons in temperature-controlled water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, an electric motor, solar or gas heater, a pump or pumps and a control, and can include other equipment, such as lights, blowers, and water sanitizing equipment.

Swimming Pool. Any structure intended for swimming or recreational bathing that is capable of containing water over 24 inches deep. This includes in-ground, above ground and on-ground swimming pools, hot tubs and spas.

Swimming Pool, Indoor. A swimming pool, which is, totally contained within a structure and surrounded on all four sides by the walls of the enclosing structure.

Swimming Pool, Outdoor. Any Swimming pool, which is not an indoor pool.

Swimout. An underwater seat area that is placed completely outside of the perimeter shape of the pool. Where located at the deep end, swimouts are permitted to be used as the deep-end means of entry and exit to the pool.

Waterline. See "Design waterline"

P. Table 301.2(1) is amended as follows:

Table R301.2(1)  
Climatic and Geographic Reference Criteria

GROUND SNOW LOAD	WIND DESIGN			SEISMIC DESIGN CATEGORY	SUBJECT TO DAMAGE FROM Weathering	DAMAGE		WINTER DESIGN TEMP	ICE BARRIER UNDERLAYMENT REQUIREMENT	FLOOD HAZARDS	AIR FREEZING INDEX	MEAN ANNUAL TEMP
	Speed (MPH)	Topographic effects	Special Wind Region			Frost Line Depth	Termites					
30 pounds per square foot	115 (51) MPH	None	No	B	Yes	42 inches	No	4 degrees F	Yes	Per Chapter 595	1500	47.8 degrees F

Q. The Manual J Design Criteria portion of Table 301.2(1) is deleted.

- R. Section 312.2.1, Window fall protection- window sills, is amended as follows: In dwelling units, where the top of the sill of an operable window opening is located less than 20 inches above finished floor and greater than 72 inches above finished grade or other surface below on the exterior of the building, the operable window shall comply with the following:
1. Operable window openings will not allow a 4-inch diameter sphere to pass through where the openings are in their largest open position.
  2. Operable windows are provided with window fall prevention devices that comply with ASTM F2090.
  3. Operable windows are provided with window opening control devices that comply with Section R312.2.2.
- S. Section 313.1.1, Design and installation, is amended as follows: Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with NFPA 13D.
- T. Section 313.2, One and two-family dwellings automatic fire sprinkler systems, is deleted in its entirety.
- U. Section 401.3, Drainage, is amended as follows: Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall not fewer than 6 inches within the first 10 feet. Grading, drainage, or both, shall be performed so that the water will drain away from the building on all sides and off the lot in a manner which will provide reasonable freedom from erosion and pocketed surface water. Construction of walks, driveways, retaining walls, patios, fences and similar structures shall be installed so that they will not interfere with drainage. Grading and drainage shall be subject to the approval of the City Engineer or his/her designee.
- V. The following is inserted as section 401.4: Sump pump and downspout discharge. When a sump pump or gutter downspout is not connected to the City storm sewer, it shall be discharged at a point located no closer to the abutting property line than one-half (½) the overall distance as measured between the building and the abutting property line. The discharged water shall not be allowed to directly flow across walking or street surfaces. When the point of discharge is located within five feet (5') from the abutting property line, the discharge pipe shall be directed to the front or rear of the property. The City Engineer or his/her designee may vary the requirements of this section if warranted by site conditions.
- W. Section 401.5, Soil tests, is amended as follows: Soils tests shall be required on all new construction. The test shall be done by an approved agency using an approved method. Soils reports shall be submitted for review and approved before footing and foundation placement. Soils test requirement can be waived by the building official.
- X. Exception 3 in Section 403.1.4.1, Frost protection, is deleted.
- Y. Section 507.3.2, Minimum size, is amended as follows: The minimum size of concrete footings shall be 10 inches.
- Z. Table R507.3.1, Minimum footing size for decks, is deleted in its entirety.
- AA. The exceptions in Section 507.3.2, Minimum depth, are deleted in their entirety.
- BB. Section 507.9.2, Lateral connection, is amended as follows: Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold-down tension devices shall be installed in not less than two locations per deck elevation or change in deck height, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 pounds. Where the lateral load connections are provided in accordance with Figure R507.9.2(2), the hold-down tension devices shall be

installed in not less than four locations per deck elevation or change in deck height, and each device shall have an allowable stress design capacity of not less than 750 pounds.

CC. The following is inserted as Section 609.1: Replacement windows and doors. All replacement windows and doors shall be connected to the water resistive barrier of the structure by one of the following methods or a combination thereof:

1. Perimeter flashing at all sides allowing water drainage to the building exterior or water resistive barrier
2. Approved flashing tape/membrane attached to all sides and connected to the water resistive barrier in accordance with Section 703.4.

DD. Section 905.1.2, Ice barriers, is amended as follows: In areas where there has been a history of ice forming along the eaves causing a backup of water as designated in table R301.2(1), an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral surfaced roll roofing, slate and slate type shingles, wood shingles and wood shakes. The ice barrier shall consist of a self-adhering polymer-modified bitumen sheet used in place of normal underlayment. The ice barrier shall be a minimum of 72 inches wide or extend from the lowest edges of all roof surfaces to a point not less than 24 inches inside the exterior wall line of the building whichever is greater.

Exception: Detached accessory structures less than 200 square feet not containing conditioned floor space.

EE. The following are inserted in Chapter 44 Referenced Standards in their appropriate sections in alphabetical and numerical order.

APSP

ANSI/APSP/ICC 7-13: American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins  
4504.1

ASTM

F1346-91(2010): Standard Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs  
4502.1, 4502.4.2

UL

2017-2008: General Purpose Signaling Devices and Systems- with revisions through May 2011  
4505.4.1

FF. The following is inserted as Chapter 45:Swimming Pools:

**CHAPTER 45  
SWIMMING POOLS**

SECTION 4501

GENERAL

4501.1 Scope. The provisions of this chapter shall govern the general design and construction of pools and spas and related piping, equipment and materials.

SECTION 4502

BARRIER REQUIREMENTS

4502.1 General. The provisions of this section shall apply to the design of barriers for restricting entry into areas having pools and spas. Where spas or hot tubs are equipped with a lockable safety cover complying with ASTM

F1346 and swimming pools are equipped with a powered safety cover that complies with ASTM F1346, the areas where these spas, hot tubs or pools are located shall not be required to comply with Sections 4502.2 through 4502.7

4502.2 Outdoor swimming pools and spas. Outdoor pools and spas and indoor swimming pools shall be surrounded by a barrier that complies with Sections 4502.2.1 through 4502.7.

4502.2.1 Barrier height and clearances. Barrier heights and clearances shall be in accordance with all of the following:

1. The top of the barrier shall be not less than 48 inches above grade where measured from the side of the barrier that faces away from the pool or spa. Such height shall exist around the entire perimeter of the barrier and for a distance of 3 feet measured horizontally from the outside of the required barrier.
2. The vertical clearance between grade and the bottom of the barrier shall not exceed 2 inches for grade surfaces that are not solid, such as grass or gravel, where measured on the side of the barrier that faces away from the pool or spa.
3. The vertical clearance between a surface below the barrier to a solid surface, such as concrete, and the bottom of the required barrier shall not exceed 4 inches where measured on the side of the barrier that faces away from the pool or spa.
4. Where the top of the pool or spa structure is above grade, the barrier shall be installed on grade or shall be mounted on top of the pool or spa structure. Where the barrier is mounted on the top of the pool or spa, the vertical clearance between the top of the pool or spa and the bottom of the barrier shall not exceed 4 inches.

4502.2.2 Openings. Openings in the barrier shall not allow passage of a 4-inch diameter sphere.

4502.2.3 Solid barrier surfaces. Solid barrier that do not have openings shall not contain indentations or protrusions that form handholds and footholds, except for normal construction tolerances and tooled masonry joints.

4502.2.4 Mesh fence as a barrier. Mesh fences, other than chain link fences in accordance with Section 4502.2.7, shall be installed in accordance with manufacturer's instructions and shall comply with the following:

1. The bottom of the mesh fence shall not be more than 1 inch above the deck or installed surface or grade.
2. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall not permit the fence to be lifted more than 4 inches from grade or decking.
3. The fence shall be designed and constructed so that it does not allow passage of a 4-inch sphere under any mesh panel. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall not permit the fence to be lifted more than 4 inches from grade or decking.
4. An attachment device shall attach each barrier section at a height not lower than 45 inches above grade. Common attachment devices include, but are not limited to, devices that provide the security equal to or greater than that of a hook-and-eye-type latch incorporating a spring actuated retaining lever such as a safety gate hook.
5. Where a hinged gate is used with a mesh fence, the gate shall comply with section 4502.3.
6. Patio deck sleeves such as vertical post receptacles that are placed inside the patio surface shall be of a nonconductive material.
7. Mesh fences shall not be installed on top of onground pools.

4502.2.5 Closely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches, the horizontal members shall be located on the pool or spa side of the fence. Spacing between vertical members shall not exceed 1 ¾ inches in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1 ¾ inches in width.

4502.2.6 Widely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches or more, spacing between vertical members should not exceed 4 inches. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1 ¾ inches in width.

4502.2.7 Chain link dimensions. The maximum opening formed by a chain link fence shall be not more than 2 ½ inches. Where the fence is provided with slats fastened at the top or the bottom that reduce the openings, such openings shall be not greater than 1 ¾ inches.

4502.2.8 Diagonal members. Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall not be more than 1 ¾ inches. The angle of diagonal members shall not be greater than 45 degrees from vertical.

4502.2.9 Clear zone. There shall be a clear zone of not less than 36 inches between the exterior of the barrier and any permanent structures or equipment such as pumps, filters and heaters that can be used to climb the barrier.

4502.2.10 Poolside barrier setbacks. The pool or spa side of the required barrier shall be not less than 20 inches from the water's edge.

4502.3 Gates. Access gates shall comply with the requirements of Section 4502.3.1, through 4502.3.3 and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool or spa, shall be self-closing and have a self-latching device.

4502.3.1 Utility or service gates. Gates not intended for pedestrian use, such as utility or service gates, shall remain locked while not in use.

4502.3.2 Double or multiple gates. Double gates or multiple gates shall have not less than one leaf secured in place and the adjacent leaf shall be secured with a self-closing and self-latching device. The gate and barrier shall not have an opening larger than ½ inch within 18 inches of the latch release mechanism. The self-latching device shall comply with the requirements of Section 4502.3.3.

4502.3.3 Latches. Where the release mechanism of the self-latching device is located less than 54 inches from grade, the release mechanism shall be located on the pool or spa side of the gate not less than 3 inches below the top of the gate, and the gate and barrier shall not have openings greater than ½ inch within 18 inches of the release mechanism.

4502.4 Structure wall as a barrier. Where a wall of a dwelling or structure serves as part of the barrier and where doors provide direct access to the pool or spa through that wall, one of the following shall be required:

1. Doors shall have an alarm that produces an audible warning when the door or its screen is opened. The alarm shall be listed and labeled as a water hazard entrance alarm in accordance with UL 2017. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. The operable parts of the alarm deactivation switch(es) shall be located 54 inches or more above the finished floor.
2. A safety cover that is listed and labeled in accordance with ASTM F 1346 is installed for the pool or spa.
3. An approved means of protection, such as self-closing doors with self-latching devices, is provided. Such means of protection shall provide a degree of protection that is not less than the protection afforded by item 1 or 2.

4502.5 Onground pool structure as a barrier. An onground pool wall structure or a barrier mounted on top of an onground pool wall structure shall serve as a barrier where all of the following conditions are present:

1. Where only the pool wall serves as the barrier, the bottom of the wall is on grade, the top of the wall is not less than 48 inches above grade for the entire perimeter of the pool and the wall complies with the requirements of Section 4502.2.
2. Where a barrier is mounted on top of the pool wall, the top of the barrier is not less than 48 inches above grade for the entire perimeter of the pool and the wall and the barrier on top of the wall comply with the requirements of Section 4502.2.
3. Ladders or steps used as a means of access to the pool are capable of being secured, locked or removed to prevent access except where the ladder or steps are surrounded by a barrier that meets the requirements of Section 4502.2.
4. Openings created by the securing, locking or removal of ladders and steps do not allow the passage of a 4-inch diameter sphere.



5. Barriers that are mounted on top of onground pool walls are installed in accordance with the pool manufacturer's instructions.

## SECTION 4503

### DIMENSIONAL DESIGN

4503.1 Floor slope. The slope of the floor from the point of the first slope change to the deep area shall not exceed one unit vertical in three units horizontal (33-percent slope).

Exception: Portable spas and portable exercise spas.

4503.2 Walls. Walls shall intersect with the floor at an angle or transition profile. Where a transitional profile is provided at water depths of 3 feet or less, a transitional radius shall not exceed 6 inches and shall be tangent to the wall and is permitted to be tangent or intersect the floor.

Exceptions:

1. Portable spas and portable exercise spas.
2. Onground storable pools.

4503.3 Shape. This chapter is not intended to regulate the shape of a pool or spa other than to take into account the effect that a given shape will have on the safety of the occupants and to maintain the minimum required level of circulation to ensure sanitation.

## SECTION 4504

### SUCTION ENTRAPMENT AVOIDANCE

4504.1 General. Suction entrapment avoidance for pools and spas shall be provided in accordance with APSP 7.

Exception: Portable spas and portable exercise spas listed and labeled in accordance with UL 1563 or CSA C22.2 No. 218.1.

## SECTION 45057

### PUMPS AND MOTORS

4505.1 General. The provisions of this section apply to pumps and motors for pools and spas.

Exceptions:

1. Portable spas and portable exercise spas
2. Onground storable pools supplied by the pool manufacturer as a kit that includes a pump and motor that is in accordance with Section 4509.5.

4505.2 Performance. A pump shall be provided for circulation of the pool water. The pump shall be capable of providing the flow required for filtering the pool water and filter cleaning, if applicable, against the total dynamic head development by the complete system.

4505.3 Intake protection. A cleanable strainer, skimmer basket, or screen shall be provided for pools and spas, upstream or as an integral part of circulation pumps, to remove solids, debris, hair and lint on pressure filter systems.

4505.4 Location. Pumps and motors shall be acceptable for inspection and service in accordance with manufacturer's specifications.

4505.5 Safety. The design, construction and installation of pumps and component parts shall be in accordance with the manufacturer's specifications.

4505.6 Isolation valves. Shutoff valves shall be installed on the suction and discharge sides of pumps that are located below the waterline. Such valves shall be provided with access.

## SECTION 4506

### SKIMMERS

4506.1 General. The provisions of the section apply to skimmers for pools and spas.

Exceptions:

1. Portable spas and portable exercise spas
2. Ongoing storable pools supplied by the pool manufacturer as a kit that includes a pump and motor that is in accordance with Section 4509.5.

4506.2 Required. Either a surface skimming system or perimeter overflow system shall be provided for permanent inground pools and permanent spas. Where installed, surface skimming systems shall be designed and constructed to create a skimming action on the pool water surface when the water level in the pool is within operational parameters.

Exception: Skimmers that are an integral part of a spa that has been listed and labeled in accordance with UL 1563 shall not be required to be listed and labeled in accordance with NSF 50.

4506.3 Equalizers. Equalizers on skimmers shall be prohibited.

4506.4 Hazard. Skimming devices shall be designed and installed so as not to create a hazard to the user.

### SECTION 4507

#### LADDERS AND RECESSED TREADS

4507.1 General. Ladders and recessed treads shall comply with the provisions of this section and the applicable provisions of Sections 4509 through 4512 based on the type of pool or spa.

4507.2 Outside diving envelope. Where installed, steps and ladders shall be located outside of the minimum diving water envelope as indicated in Figure 4507.2.

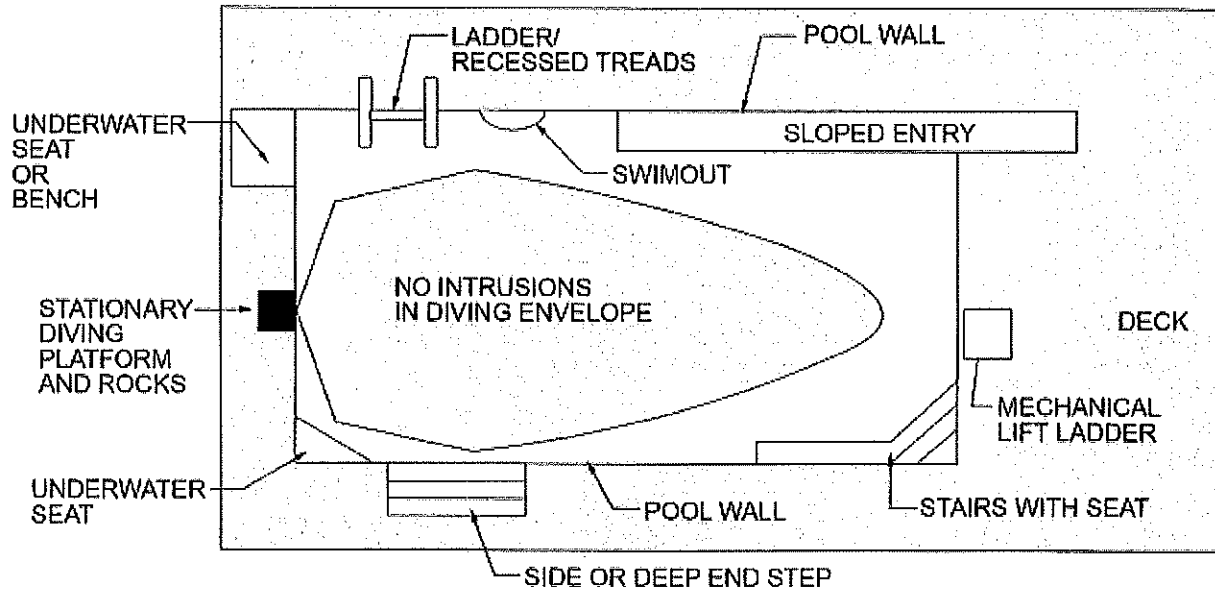


Figure 4507.2  
MINIMUM WATER DIVING ENVELOPE

4507.3 Ladders. Ladder treads shall have a uniform horizontal depth of not less than 2 inches. There shall be a uniform distance between ladder treads, with a distance of not less than 7 inches and not greater than 12 inches. The top tread of a ladder shall be located not greater than 12 inches below the top of the deck or coping. Ladder treads shall have slip-resistant surfaces.

4507.3.1 Wall clearance. There shall be a clearance of not less than 3 inches and not greater than 6 inches between the pool wall and the ladder.

4507.3.2 Handrails and handholds. Ladders shall be provided with two handholds or two handrails. The clear distance between ladder handrails shall be not less than 17 inches and not greater than 24 inches.

4507.4 Recessed treads. Recessed treads shall have a minimum depth of not less than 5 inches and a width of not less than 12 inches. The vertical distance between the pool coping edge, deck, or step surface and the uppermost recessed tread shall not be greater than 12 inches. Recessed treads shall have slip-resistant surfaces.

4507.4.1 Vertical spacing. Recessed treads at the centerline shall have a uniform vertical spacing of not less than 7 inches and not greater than 12 inches.

4507.4.2 Drainage. Recessed treads shall drain into the pool.

4507.4.3 Handrails and grab rails. Recessed treads shall be provided with a handrail or grab rail on each side of the treads. The clear distance between handrails and grab rails shall be not less than 17 inches and not greater than 24 inches.

## SECTION 4508

### SAFETY

4508.1 Handholds required. Where the depth below the design waterline of a pool or spa exceeds 42 inches, handholds along the perimeter shall be provided. Handholds shall be located at the top of deck or coping.

Exception: Handholds shall not be required where an underwater bench, seat or swim out is installed.

4508.1.1 Height above water. Handholds shall be located not more than 12 inches above the design waterline.

4508.1.2 Handhold type. Handholds shall be one or more of the following:

1. Top of pool deck or coping
2. Secured rope
3. Rail
4. Rock
5. Ledge
6. Ladder
7. Stair step
8. Any design that allows holding on with one hand while at the side of the pool.

4508.1.3 Handhold spacing. Handholds shall be horizontally spaced not greater than 4 feet apart.

4508.2 Handrails. Where handrails are installed, they shall conform to this section.

4508.2.1 Height. The top of the gripping surface of handrails for pools and spas shall be 30 inches to 38 inches above the step or finished surface of the slope.

4508.2.2 Material. Handrails shall be made of corrosion-resistant materials.

4508.2.3 Nonremovable. Handrails shall be installed so that they cannot be removed without the use of tools.

4508.2.4 Leading edge distance. The leading edge of handrails for stairs, pool entries and exits shall be located not greater than 18 inches from the vertical face of the bottom riser.

4508.2.5 Diameter. The outside diameter or width of handrails shall be not less than 1 ¼ inches and not greater than 2 inches.

4508.3 Obstructions and entrapment avoidance. There shall not be obstructions that can cause the user to be entrapped or injured. Types of entrapment include, but are not limited to, wedge or pinch-type openings and rigid, nongiving cantilevered protrusions.

## SECTION 4509

### ONGROUND STORABLE SWIMMING POOLS

4509.1 Scope. This section describes certain criteria for the design, manufacturing, and testing of onground storable pools. This includes portable pools with flexible or nonrigid side walls that achieve their structural integrity by means of uniform shape, support frame or a combination thereof, and that can be disassembled for storage or

relocation. This section includes what has been commonly referred to in past standards or codes as onground or above-ground pools.

4509.1.1 Permanent inground swimming pool. This section does not apply to permanent inground pools as defined in section 4510.

4509.2 General. In addition to the requirements of this section, onground storable swimming pools shall comply with the requirements of Sections 4501 through 4508.

4509.3 Installation. Onground storable pools shall be installed in accordance with the manufacturer's instructions.

4509.4 Ladders and stairs. Pools shall have a means of entry and exit consisting of not less than one ladder or a ladder and staircase combination.

4509.5 Circulation system. A circulation system consisting of pumps, hoses, tubing, piping, return inlets, suction outlets, filters and other related equipment that provides for the circulation of water throughout the pool shall be located so that such items cannot be used by young children as a means of access to the pool.

4509.5.1 Turnover. A pump including a motor shall be provided for circulation of the pool water.

The equipment shall be sized to provide turnover of the pool water not less than once every 12 hours.

4509.5.2 Pumps. Pool pumps shall be tested and certified by a nationally recognized testing laboratory in accordance with UL 1081.

## SECTION 4510

### PERMANENT INGROUND SWIMMING POOLS

4510.1 Scope. The provisions of this section shall govern permanent inground swimming pools. Permanent inground swimming pools shall include pools that are partially or entirely above grade. This chapter does not cover pools that are specifically manufactured for above-ground use and are capable of being disassembled and stored. This section covers new construction, modification and repair of inground swimming pools.

4510.2 General. In addition to the requirements of this section, permanent inground pools shall comply with the requirements of Sections 4501 through 4508.

4510.3 Materials of components and accessories. The materials of components and accessories used for permanent inground swimming pools shall be suitable for the environment in which they are installed. The materials shall be capable of fulfilling the design, installation and intended use requirements on the International Residential code.

4510.4 Structural design. The structural design and materials shall be in accordance with the International Residential code.

4510.5 Diving water envelopes. The minimum diving water envelopes shall be in accordance with Table 4510.1 and Figure 4510.1. Negative construction tolerances shall not be applied to the dimensions of the minimum diving water envelopes given in Table 4510.1.

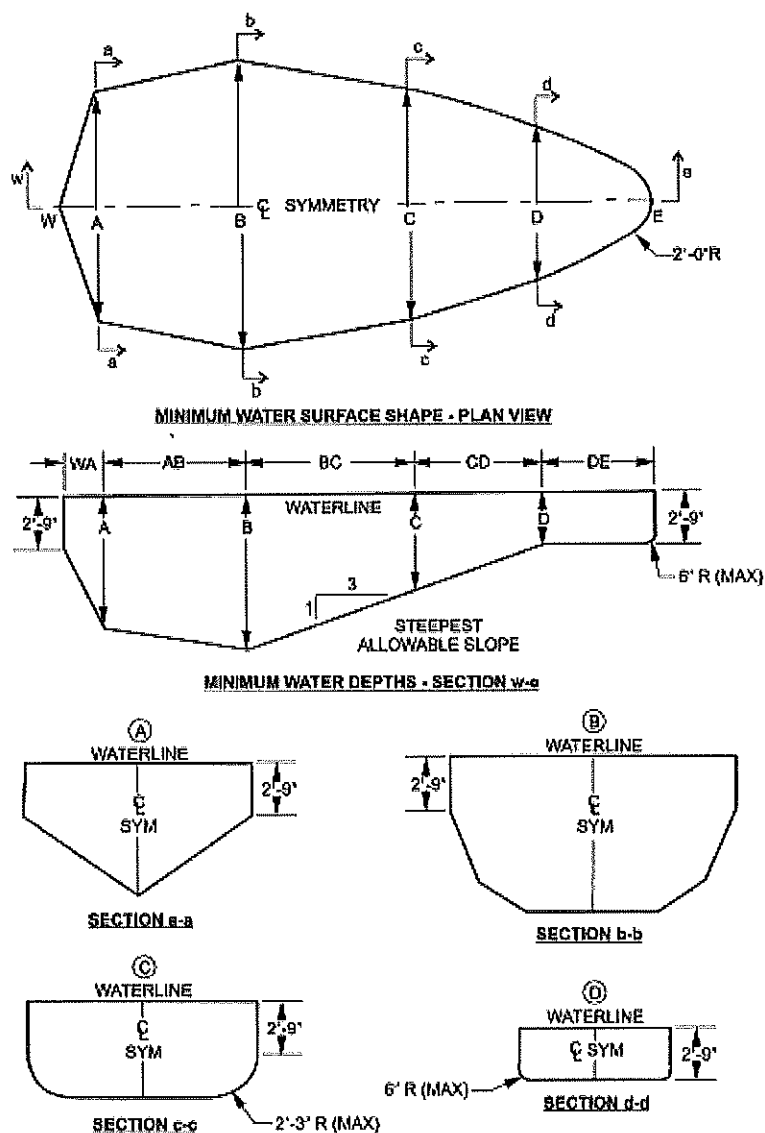
TABLE 4510.1  
MINIMUM DIVING WATER ENVELOPE FOR SWIMMING POOLS

POOL TYPE	MINIMUM DEPTHS AT POINT FEET-INCHES				MINIMUM WIDTHS AT POINT FEET-INCHES				MINIMUM LENGTHS BETWEEN POINTS FEET-INCHES					
	A	B	C	D	A	B	C	D	WA	AB	BC	CD	DE	WE
I	6-0	7-6	5-0	2-9	10-0	12-0	10-0	8-0	1-6	7-0	7-6	Note a	6-0	28-9
II	6-0	7-6	5-0	2-9	12-0	15-0	12-0	8-0	1-6	7-0	7-6	Note a	6-0	28-9
III	6-10	8-0	5-0	2-9	12-0	15-0	12-0	8-0	2-0	7-6	9-0	Note a	6-0	31-3
IV	7-8	8-0	5-0	2-9	15-0	18-0	15-0	9-0	2-6	8-0	10-6	Note a	6-0	31-3
V	8-6	9-0	5-0	2-9	15-0	18-0	15-0	9-0	3-0	9-0	12-0	Note a	6-0	36-9

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. The minimum length between points C and D varies based on water depth at point D and the floor slope between points C and D.
- b. See Figure 804.1 for location of points.

FIGURE 4510.1  
MINIMUM DIVING WATER ENVELOPE



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

4510.6 Walls. Walls in the shallow area and deep area of the pool shall have a wall-to-floor transition point that is not less than 33 inches below the design waterline. Above the transition point, the walls shall be within 11 degrees of vertical.

4510.7 Offset ledges. Offset ledges shall be not greater than 8 inches in width.

4510.7.1 Reduced width required. Where an offset ledge is located less than 42 inches below the design waterline, the width of such ledge shall be proportionally less than 8 inches in width so as to fall within 11 degrees of vertical as measured from the top of the design waterline.

4510.8 Floor slopes. Floor slopes shall be in accordance with Sections 4510.8.1 through 4510.8.3.

4510.8.1 Shallow end. The slope of the floor from the beginning of the shallow end to the deep area floor slope transition point, indicated in Figure 4510.1 as point E to Point D, shall not exceed 1 unit vertical in 7 units horizontal.

4510.8.2 Shallow to deep transition. The shallow to deep area floor slope transition point, indicated in Figure 4510.1 as Point D, shall occur at a depth of not less than 33 inches below the design waterline and at a point not less than 6 feet from the beginning of the shallow end, indicated in Figure 4510.1 as Point E.

4510.8.3 Deep end. The slope of the floor in the deep end, indicated in Figure 4510.1 as Point B to Point D, shall not exceed a slope of 1 unit vertical in 3 units horizontal.

4510.8.4 Shallow end water depths. The design water depth as measured at the shallowest point in the shallow area shall be not less than 33 inches and not greater than 4 feet.

4510.9 Diving equipment. Manufactured diving equipment shall be designed for swimming pool use.

4510.9.1 Installation. Where manufactured diving equipment is installed, the installation shall be located in the deep area of the pool so as to provide the minimum dimensions as shown in Table 4510.1, and shall be installed in accordance with the manufacturer's instructions.

4510.9.2 Labeling. Manufactured diving equipment shall have a permanently affixed label indicating the manufacturer's name and address, the date of manufacture, the minimum diving envelope and the maximum weight limitation.

4510.9.3 Slip resistant. Diving equipment shall have slip-resistant walking surfaces.

4510.9.4 Point A. for the application of Table 4510.1, Point A shall be the point from which all dimensions of width, length and depth are established for the minimum diving envelope. If the tip of the diving board or diving platform is located at a distance of WA or greater from the deep end wall and the water depth at that location is equal to or greater than the water depth requirement at Point A, then the point on the water surface directly below the center of the tip of the diving board or diving platform shall be identified as Point A.

4510.9.5 Location of pool features in a diving pool. Where a pool is designed for use with diving equipment, the location of steps, pool stairs, ladders, underwater benches, special features and other accessory items shall be outside of the minimum diving water envelope as indicated in Figure 4507.2.

4510.9.6 Stationary diving platforms and diving rocks. Stationary diving platforms and diving rocks built on-site shall be permitted to be flush with the wall and shall be located in the diving area of the pool. Point A shall be in front of the wall at the platform or diving rock centerline.

4510.9.7 Location. The forward tip of manufactured or fabricated diving equipment shall be located directly above Point A as defined by Section 4510.9.4.

4510.9.8 Elevation. The maximum elevation of a diving board above the design waterline shall be in accordance with the manufacturer's instructions.

4510.9.9 Minimum water envelope. Manufactured diving equipment installation and the use instructions shall be provided by the diving equipment manufacturer and shall specify the minimum water dimensions required for each diving board and diving stand combination. The board manufacturer shall indicate the water envelope type by dimensionally relating their products to Point A on the water envelopes as shown in Figure 4510.1 and Table 4510.1.

4510.9.10 Platform height above waterline. The height of a stationary diving platform or diving rock above the design waterline shall not exceed the dimensions in Table 4510.9.

TABLE 4510.9  
DIVING PLATFORM OR APPURTENANCE HEIGHT ABOVE DESIGN WATERLINE

POOL TYPE	HEIGHT INCHES
I	42
II	42
III	50
IV	60
V	69

For SI: 1 inch = 25.4 mm.

4510.9.11 Headroom above the board. The diving equipment manufacturer shall specify the minimum headroom required above the board tip.

4510.10 Slides. Slides shall be installed in accordance with the manufacturer's instructions.

4510.11 Entry and exit. Pools shall have a means of entry and exit in all shallow areas where the design water depth of the shallow area at the shallowest point exceeds 24 inches. Entries and exits shall consist of one or a combination of the following: steps, stairs, ladders, treads, ramps, beach entries, underwater seats, benches, swimouts and other approved designs. The means of entry and exit shall be located on the shallow side of the first slope change.

4510.12 Secondary entries and exits. Where water depth in the deep area of the pool exceeds 5 feet, a means of entry and exit as indicated in Section 4510.11 shall be provided in the deep end of the pool.

Exception: Where the required placement of a means of exit from the deep end of a pool would present a potential hazard, handholds shall be provided as an alternative for the means of exit.

4510.13 Over 30 feet in width. Pools over 30 feet in width at the deep area shall have an entry and exit on both sides of the deep area of the pool.

4510.14 Pool stairs. The design and construction of stairs into the shallow end and recessed pool stairs shall conform to Sections 4510.14.1 through 4510.14.3.

4510.14.1 Tread dimension and area. Treads shall have a minimum unobstructed horizontal depth of 10 inches and a minimum unobstructed walking surface area of 240 square inches.

4510.14.2 Riser heights. Risers, other than the top and bottom riser, shall have a uniform height of not greater than 12 inches. The top riser height shall be any dimension not exceeding 12 inches for the width of the walking surface. The bottom riser height shall be any dimension not exceeding 12 inches. The top and bottom riser heights shall not be required to be equal to each other or equal to the uniform riser height. Riser heights shall be measured at the horizontal centerline of the walking surface area.

4510.14.3 Additional steps. In design water depths exceeding 48 inches, additional steps shall not be required.

4510.15 Maximum depth. The horizontal surface of underwater seats, benches and swimouts shall not be greater than 20 inches below the design waterline.

4510.16 Turnover rate. The circulation system equipment shall be sized to provide a turnover of the pool water not less than once every 12 hours.

## SECTION 4511

## PERMANENT SPAS AND EXERCISE SPAS

4511.1 Scope. This section shall govern the design, installation, construction and repairs of permanently installed spas and exercise spas.

4511.2 General. In addition to the requirements of this section, permanent spas shall comply with the requirements of Sections 4501 through 4508.

4511.3 Pumps and motors. Pumps and motors shall be listed and labels for use in spas.

4511.4 Water depth. The maximum water depth for spas shall be 4 feet measured from the design waterline except for spas that are designed for special purposes and approved by the authority having jurisdiction. The water depth for exercise spas shall not exceed 6 feet 6 inches measured from the design waterline.

4511.5 Multilevel seating. Where multilevel seating is provided, the maximum water depth of any seat or sitting bench shall be 28 inches measured from the design waterline to the lowest measurable point.

4511.6 Floor slope. The slope of the floor shall not exceed 1 unit vertical in 12 units horizontal (8.3-percent slope). Where multilevel floors are provided, the change in depth shall be indicated.

4511.7 Emergency shutoff switch. One emergency shutoff switch shall be provided to disconnect power to circulation and jet system pumps and air blowers. Emergency shutoff switches shall be accessible, located within sight of the spa and shall be located not less than 5 feet but not greater than 10 feet horizontally from the inside walls of the spa.

4511.8 Water temperature controls. Components provided for water temperature controls shall be suitable for the intended application.

4511.8.1 Water temperature regulating controls. Water temperature regulating controls shall comply with UL 873 or UL 372. A means shall be provided to indicate the water temperature in the spa

Exception: Water temperature regulating controls that are integral to the heating appliance and listed in accordance with the applicable end use appliance standard.

## SECTION 4512

### PORTABLE SPAS AND EXERCISE SPAS

4512.1 Scope. This section shall govern the design, installation, construction and repairs of portable installed spas and exercise spas.

4512.2 General. In addition to the requirements of this section, portable spas shall comply with the requirements of Sections 4501 through 4508.

4512.3 Listing. Equipment and appliances shall be listed and labeled, and installed as required by the terms of their approval, in accordance with the conditions of the listing, the manufacturer's instructions and this code.

4512.4 Certification. Factory-built portable spas and exercise spas shall be listed and labeled in compliance with UL 1563 or CSA C22.2 No. 218.1

4512.5 Installation. Spa equipment shall be supported to prevent damage from misalignment and settling in accordance with the manufacturer's instructions.

4512.6 Access. Electrical components that require placement or servicing shall be accessible.

**SECTION II:** That Chapter 458: Swimming Pools, is hereby repealed in its entirety.

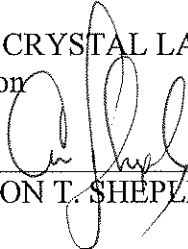


**SECTION III:** All ordinances or parts of ordinances in conflict herewith are hereby repealed.

**SECTION IV:** That this Ordinance shall be in full force and effect from and after November 1, 2018 as provided by law.


DATED at Crystal Lake, Illinois, this 17<sup>th</sup> day of April, 2018.

CITY OF CRYSTAL LAKE, an Illinois Municipal Corporation

BY:   
AARON T. SHEPLEY, MAYOR

SEAL

ATTEST:

  
CITY CLERK

PASSED: April 17, 2018

APPROVED: April 17, 2018

Published in pamphlet form by the authority of the Mayor and City Council of the City of Crystal Lake.