CITY OF SULPHUR FLOATING METER APPLICATION

$1,000.00 refundable deposit required payable by cash, check or money order.

NAME _____ TAX ID# _____

MAILING ADDRESS_____

OFFICE PHONE _____CELL PHONE _____

LOCATION OF METER_____

PLEASE DO NOT REMOVE METER FROM FIRE HYDRANT

If at any time the meter will need to be moved, please contact the water department at (337)527-4523 the day before you need the meter moved with the new location so we can notify the water plant.

DATE SERVICE DESIRED: _____ TIME_____AM/PM

The undersigned applicant agrees to be responsible for all utility payments for services rendered by the City of Sulphur in accordance with the application.

_____ _____

APPLICANT SIGNATURE DATE

OFFICE USE ONLY

METER NUMBER_____

INITIAL READING _____ **DATE**_____

SERVICE ADDRESS_____

CUSTOMER ID_____ **LOCATION ID**_____

CHAPTER 8

PERMANENT INGROUND RESIDENTIAL SWIMMING POOLS

User note:

About this chapter: *Permanent inground residential swimming pools are regulated by Chapter 8. Where diving boards are present, this chapter provides information regarding the minimum diving water dimensions. Requirements for means of entry and exit, decks and circulation systems are provided. Special features of these pools such as beach entries, swimouts, diving rocks and architectural features are also regulated by this chapter.*

SECTION 801
GENERAL

801.1 Scope. The provisions of this chapter shall govern permanent inground *residential* swimming pools. Permanent inground *residential* 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 that are capable of being disassembled and stored. This chapter covers new construction, modification and repair of inground *residential* swimming pools.

801.2 General. Permanent inground *residential* pools shall comply with the requirements of Chapter 3.

SECTION 802
DESIGN

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

802.2 Structural design. The structural design and materials shall be in accordance with the *International Residential Code*.

SECTION 803
CONSTRUCTION TOLERANCES

803.1 Construction tolerances. The construction tolerance for dimensions for the overall length, width and depth of the pool shall be ± 3 inches (76 mm). The construction tolerance for all other dimensions shall be ± 2 inches (51 mm), unless otherwise specified by the design engineer.

SECTION 804
DIVING WATER ENVELOPES

804.1 General. The minimum diving water envelopes shall be in accordance with Table 804.1 and Figure 804.1. Negative construction tolerances shall not be applied to the dimensions of the minimum diving water envelopes given in Table 804.1.

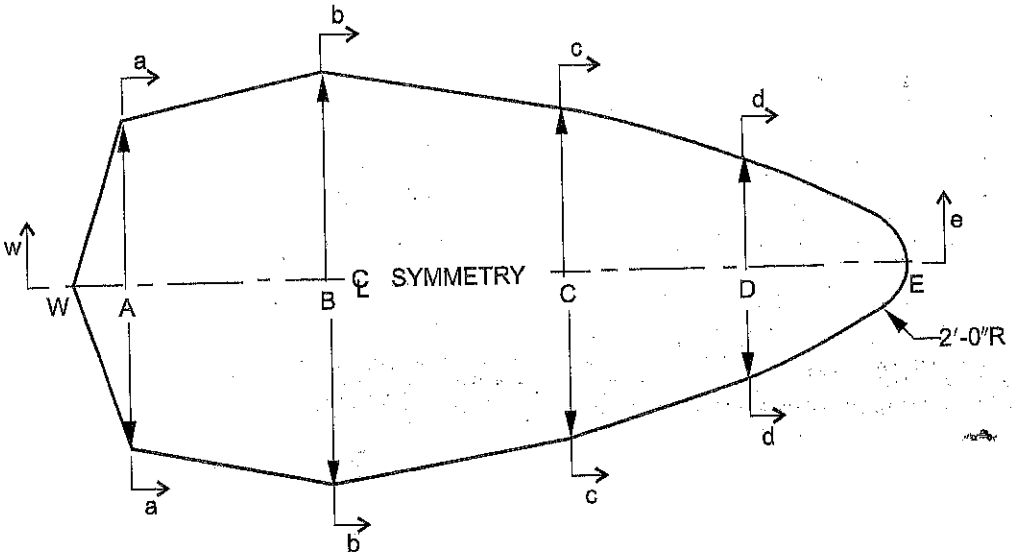
SECTION 805
WALLS

805.1 General. 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 (838 mm) below the *design waterline*. Above the transition point, the walls shall be within 11 degrees (0.19 rad) of vertical.

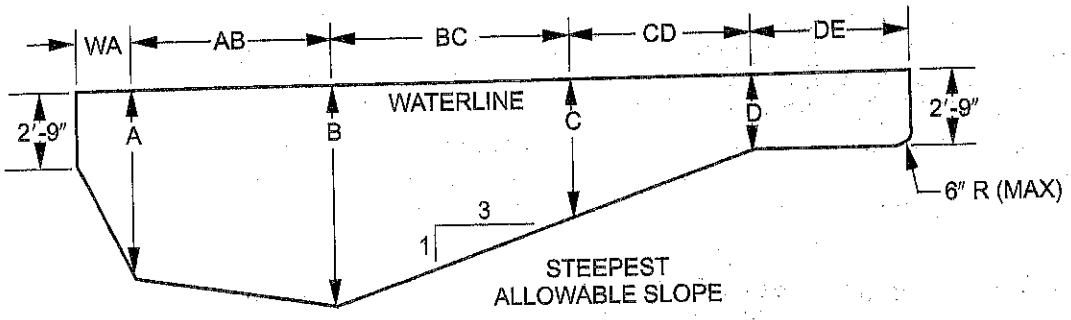
TABLE 804.1
MINIMUM DIVING WATER ENVELOPE FOR SWIMMING POOLS DESIGNATED TYPES I-V[b]

POOLTYPE	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

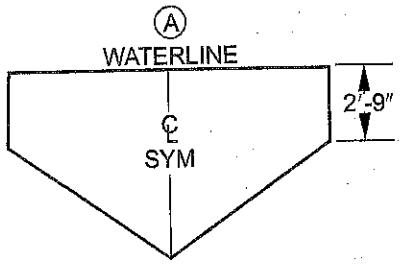
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
a. The minimum length between points C and D varies based on water depth at point D and the floor slope between points C and D.
b. See Figure 804.1 for location of points.



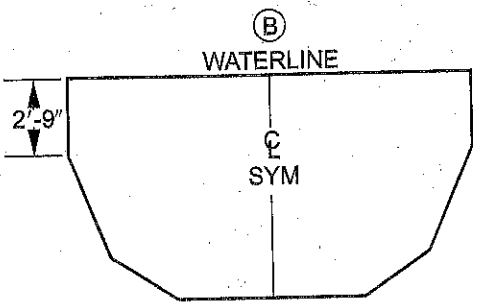
MINIMUM WATER SURFACE SHAPE - PLAN VIEW



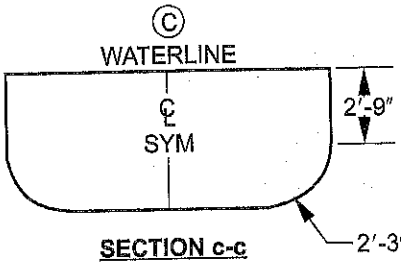
MINIMUM WATER DEPTHS - SECTION w-e



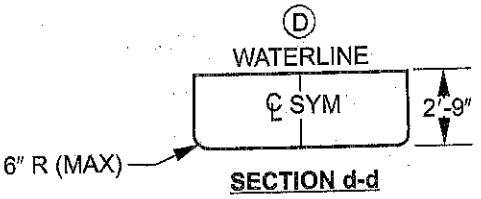
SECTION a-a



SECTION b-b



SECTION c-c



SECTION d-d

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

FIGURE 804.1
MINIMUM DIVING WATER ENVELOPE

SECTION 806
OFFSET LEDGES

806.1 Maximum width. Offset ledges shall be not greater than 8 inches (203 mm) in width.

806.2 Reduced width required. Where an offset ledge is located less than 42 inches (1067 mm) below the *design waterline*, the width of such ledge shall be proportionately less than 8 inches (203 mm) in width so as to fall within 11 degrees of vertical as measured from the top of the *design waterline*.

SECTION 807
POOL FLOORS

807.1 Floor slopes. Floor slopes shall be in accordance with Sections 807.1.1 through 807.1.3.

807.1.1 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 804.1 as Point E to Point D, shall not exceed 1 unit vertical in 7 units horizontal.

807.1.2 Shallow to deep transition. The shallow to deep area floor slope transition point, indicated in Figure 804.1 as Point D, shall occur at a depth not less than 33 inches (838 mm) below the *design waterline* and at a point not less than 6 feet (1829 mm) from the beginning of the shallow end, indicated in Figure 804.1 as Point E, except as specified in Section 809.7.

807.1.3 Deep end. The slope of the floor in the deep end, indicated in Figure 804.1 as Point B to Point D, shall not exceed a slope of 1 unit vertical in 3 units horizontal (33-percent slope).

807.2 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 (838 mm) and not greater than 4 feet (1219 mm). Shallow areas designed in accordance with Sections 809.6, 809.7 and 809.8 shall be exempt from the minimum depth requirement.

SECTION 808
DIVING EQUIPMENT

808.1 Manufactured and fabricated diving equipment. Manufactured and fabricated diving equipment shall be in accordance with this section. Manufactured and fabricated diving equipment and appurtenances shall not be installed on a Type O pool.

808.2 Manufactured diving equipment. Manufactured diving equipment shall be designed for swimming pool use.

808.3 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 804.1 and shall be installed in accordance with the manufacturer's instructions.

808.4 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.

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

808.6 Point A. For the application of Table 804.1, Point A shall be the point from which all dimensions of width, length and depth are established for the minimum diving water 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.

808.7 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 322.2.

808.8 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.

808.9 Location. The forward tip of manufactured or fabricated diving equipment shall be located directly above Point A as defined by Section 808.6.

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

808.11 Minimum water envelope. Manufactured diving equipment installation and 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 804.1 and Table 804.1. The board manufacturer shall specify which boards fit on the design pool geometry types as indicated in Table 804.1.

808.12 Platform height above waterline. The height of a stationary diving platform or a diving rock above the *design waterline* shall not exceed the dimensions in Table 808.12.

TABLE 808.12
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.

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

SECTION 809
SPECIAL FEATURES

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

809.2 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 (610 mm). 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.

809.3 Secondary entries and exits. Where water depth in the deep area of a pool exceeds 5 feet (1524 mm), a means of entry and exit as indicated in Section 809.2 shall be provided in the deep area 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.

809.4 Over 30 feet in width. Pools over 30 feet (9144 mm) in width at the deep area shall have an entry and exit on both sides of the deep area of the pool.

809.5 Pool stairs. The design and construction of stairs into the shallow end and recessed pool stairs shall conform to Sections 809.5.1 through 809.5.3.

809.5.1 Tread dimension and area. Treads shall have a minimum unobstructed horizontal depth of 10 inches (254 mm) and a minimum unobstructed walking surface area of 240 square inches (0.15 m^2).

809.5.2 Riser heights. Risers, other than the top and bottom riser, shall have a uniform height of not greater than 12 inches (305 mm). The top riser height shall be any dimension not exceeding 12 inches (305 mm) for the width of the walking surface. The bottom riser height shall be any dimension not exceeding 12 inches (305 mm). 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.

809.5.3 Additional steps. In design water depths exceeding 48 inches (1219 mm), additional steps shall not be required.

809.6 Beach and sloping entries. The slope of beach and sloping entries used as a pool entrance shall not exceed 1 unit vertical in 7 units horizontal (14-percent slope).

809.7 Steps and sloping entries. Where steps and benches are used in conjunction with sloping entries, the vertical riser distance shall not exceed 12 inches (305 mm). For steps used in conjunction with sloping entries, the requirements of Section 809.6 shall apply.

809.8 Architectural features. Surfaces of architectural features shall not be required to comply with the 1 unit vertical in 7 units horizontal (14-percent slope) slope limitation.

809.9 Maximum depth. The horizontal surface of underwater seats, benches and swimouts shall be not greater than 20 inches (508 mm) below the *design waterline.*

SECTION 810
CIRCULATION SYSTEMS

810.1 Turnover rate. The circulation system equipment shall be sized to provide a turnover of the pool water not less than once every 12 hours. The system shall be designed to provide the required turnover rate based on the manufacturer's specified maximum flow rate of the filter, with a clean media condition of the filter.

810.2 Strainer required. Pressure filter systems shall be provided with a strainer located between the pool and the circulation pump.

SECTION 811
SAFETY FEATURES

811.1 Rope and float. In pools where the point of first slope break occurs, a rope and float assembly shall be installed across the width of the pool. The rope assembly shall be located not less than 1 foot (305 mm) and not greater than 2 feet (610 mm) towards the shallow side of the slope break. Rope anchoring devices shall be permanently attached to the pool wall, coping or deck. Rope ends shall attach to the rope anchor devices so that the rope ends can be disconnected from the rope anchor device.

CHAPTER 42
SWIMMING POOLS

ICC user note:

About this chapter: Chapter 42 addresses all aspects of wiring, fixtures, motors and electrical accessories for swimming pools, wading pools, hot tubs, spas and hydromassage bathtubs.

This chapter focuses on protection of occupants from electrical shock. The dangers of using electricity around water, wet surfaces, grounded surfaces and plumbing are well known, and this chapter is intended to minimize or eliminate those hazards.

SECTION E4201
GENERAL

E4201.1 Scope. The provisions of this chapter shall apply to the construction and installation of electric wiring and equipment associated with all swimming pools, wading pools, decorative pools, hot tubs and spas, and hydromassage bathtubs, whether permanently installed or storable, and shall apply to metallic auxiliary equipment, such as pumps, filters and similar equipment. Sections E4202 through E4206 provide general rules for permanent pools, spas and hot tubs. Section E4207 provides specific rules for storable pools and storable/portable spas and hot tubs. Section E4208 provides specific rules for spas and hot tubs. Section E4209 provides specific rules for hydromassage bathtubs. (680.1)

E4201.2 Definitions. The definitions in this section shall apply only within this chapter. (680.2)

CORD-AND-PLUG-CONNECTED LIGHTING ASSEMBLY. A lighting assembly consisting of a cord-and-plug-connected transformer and a luminaire intended for installation in the wall of a spa, hot tub, or storable pool.

CORROSIVE ENVIRONMENT. Areas where pool sanitation chemicals are stored, handled, or dispensed, and confined areas under decks adjacent to such areas, as well as areas with circulation pumps, automatic chlorinators, filters, open areas under decks adjacent to or abutting the pool structure, and similar locations.

DRY-NICHE LUMINAIRE. A luminaire intended for installation in the floor or wall of a pool or spa in a niche that is sealed against the entry of water.

FORMING SHELL. A structure designed to support a wet-niche luminaire assembly and intended for mounting in a pool structure.

HYDROMASSAGE BATHTUB. A permanently installed bathtub equipped with a recirculating piping system, pump, and associated equipment. It is designed so it can accept, circulate and discharge water upon each use.

LOW-VOLTAGE CONTACT LIMIT. A voltage not exceeding the following values:

1. 15 volts (RMS) for sinusoidal ac.
2. 21.2 volts peak for nonsinusoidal ac.
3. 30 volts for continuous dc.
4. 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz.

MAXIMUM WATER LEVEL. The highest level that water can reach before it spills out.

NO-NICHE LUMINAIRE. A luminaire intended for installation above or below the water without a niche.

PACKAGED SPA OR HOT TUB EQUIPMENT ASSEMBLY. A factory-fabricated unit consisting of water-circulating, heating and control equipment mounted on a common base, intended to operate a spa or hot tub. Equipment may include pumps, air blowers, heaters, luminaires, controls and sanitizer generators.

PERMANENTLY INSTALLED SWIMMING, WADING, IMMERSION AND THERAPEUTIC POOLS. Those that are constructed in the ground or partially in the ground, and all others capable of holding water with a depth greater than 42 inches (1067 mm), and all pools installed inside of a building, regardless of water depth, whether or not served by electrical circuits of any nature.

POOL. Manufactured or field-constructed equipment designed to contain water on a permanent or semipermanent basis and used for swimming, wading, immersion, or therapeutic purposes.

POOL COVER, ELECTRICALLY OPERATED. Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame.

SELF-CONTAINED SPA OR HOT TUB. A factory-fabricated unit consisting of a spa or hot tub vessel with all water-circulating, heating and control equipment integral to the unit. Equipment may include pumps, air blowers, heaters, luminaires, controls and sanitizer generators.

SPA OR HOT TUB. A hydromassage pool, or tub for recreational or therapeutic use, not located in health care facilities, designed for immersion of users, and usually having a filter, heater, and motor-driven blower. They are installed indoors or outdoors, on the ground or supporting structure, or in the ground or supporting structure. Generally, a spa or hot tub is not designed or intended to have its contents drained or discharged after each use.

STORABLE SWIMMING, WADING OR IMMERSION POOLS; OR STORABLE/PORTABLE SPAS AND HOT TUBS. Swimming, wading, or immersion pools that are intended to be stored when not in use, that are constructed on or above the ground and that are capable of holding water with a maximum depth of 42 inches (1067 mm), or a pool,

spa, or hot tub that is constructed on or above the ground with nonmetallic, molded polymeric walls or inflatable fabric walls regardless of dimension.

THROUGH-WALL LIGHTING ASSEMBLY. A lighting assembly intended for installation above grade, on or through the wall of a pool, consisting of two interconnected groups of components separated by the pool wall.

WET-NICHE LUMINAIRE. A luminaire intended for installation in a forming shell mounted in a pool structure where the luminaire will be completely surrounded by water.

SECTION E4202
WIRING METHODS FOR POOLS, SPAS, HOT TUBS AND HYDROMASSAGE BATHTUBS

E4202.1 General. Wiring methods used in conjunction with permanently installed swimming pools, spas or hot tubs that are installed in corrosive environments described in Section E4202.2 shall comply with Table E4202.1, Sections E4202.2 and E4205 and Chapter 38 except as otherwise stated in this section. Wiring methods used in conjunction with permanently installed swimming pools, spas or hot tubs that are not installed in corrosive environments shall comply with Chapter 38. Storable swimming pools shall comply with Section E4207.

Hydromassage bathtubs shall comply with Section E4209. [680.7; 680.14; 680.21(A); 680.23(B) and (F); 680.25(A); 680.42; 680.43; and 680.70]

E4202.2 Wiring methods in corrosive environment. Wiring methods in a corrosive environment shall be *listed* and identified for use in such areas. Rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit and reinforced thermosetting resin conduit shall be considered to be resistant to the corrosive environment.

E4202.3 Flexible cords. Flexible cords used in conjunction with a pool, spa, hot tub or hydromassage bathtub shall be installed in accordance with the following:

1. For other than underwater luminaires, fixed or stationary equipment shall be permitted to be connected with a flexible cord and plug to facilitate removal or disconnection for maintenance or repair. For other than storable pools, the flexible cord shall not exceed 3 feet (914 mm) in length. Cords that supply swimming pool equipment shall have a copper equipment grounding conductor not smaller than 12 AWG and shall terminate in a grounding-type attachment plug. [680.8(A), (B), and (C); 680.21(A)(3)]
2. Other than *listed* low-voltage lighting systems not requiring grounding, wet-niche luminaires that are supplied by a flexible cord or cable shall have all exposed noncurrent-carrying metal parts connected to an insulated copper equipment grounding conductor that is an integral part of the cord or cable. This equipment grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure or other enclosure. The equipment grounding conductor shall be not smaller than the supply conductors and not smaller than 16 AWG. [680.23(B)(3)]

TABLE E4202.1[a]
PERMITTED WIRING METHODS IN CORROSIVE ENVIRONMENTS

WIRING LOCATION OR PURPOSE (Application allowed where marked with an "A")	IMC[b], RMC[b], RNC[e]	LFMC	LFNMC	MC[g]	FLEX CORD
Panelboard(s) that supply pool equipment: from service equipment to panelboard	A[f]	—	A	—	—
Wet-niche and no-niche luminaires: from branch circuit OCPD to deck or junction box	A	—	A	—	—
Wet-niche and no-niche luminaires: from deck or junction box to forming shell	A[j]	—	A	—	A[d]
Dry niche: from branch circuit OCPD to luminaires	A	—	A	—	—
Pool-associated motors: from branch circuit OCPD to motor[h]	A	A[c]	A[c]	A	A[d]
Packaged or self-contained outdoor spas and hot tubs with underwater luminaire: from branch circuit OCPD to spa or hot tub	A	A	A	—	A[d]
Packaged or self-contained outdoor spas and hot tubs without underwater luminaire: from branch circuit OCPD to spa or hot tub	A	A	A	—	A[d]
Indoor spas and hot tubs, and other pool, spa or hot tub associated equipment: from branch circuit OCPD to equipment	A	A	A	—	A[d]
Connection at pool lighting transformers or power supplies	A	A[i]	A	—	—

For SI: 1 foot = 304.8 mm.

a. For all wiring methods, see Section E4205 for equipment grounding conductor requirements.
b. See Section E4202.2 for use of metal conduits in corrosive environments.
c. Limited to where necessary to employ flexible connections at or adjacent to a pool motor.
d. Flexible cord shall be installed in accordance with Section E4202.3.
e. Nonmetallic conduit shall be rigid polyvinyl chloride conduit Type PVC or reinforced thermosetting resin conduit Type RTRC.
f. Aluminum conduits shall not be permitted in the pool area where subject to corrosion.
g. Where installed as direct burial cable or in wet locations, Type MC cable shall be listed and identified for the location.
h. See Section E4202.4 for listed, double-insulated pool pump motors.
i. Limited to use in individual lengths not to exceed 6 feet. The total length of all individual runs of LFMC shall not exceed 10 feet.
j. Metal conduit shall be constructed of brass or other approved corrosion-resistant metal.

3. A *listed* packaged spa or hot tub installed outdoors that is GFCI protected shall be permitted to be cord-and-plug-connected provided that such cord does not exceed 15 feet (4572 mm) in length. [680.42(A)(2)]
4. A *listed* packaged spa or hot tub rated at 20 amperes or less and installed indoors shall be permitted to be cord-and-plug-connected to facilitate maintenance and repair. (680.43 Exception No. 1)
5. For other than underwater and storable pool lighting luminaire, the requirements of Item 1 shall apply to any cord-equipped luminaire that is located within 16 feet (4877 mm) radially from any point on the water surface. [680.22(B)(5)]

E4202.4 Double-insulated pool pumps. A *listed* cord-and-plug-connected pool pump incorporating an approved system of double insulation that provides a means for grounding only the internal and nonaccessible, noncurrent-carrying metal parts of the pump shall be connected to any wiring method recognized in Chapter 38 that is suitable for the location. Where the equipment grounding conductor of the motor circuit is connected to the equipotential bonding means in accordance with Section E4204.2, Item 6.1, the branch circuit wiring shall comply with Sections E4202.1 and E4205.5. [680.21(B)]

SECTION E4203
EQUIPMENT LOCATION AND CLEARANCES

E4203.1 Receptacle outlets. Receptacles outlets shall be installed and located in accordance with Sections E4203.1.1 through E4203.1.7. In determining the dimensions in this section addressing receptacle spacings, the distance to be measured shall be the shortest path the supply cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, doorway with hinged or sliding door, window opening, or other effective permanent barrier. [680.22(A)(6)]

E4203.1.1 Location. Receptacles that provide power for water-pump motors or other loads directly related to the circulation and sanitation system shall be located at least 6 feet (1829 mm) from the inside walls of pools, outdoor spas and hot tubs. These receptacles shall have GFCI protection and be of the grounding type. [680.22(A)(2)].

E4203.1.2 Other receptacles. Other receptacles on the property shall be located not less than 6 feet (1829 mm) from the inside walls of pools and outdoor spas and hot tubs. [680.22 (A)(3)]

E4203.1.3 Where required. No less than one 125-volt, 15- or 20-ampere receptacle supplied by a general-purpose branch circuit shall be located not less than 6 feet (1829 mm) from and not more than 20 feet (6096 mm) from the inside wall of permanently installed pools and outdoor spas and hot tubs. This receptacle shall be located not more than 6 feet 6 inches (1981 mm) above the floor, platform or grade level serving the pool, spa or hot tub. [680.22(A)(1)]

E4203.1.4 GFCI protection. All 15- and 20-ampere, single phase, 125-volt receptacles located within 20 feet (6096 mm) of the inside walls of pools and outdoor spas and hot tubs shall be protected by a Class A ground-fault circuit interrupter. Outlets supplying all pool motors on branch circuits rated at 150 volts or less to ground, and 60 amperes or less, single- or 3-phase, shall be provided with Class A ground-fault circuit-interrupter protection. [680.21(C) and 680.22(A)(4)]

E4203.1.5 Indoor locations. Receptacles shall be located not less than 6 feet (1829 mm) measured horizontally from the inside walls of indoor spas and hot tubs. A minimum of one 125-volt, 15- or 20-ampere receptacle on a general-purpose branch circuit shall be located between 6 feet (1829 mm) and 10 feet (3048 mm) from the inside walls of indoor spas or hot tubs. [680.43(A) and 680.43(A)(1)]

E4203.1.6 Indoor GFCI protection. Receptacles rated 125 volts and 30 amperes or less and located within 10 feet (3048 mm) of the inside walls of a spa or hot tub installed indoors shall be protected by ground-fault circuit interrupters. [680.43(A)(2)].

E4203.1.7 Pool equipment room. At least one GFCI-protected 125-volt, 15- or 20-ampere receptacle on a general-purpose circuit shall be located within a pool equipment room, and all other receptacles supplied by branch circuits rated 150 volts or less to ground within a pool equipment room shall be GFCI protected.

E4203.2 Switching devices. Switching devices shall be located at least 5 feet (1524 mm) horizontally from the inside walls of pools, spas and hot tubs unless separated from the pool, spa or hot tub by a solid fence, wall, or other permanent barrier that provides at least a 5-foot (1524 mm) reach distance. Alternatively, a switch that is *listed* as being acceptable for use within 5 feet (1524 mm) shall be permitted. Switching devices located in a room or area containing a hydromassage bathtub shall be located in accordance with the general requirements for installing equipment in bathrooms. [680.22(C); 680.43(C); and 680.72]

E4203.3 Disconnecting means. One or more means to simultaneously disconnect all ungrounded conductors for all utilization equipment other than lighting shall be provided. Each of such means shall be readily accessible and within sight from the equipment it serves and shall be located at least 5 feet (1524 mm) horizontally from the inside walls of a pool, spa, or hot tub unless separated from the open water by a permanently installed barrier that provides a 5-foot (1524 mm) or greater reach path. This horizontal distance shall be measured from the water's edge along the shortest path required to reach the disconnect. (680.13)

E4203.4 Luminaires, equipment and ceiling fans. Lighting outlets, luminaires, equipment and ceiling-suspended paddle fans shall be installed and located in accordance with Sections E4203.4.1 through E4203.4.7. [680.22(B)]

E4203.4.1 Outdoor location. In outdoor pool, outdoor spas and outdoor hot tubs areas, luminaires, lighting

outlets, and ceiling-suspended paddle fans shall not be installed over the pool or over the area extending 5 feet (1524 mm) horizontally from the inside walls of a pool except where no part of the luminaire or ceiling-suspended paddle fan is less than 12 feet (3658 mm) above the maximum water level. [680.22(B)(1)]

E4203.4.2 Indoor locations. In indoor pool areas, the limitations of Section E4203.4.1 shall apply except where the luminaires, lighting outlets and ceiling-suspended paddle fans comply with all of the following conditions:

1. The luminaires are of a totally enclosed type.
2. Ceiling-suspended paddle fans are identified for use beneath ceiling structures such as porches and patios.
3. A ground-fault circuit interrupter is installed in the branch circuit supplying the luminaires or ceiling-suspended paddle fans.
4. The distance from the bottom of the luminaire or ceiling-suspended paddle fan to the maximum water level is not less than 7 feet 6 inches (2286 mm). [680.22(B)(2)]

E4203.4.3 Low-voltage luminaires. *Listed* low-voltage luminaires not requiring grounding, not exceeding the low-voltage contact limit, and supplied by *listed* transformers or power supplies that comply with Section E4206.1 shall be permitted to be located less than 5 feet (1.5 m) from the inside walls of the pool. [680.22(B)(6)]

E4203.4.4 Existing lighting outlets and luminaires. Existing lighting outlets and luminaires that are located within 5 feet (1524 mm) horizontally from the inside walls of pools and outdoor spas and hot tubs shall be permitted to be located not less than 5 feet (1524 mm) vertically above the maximum water level, provided that such luminaires and outlets are rigidly attached to the existing structure and are protected by a ground-fault circuit interrupter. [680.22(B)(3)]

E4203.4.5 Indoor spas and hot tubs.

1. Luminaires, lighting outlets and ceiling-suspended paddle fans located over the spa or hot tub or within 5 feet (1524 mm) from the inside walls of the spa or hot tub shall be not less than 7 feet 6 inches (2286 mm) above the maximum water level and shall be protected by a ground-fault circuit interrupter. [680.43(B)(1)(b)]

   Luminaires, lighting outlets and ceiling-suspended paddle fans that are located 12 feet (3658 mm) or more above the maximum water level shall not require ground-fault circuit-interrupter protection. [680.43(B)(1)(a)]

2. Luminaires protected by a ground-fault circuit interrupter and complying with Item 2.1 or 2.2 shall be permitted to be installed less than 7 feet 6 inches (2286 mm) over a spa or hot tub.

   2.1. Recessed luminaires shall have a glass or plastic lens and nonmetallic or electrically isolated metal trim, and shall be suitable for use in damp locations.

   2.2. Surface-mounted luminaires shall have a glass or plastic globe and a nonmetallic body or a metallic body isolated from contact. Such luminaires shall be suitable for use in damp locations. [680.43(B)(1)(c)(1) and (2)]

E4203.4.6 GFCI protection in adjacent areas. Luminaires, lighting outlets and ceiling-suspended paddle fans that are installed in the area extending between 5 feet (1524 mm) and 10 feet (3048 mm) from the inside walls of pools and outdoor spas and hot tubs shall be protected by ground-fault circuit interrupters except where such luminaires, lighting outlets and ceiling-suspended paddle fans are installed not less than 5 feet (1524 mm) above the maximum water level and are rigidly attached to the structure. [680.22(B)(4)]

E4203.4.7 Low-voltage gas-fired luminaires, decorative fireplaces, fire pits and similar equipment. *Listed* low-voltage gas-fired luminaires, decorative fireplaces, fire pits and similar equipment that use low-voltage igniters that do not require grounding, and that are supplied by *listed* transformers or power supplies that comply with Section E4206.1 with outputs that do not exceed the low-voltage contact limit, shall be permitted to be located less than 5 feet (1524 mm) from the inside walls of the pool. Metallic equipment shall be bonded in accordance with the requirements in Section E4204.2. Transformers and power supplies supplying this type of equipment shall be installed in accordance with the requirements of Section E4206.9.1. Metallic gas piping shall be bonded in accordance with the requirements of Sections E3609.7 and 4204.2, Item 7. [680.22 (B)(7)]

E4203.5 Other outlets. Other outlets such as for remote control, signaling, fire alarm and communications shall be not less than 10 feet (3048 mm) from the inside walls of the pool. Measurements shall be determined in accordance with Section E4203.1. [680.22(D)]

E4203.6 Other equipment. Other equipment with ratings exceeding the low-voltage contact limit shall be located at least 5 feet (1524 mm) horizontally from the inside walls of a pool unless separated from the pool by a solid fence, wall or other permanent barrier. [680.22(E)]

E4203.7 Overhead conductor clearances. Except where installed with the clearances specified in Table E4203.7, the following parts of pools and outdoor spas and hot tubs shall not be placed under existing service-drop conductors, overhead service conductor, or any other open overhead wiring; nor shall such wiring be installed above the following:

1. Pools and the areas extending not less than 10 feet (3048 mm) horizontally from the inside of the walls of the pool.
2. Diving structures and the areas extending not less than 10 feet (3048 mm) horizontally from the outer edge of such structures.

CHAPTER 3
GENERAL COMPLIANCE

User note:

About this chapter: Chapter 3 covers general regulations for pool and spa installations. As many of these requirements would need to be repeated in Chapters 3 through 10, placing such requirements in only one location eliminates code development coordination issues with the same requirement in multiple locations. These general requirements can be superseded by more specific requirements for certain applications in Chapters 3 through 10.

SECTION 301
GENERAL

301.1 Scope. The provisions of this chapter shall govern the general design and construction of public and *residential* pools and spas and related piping, equipment, and materials. Provisions that are unique to a specific type of pool or spa are located in Chapters 4 through 10.

301.1.1 Application of Chapters 4 through 10. Where differences occur between the provisions of this chapter and the provisions of Chapters 4 through 10, the provisions of Chapters 4 through 10 shall apply.

SECTION 302
ELECTRICAL, PLUMBING, MECHANICAL AND FUEL GAS REQUIREMENTS

302.1 Electrical. Electrical requirements for aquatic facilities shall be in accordance with NFPA 70 or the *International Residential Code*, as applicable in accordance with Section 102.7.1.

Exception: Internal wiring for portable *residential* spas and portable *residential* exercise spas.

302.2 Water service and drainage. Piping and fittings used for water service, makeup and drainage piping for pools and spas shall comply with the *International Plumbing Code*. Fittings shall be *approved* for installation with the piping installed.

302.3 Pipe, fittings, and components. Pipe, fittings and components shall be *listed* and *labeled* in accordance with NSF 50 or NSF 14. Plastic jets, fittings, and outlets used in public spas shall be *listed* and *labeled* in accordance with NSF 50.

Exceptions:

1. Portable *residential* spas and portable *residential* exercise spas *listed* and *labeled* in accordance with UL 1563 or CSA C22.2 No. 218.1.
2. *Onground storable pools* supplied by the pool manufacturer as a kit that includes all pipe, fittings and components.

302.4 Concealed piping inspection. Piping, including process piping, that is installed in trenches, shall be inspected prior to backfilling.

302.5 Backflow protection. Water supplies for pools and spas shall be protected against backflow in accordance with the *International Plumbing Code* or the *International Residential Code*, as applicable in accordance with Section 102.7.1.

302.6 Wastewater discharge. Where wastewater from pools or spas, such as backwash water from filters and water from deck drains discharge to a building drainage system, the connection shall be through an air gap in accordance with the *International Plumbing Code* or the *International Residential Code* as applicable in accordance with Section 102.7.1.

302.7 Tests. Tests on water piping systems constructed of plastic piping shall not use compressed air for the test.

302.8 Maintenance. Pools and spas shall be maintained in a clean and sanitary condition, and in good repair.

302.8.1 Manuals. An operating and maintenance manual in accordance with industry-accepted standards shall be provided for each piece of equipment requiring maintenance.

SECTION 303
ENERGY

303.1 Energy consumption of pools and permanent spas. The energy consumption of pools and permanent spas shall be controlled by the requirements in Sections 303.1.1 through 303.1.3.

303.1.1 Heaters. The electric power to heaters shall be controlled by a readily accessible on-off switch that is an integral part of the heater, mounted on the exterior of the heater or external to and within 3 feet (914 mm) of the heater. Operation of such switch shall not change the setting of the heater thermostat. Such switches shall be in addition to a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.

303.1.2 Time switches. Time switches or other control methods that can automatically turn off and on heaters and pump motors according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate solar- or waste-heat recovery pool heating systems.

303.1.3 Covers. Outdoor heated pools and outdoor permanent spas shall be provided with a vapor-retardant cover or other *approved* vapor-retardant means in accordance with Section 104.12.

Exception: Where more than 70 percent of the energy for heating, computed over an operating season, is from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required.

303.2 Portable spas. The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP 14.

303.3 Residential pools and permanent residential spas. The energy consumption of *residential* swimming pools and permanent *residential* spas shall be controlled in accordance with the requirements of APSP 15.

SECTION 304
FLOOD HAZARD AREAS

304.1 General. The provisions of Section 304 shall control the design and construction of pools and spas installed in *flood hazard areas.*

[BS] 304.2 Determination of impacts based on location. Pools and spas located in *flood hazard areas* indicated within the *International Building Code* or the *International Residential Code* shall comply with Section 304.2.1 or 304.2.2.

Exception: Pools and spas located in riverine *flood hazard areas* that are outside of designated floodways and pools and spas located in *flood hazard areas* where the source of flooding is tides, storm surges or coastal storms.

[BS] 304.2.1 Pools and spas located in designated floodways. Where pools and spas are located in designated floodways, documentation shall be submitted to the *code official* that demonstrates that the construction of the pools and spas will not increase the design flood elevation at any point within the jurisdiction.

[BS] 304.2.2 Pools and spas located where floodways have not been designated. Where pools and spas are located where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed pool or spa and any associated grading and filling, will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

[BS] 304.3 Pools and spas in coastal high-hazard areas. Pools and spas installed in coastal high-hazard areas shall be designed and constructed in accordance with ASCE 24.

[BS] 304.4 Protection of equipment. Equipment shall be elevated to or above the design flood elevation or be anchored to prevent flotation and protected to prevent water from entering or accumulating within the components during conditions of flooding.

304.5 GFCI protection. Electrical equipment installed below the design flood elevation shall be supplied by branch circuits that have ground-fault circuit interrupter protection for personnel.

SECTION 305
BARRIER REQUIREMENTS

305.1 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 those spas, hot tubs or pools are located shall not be required to comply with Sections 305.2 through 305.7.

305.1.1 Construction fencing required. The construction sites for in-ground swimming pools and spas shall be provided with construction fencing to surround the site from the time that any excavation occurs up to the time that the permanent barrier is completed. The fencing shall be not less than 4 feet (1219 mm) in height.

305.2 Outdoor swimming pools and spas. Outdoor pools and spas and indoor swimming pools shall be surrounded by a barrier that complies with Sections 305.2.1 through 305.7.

305.2.1 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 (1219 mm) above grade where measured on 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 (914 mm) 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 (51 mm) 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 (102 mm) where measured on the side of the required 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 (102 mm).

305.2.2 Openings. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.

305.2.3 Solid barrier surfaces. Solid barriers 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.

305.2.4 Mesh fence as a barrier. Mesh fences, other than chain link fences in accordance with Section 305.2.7, shall be installed in accordance with the manufacturer's instructions and shall comply with the following:

1. The bottom of the mesh fence shall be not more than 1 inch (25 mm) 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 (102 mm) from grade or decking.
3. The fence shall be designed and constructed so that it does not allow passage of a 4-inch (102 mm) sphere under any mesh panel. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall be not greater than 4 inches (102 mm) from grade or decking.
4. An attachment device shall attach each barrier section at a height not lower than 45 inches (1143 mm) 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 305.3.
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 *residential* pools.

305.2.4.1 Setback for mesh fences. The inside of a mesh fence shall be not closer than 20 inches (508 mm) to the nearest edge of the water of a pool or spa.

305.2.5 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 (1143 mm), the horizontal members shall be located on the pool or spa side of the fence. Spacing between vertical members shall not exceed $1^3/_4$ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed $1^3/_4$ inches (44 mm) in width.

305.2.6 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 (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, the interior width of the cutouts shall not exceed $1^3/_4$ inches (44 mm).

305.2.7 Chain link dimensions. The maximum opening formed by a chain link fence shall be not more than $1^3/_4$ inches (44 mm). Where the fence is provided with slats fastened at the top and bottom that reduce the openings, such openings shall be not greater than $1^3/_4$ inches (44 mm).

305.2.8 Diagonal members. Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not greater than $1^3/_4$ inches (44 mm). The angle of diagonal members shall be not greater than 45 degrees (0.79 rad) from vertical.

305.2.9 Clear zone. Where equipment, including pool equipment such as pumps, filters and heaters, is on the same lot as a pool or spa and such equipment is located outside of the barrier protecting the pool or spa, such equipment shall be located not less than 36 inches (914 mm) from the outside of the barrier.

305.3 Doors and gates. Doors and gates in barriers shall comply with the requirements of Sections 305.3.1 through 305.3.3 and shall be equipped to accommodate a locking device. Pedestrian access doors and gates shall open outward away from the pool or spa, shall be self-closing and shall have a self-latching device.

305.3.1 Utility or service doors and gates. Doors and gates not intended for pedestrian use, such as utility or service doors and gates, shall remain locked when not in use.

305.3.2 Double or multiple doors and gates. Double doors and gates or multiple doors and gates shall have not fewer than one leaf secured in place and the adjacent leaf shall be secured with a self-latching device.

305.3.3 Latch release. For doors and gates in barriers, the door and gate latch release mechanisms shall be in accordance with the following:

1. Where door and gate latch release mechanisms are accessed from the outside of the barrier and are not of the self-locking type, such mechanism shall be located above the finished floor or ground surface in accordance with the following:
   1.1. At public pools and spas, not less than 52 inches (1219 mm) and not greater than 54 inches (1372 mm).
   1.2. At residential pools and spas, not less 54 inches (1372 mm).
2. Where door and gate latch release mechanisms are of the self-locking type such as where the lock is operated by means of a key, an electronic opener or the entry of a combination into an integral combination lock, the lock operation control and

the latch release mechanism shall be located above the finished floor or ground surface in accordance with the following:

2.1. At public pools and spas, not less than 34 inches and not greater than 48 inches (1219 mm).

2.2. At residential pools and spas, at not greater than 54 inches (1372 mm).

3. At private pools, where the only latch release mechanism of a self-latching device for a gate is located on the pool and spa side of the barrier, the release mechanism shall be located at a point that is at least 3 inches (76 mm) below the top of the gate.

305.3.4 Barriers adjacent to latch release mechanisms. Where a latch release mechanism is located on the inside of a barrier, openings in the door, gate and barrier within 18 inches (457 mm) of the latch shall not be greater than $^1/_2$ inch (12.7 mm) in any dimension.

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

1. Operable windows having a sill height of less than 48 inches (1219 mm) above the indoor finished floor, doors and gates shall have an alarm that produces an audible warning when the window, door or their screens are opened. The alarm shall be *listed* and labeled as a water hazard entrance alarm in accordance with UL 2017.
2. In dwellings not required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located at not less than 54 inches (1372 mm) above the finished floor.
3. In dwellings that are required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1219 mm) above the finished floor.
4. In structures other than dwellings, the operable parts of the alarm deactivation switches shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1220 mm) above the finished floor.
5. A *safety cover* that is *listed* and *labeled* in accordance with ASTM F1346 is installed for the pools and spas.
6. 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.

305.5 Onground residential pool structure as a barrier. An onground *residential* pool wall structure or a barrier mounted on top of an onground *residential* 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 (1219 mm) above grade for the entire perimeter of the pool, the wall complies with the requirements of Section 305.2 and the pool manufacturer allows the wall to serve as a barrier.
2. Where a barrier is mounted on top of the pool wall, the top of the barrier is not less than 48 inches (1219 mm) 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 305.2.
3. Ladders or steps used as 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 305.
4. Openings created by the securing, locking or removal of ladders and steps do not allow the passage of a 4-inch (102 mm) diameter sphere.
5. Barriers that are mounted on top of onground *residential* pool walls are installed in accordance with the pool manufacturer's instructions.

305.6 Natural barriers. In the case where the pool or spa area abuts the edge of a lake or other natural body of water, public access is not permitted or allowed along the shoreline, and required barriers extend to and beyond the water's edge not less than 18 inches (457 mm), a barrier is not required between the natural body of water shoreline and the pool or spa.

305.7 Natural topography. Natural topography that prevents direct access to the pool or spa area shall include but not be limited to mountains and natural rock formations. A natural barrier *approved* by the governing body shall be acceptable provided that the degree of protection is not less than the protection afforded by the requirements of Sections 305.2 through 305.5.

305.8 Means of egress. Outdoor public pools provided with barriers shall have means of egress as required by Chapter 10 of the *International Building Code*.

SECTION 306
DECKS

306.1 General. The structural design and installation of decks around pools and spas shall be in accordance with the *International Residential Code* or the *International Building Code*, as applicable in accordance with Section 102.7 and this section.

306.2 Slip resistant. Decks, ramps, coping, and similar step surfaces shall be slip resistant and cleanable. Special features in or on decks such as markers, brand insignias, and similar materials shall be slip resistant.

306.3 Step risers and treads. Step risers for decks of public pools and spas shall be uniform and have a height not less than $3^3/_4$ inches (95 mm) and not greater than $7^1/_2$ inches (191 mm). The tread distance from front to back shall be not less than 11 inches (279 mm). Step risers for decks of *residential* pools and spas shall be uniform and shall have a height not exceeding $7^1/_2$ inches (191 mm). The tread

SECTION 318
WATER SUPPLY

318.1 Makeup water. Makeup water to maintain the water level and water used as a vehicle for sanitizers or other chemicals, for pump priming, or for other such additions, shall be from a potable water source.

318.2 Protection of potable water supply. Potable water supply systems shall be designed, installed and maintained so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross-connections or other piping connections to the system. Means of protection against backflow in the potable water supply shall be provided through an air gap complying with ASME A112.1.2 or by a backflow prevention assembly in accordance with the *International Residential Code* or the *International Plumbing Code*, as applicable in accordance with Section 102.7.1.

318.3 Over-the-rim spouts. Over-the-rim spouts shall be located under a diving board, adjacent to a ladder, or otherwise shielded so as not to create a hazard. The open end of such spouts shall not have sharp edges and shall not protrude more than 2 inches (51 mm) beyond the edge of the pool. The open end shall be separated from the water by an air gap of not less than 1.5 pipe diameters measured from the pipe outlet to the rim.

SECTION 319
SANITIZING EQUIPMENT

319.1 Equipment standards. Sanitizing equipment installed in public pools and spas shall be capable of introducing the quantity of sanitizer necessary to maintain the appropriate levels under all conditions of intended use.

319.2 Chemical feeders. Where installed, chemical feed systems shall be installed in accordance with the manufacturer's specifications. Chemical feed pumps shall be wired so that they cannot operate unless there is adequate return flow to disburse the chemical throughout the pool or spa as designed.

SECTION 320
WASTEWATER DISPOSAL

320.1 Backwash water or draining water. Backwash water and draining water shall be discharged to the sanitary or storm sewer, or into an *approved* disposal system on the premise, or shall be disposed of by other means *approved* by the state or local authority. Direct connections shall not be made between the end of the backwash line and the disposal system. Drains shall discharge through an air gap.

320.2 Water salvage. Filter backwash water shall not be returned to the vessel except where the backwash water has been filtered to remove particulates, treated to eliminate coliform bacteria and waterborne pathogens, and such return has been *approved* by the state or local authority.

320.3 Waste post treatment. Where necessary, filter backwash water and drainage water shall be treated chemically or through the use of settling tanks to eliminate or neutralize chemicals, diatomaceous earth, and contaminants in the water that exceed the limits set by the state or local effluent discharge requirements.

SECTION 321
LIGHTING

321.1 General. The provisions of Sections 321.2 and 321.3 shall apply to lighting for public pools and spas. The provisions of Section 321.4 shall apply to lighting for *residential* pools and spas.

321.2 Artificial lighting required. When a pool is open during periods of low natural illumination, artificial lighting shall be provided so that all areas of the pool, including all suction outlets on the bottom of the pool, will be visible. Illumination shall be sufficient to enable a lifeguard or other persons standing on the deck or sitting on a lifeguard stand adjacent to the pool edge to determine if a pool user is lying on the bottom of the pool and that the pool water is transparent and free from cloudiness.

These two conditions shall be met when all suction outlets are visible from the edge of the deck at all times when artificial lighting is illuminated and when an 8-inch-diameter (152 mm) black disk, placed at the bottom of the pool in the deepest point, is visible from the edge of the pool deck at all times when artificial lighting is illuminated.

321.2.1 Pool and deck illumination. Overhead lighting, underwater lighting or both shall be provided to illuminate the pool and adjacent deck areas. The lighting shall be *listed* and *labeled*. The lighting shall be installed in accordance with NFPA 70.

321.2.2 Illumination intensity. For outdoor pools, any combination of overhead and underwater lighting shall provide *maintained illumination* not less than 10 horizontal foot-candles (10 lumens per square foot) [108 lux] at the pool water surface. For indoor pools, any combination of overhead and underwater lighting shall provide *maintained illumination* of not less than 30 horizontal foot-candles (30 lumens per square foot) [323 lux] at the pool water surface. Deck area lighting for both indoor and outdoor pools shall provide *maintained illumination* of not less than 10 horizontal foot-candles (10 lumens per square foot) [108 lux] at the walking surface of the deck.

321.2.3 Underwater lighting. Underwater lighting shall provide not less than 8 lamp lumens per square foot of pool water surface area.

Exception: The requirement of this section shall not apply where overhead lighting provides not less than 15 foot-candles (15 lumens per square foot) [161 lux] of *maintained illumination* at the pool water surface, the overhead lighting provides visibility, without glare, of all areas of the pool, and the requirements of Section 321.2.2 are met or exceeded.

321.3 Emergency illumination. Public pools and public pool areas that operate during periods of low illumination shall be provided with emergency lighting that will automat-

ically turn on to permit evacuation of the pool and securing of the area in the event of power failure. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than 0.1 foot-candle (0.1 lumen per square foot) [1 lux] measured at any point on the water surface and at any point on the walking surface of the deck, and not less than an average of 1 foot-candle (1 lumen per square foot) [11 lux]. At the end of the emergency lighting time duration, the illumination level shall be not less than 0.06 foot-candle (0.06 lumen per square foot) [0.65 lux] measured at any point on the water surface and at any point on the walking surface of the deck, and not less than an average of 0.6 foot-candle (0.6 lumen per square foot) [6.46 lux]. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

321.4 Residential pool and deck illumination. Where lighting is installed for, and in, *residential* pools and permanent *residential* spas, such lighting shall be installed in accordance with NFPA 70 or the *International Residential Code*, as applicable in accordance with Section 102.7.1.

SECTION 322
LADDERS AND RECESSED TREADS

322.1 General. Ladders and recessed treads shall comply with the provisions of this section and the applicable provisions of Chapters 4 through 10 based on the type of pool or spa.

322.2 Outside diving envelope. Where installed, steps and ladders shall be located outside of the minimum diving water envelope as indicated in Figure 322.2.

322.3 Ladders. Ladder treads shall have a uniform horizontal depth of not less than 2 inches (51 mm). There shall be a uniform distance between ladder treads, with a distance of not less than 7 inches (178 mm) and not greater than 12 inches (305 mm). The top tread of a ladder shall be located not greater than 12 inches (305 mm) below the top of the deck or coping. Ladder treads shall have slip-resistant surfaces.

322.3.1 Wall clearance. There shall be a clearance of not less than 3 inches (76 mm) and not greater than 4 inches (101.6 mm) between the pool wall and the ladder.

322.3.2 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 (432 mm) and not greater than 24 inches (610 mm).

322.4 Recessed treads. Recessed treads shall have a minimum depth of not less than 5 inches (127 mm) and a width of not less than 12 inches (305 mm). The vertical distance between the pool coping edge, deck, or step surface and the uppermost recessed tread shall be not greater than 12 inches (305 mm). Recessed treads shall have slip-resistant surfaces.

322.4.1 Vertical spacing. Recessed treads at the centerline shall have a uniform vertical spacing of not less than 7 inches (178 mm) and not greater than 12 inches (305 mm).

322.4.2 Drainage. Recessed treads shall drain into the pool.

322.4.3 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 (432 mm) and not greater than 24 inches (610 mm).

SECTION 323
SAFETY

323.1 Handholds required. Where the depth below the *design waterline* of a pool or spa exceeds 42 inches (1067 mm), handholds along the perimeter shall be provided. Handholds shall be located at the top of deck or coping.

Exceptions:

1. Handholds shall not be required where an underwater bench, seat or swimout is installed.
2. Handholds shall not be required for wave action pools and action rivers.

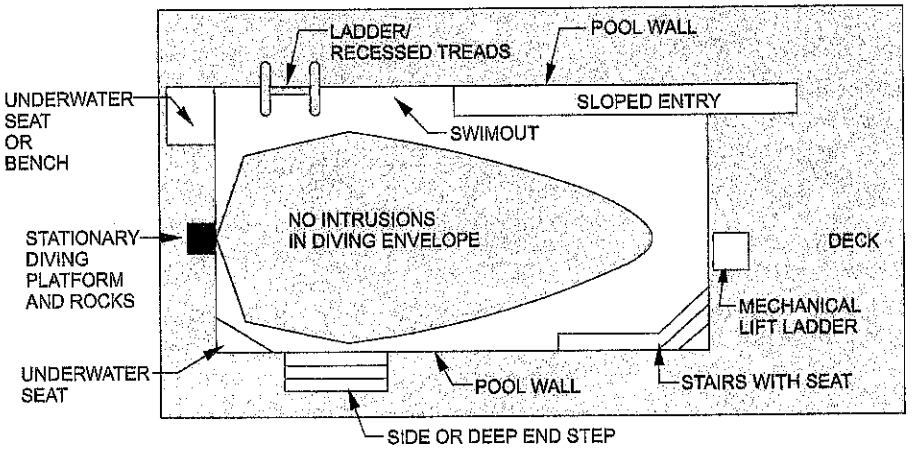


FIGURE 322.2
MINIMUM WATER DIVING ENVELOPE

3. Observation stands, towers, and platforms and the areas extending not less than 10 feet (3048 mm) horizontally from the outer edge of such structures.

Overhead conductors of network-powered broadband communications systems shall comply with the provisions in Table E4203.7 for conductors operating at 0 to 750 volts to ground.

Utility-owned, -operated and -maintained communications conductors, community antenna system coaxial cables and the supporting messengers shall be permitted at a height of not less than 10 feet (3048 mm) above swimming and wading pools, diving structures, and observation stands, towers, and platforms. [680.9(A), (B), and (C)]

E4203.8 Underground wiring. Underground wiring within 5 feet (1524 mm) horizontally from the inside wall of the pool shall be permitted. Underground wiring shall not be installed under the pool except where this wiring is necessary to supply pool equipment permitted by this chapter. Underground wiring shall be installed in rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, reinforced thermosetting resin conduit or Type MC cable, suitable for the conditions subject to that location. The minimum cover depth shall be in accordance with Table E3803.1. (680.11)

SECTION E4204
EQUIPOTENTIAL BONDING

E4204.1 Performance. The equipotential bonding required by this section shall be installed to reduce voltage gradients in the prescribed areas of permanently installed swimming pools and spas and hot tubs other than the storable/portable type.

E4204.2 Bonded parts. The parts of pools, spas, and hot tubs specified in Items 1 through 7 shall be bonded together using insulated, covered or bare solid copper conductors not smaller than 8 AWG or using rigid metal conduit of brass or other identified corrosion-resistant metal. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool, spa, or hot tub area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes. Connections shall be made by exothermic welding, by *listed* pressure connectors or clamps that are *labeled* as being suitable for the purpose and that are made of stainless steel, brass, copper or copper alloy, machine screw-type fasteners that engage not less than two threads or are secured with a nut, thread-forming machine screws that engage not less than two-threads, or terminal bars. Connection devices or fittings that depend solely on solder shall not be used. Sheet metal screws shall not be used to connect bonding conductors or connection devices: [680.26(B)]

1. Conductive pool shells. Bonding to conductive pool shells shall be provided as specified in Item 1.1 or 1.2. Cast-in-place concrete, pneumatically applied or sprayed concrete, and concrete block with painted or plastered coatings shall be considered to be conductive materials because of their water permeability and porosity. Vinyl liners and fiberglass composite shells shall be considered to be nonconductive materials. Reconstructed pool shells shall also meet the requirements of this section.
   1.1. Structural reinforcing steel. Unencapsulated structural reinforcing steel shall be bonded together by steel tie wires or the equivalent. Where structural reinforcing steel is encapsulated in a nonconductive compound, a copper conductor grid shall be installed in accordance with Item 1.2.
   1.2. Copper conductor grid. A copper conductor grid shall be provided and shall comply with Items 1.2.1 through 1.2.4.
      1.2.1. It shall be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing.
      1.2.2. It shall conform to the contour of the pool.
      1.2.3. It shall be arranged in a 12-inch (305 mm) by 12-inch (305 mm) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 4 inches (102 mm).
      1.2.4. It shall be secured within or under the pool not more than 6 inches (152 mm) from the outer contour of the pool shell. [680.26(B)(1)]

TABLE E4203.7 [Table 680.8(A)]
OVERHEAD CONDUCTOR CLEARANCES

	INSULATED SUPPLY OR SERVICE DROP CABLES, 0-750 VOLTS TO GROUND, SUPPORTED ON AND CABLED TOGETHER WITH AN EFFECTIVELY GROUNDED BARE MESSENGER OR EFFECTIVELY GROUNDED NEUTRAL CONDUCTOR (feet)	ALL OTHER SUPPLY OR SERVICE DROP CONDUCTORS (feet)	
		Voltage to ground	
		0 to 15 kV	Greater than 15 to 50 kV
A. Clearance in any direction to the water level, edge of water surface, base of diving platform, or permanently anchored raft	22.5	25	27
B. Clearance in any direction to the diving platform	14.5	17	18

For SI: 1 foot = 304.8 mm.

2. Perimeter surfaces. The perimeter surface to be bonded shall be considered to extend for 3 feet (914 mm) horizontally beyond the inside walls of the pool and shall include unpaved surfaces, poured concrete surfaces and other types of paving. Perimeter surfaces that are separated from the pool by a permanent wall or building 5 feet (1524 mm) or more in height shall require equipotential bonding only on the pool side of the permanent wall or building. Bonding to perimeter surfaces shall be provided as specified in Item 2.1 or 2.2 and shall be attached to the pool, spa, or hot tub reinforcing steel or copper conductor grid at a minimum of four points uniformly spaced around the perimeter of the pool, spa, or hot tub. For nonconductive pool shells, bonding at four points shall not be required.

Exceptions:

1. Equipotential bonding of perimeter surfaces shall not be required for spas and hot tubs where all of the following conditions apply:
   - 1.1. The spa or hot tub is *listed* as a self-contained spa for above-ground use.
   - 1.2. The spa or hot tub is not identified as suitable only for indoor use.
   - 1.3. The installation is in accordance with the manufacturer's instructions and is located on or above grade.
   - 1.4. The top rim of the spa or hot tub is not less than 28 inches (711 mm) above all perimeter surfaces that are within 30 inches (762 mm), measured horizontally from the spa or hot tub. The height of nonconductive external steps for entry to or exit from the self-contained spa is not used to reduce or increase this rim height measurement.
2. The equipotential bonding requirements for perimeter surfaces shall not apply to a *listed* self-contained spa or hot tub located indoors and installed above a finished floor.

   2.1. Structural reinforcing steel. Structural reinforcing steel shall be bonded in accordance with Item 1.1.

   2.2. Copper ring. Where structural reinforcing steel is not available or is encapsulated in a nonconductive compound, a copper conductor(s) shall be used in accordance with Items 2.2.1 through 2.2.5:

      2.2.1. At least one minimum 8 AWG bare solid copper conductor shall be provided.

      2.2.2. The conductors shall follow the contour of the perimeter surface.

      2.2.3. Only *listed* splicing devices or exothermic welding shall be permitted.

      2.2.4. The required conductor shall be 18 to 24 inches (457 to 610 mm) from the inside walls of the pool.

      2.2.5. The required conductor shall be secured within or under the perimeter surface 4 to 6 inches (102 mm to 152 mm) below the subgrade. [680.26(B)(2)]

   2.3. The copper grid shall follow the contour of the perimeter surface extending 3 feet (914 mm) horizontally beyond the inside walls of the pool.

      2.3.1. Only *listed* splicing devices or exothermic welding shall be permitted.

      2.3.2. The required conductor shall be secured within or under the perimeter surface 4 to 6 inches (102 to 152 mm) below the subgrade. [680.26(B)(2)(c)]

3. Metallic components. All metallic parts of the pool structure, including reinforcing metal not addressed in Item 1.1, shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded. [680.26(B)(3)]

4. Underwater lighting. All metal forming shells and mounting brackets of no-niche luminaires shall be bonded. [680.26(B)(4)]

   Exception: *Listed* low-voltage lighting systems with nonmetallic forming shells shall not require bonding. [680.26(B)(4) Exception]

5. Metal fittings. All metal fittings within or attached to the pool structure shall be bonded. Isolated parts that are not over 4 inches (102 mm) in any dimension and do not penetrate into the pool structure more than 1 inch (25.4 mm) shall not require bonding. Metallic pool cover anchors intended for insertion in a concrete or masonry deck surface, 1 inch (25 mm) or less in any dimension and 2 inches (51 mm) or less in length, and metallic pool cover anchors intended for insertion in a wood or composite deck surface, 2 inches (51 mm) or less in any flange dimension and 2 inches (51 mm) or less in length, shall not require bonding. [680.26(B)(5)]

6. Electrical equipment. Metal parts of electrical equipment associated with the pool water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors, shall be bonded. [680.26(B)(6)]

   Exception: Metal parts of listed equipment incorporating an approved system of double insulation shall not be bonded. [680.26(B)(6) Exception]

   6.1. Double-insulated water pump motors. Where a double-insulated water pump motor is installed under the provisions of this item, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the swimming pool equipotential bonding means to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool equipotential bonding means and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit. [680.26(B)(6)(a)]

   6.2. Pool water heaters. For pool water heaters rated at more than 50 amperes and having specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded and only those parts designated to be grounded shall be grounded. [680.26(B)(6)(b)]

7. All fixed metal parts including, but not limited to, metal-sheathed cables and raceways, metal piping, metal awnings, metal fences and metal door and window frames. [680.26(B)(7)]

   Exceptions:

   1. Those separated from the pool by a permanent barrier that prevents contact by a person shall not be required to be bonded. [680.26(B)(7) Exception No. 1]
   2. Those greater than 5 feet (1524 mm) horizontally from the inside walls of the pool shall not be required to be bonded. [680.26(B)(7) Exception No. 2]
   3. Those greater than 12 feet (3658 mm) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, or platforms, or any diving structures, shall not be required to be bonded. [680.26(B)(7) Exception No. 3]

E4204.3 Pool water. Where none of the bonded parts are in direct connection with the pool water, the pool water shall be in direct contact with an approved corrosion-resistant conductive surface that exposes not less than 9 square inches (5800 mm^2) of surface area to the pool water at all times. The conductive surface shall be located where it is not exposed to physical damage or dislodgement during usual pool activities, and it shall be bonded in accordance with Section E4204.2.

E4204.4 Bonding of outdoor hot tubs and spas. Outdoor hot tubs and spas shall comply with the bonding requirements of Sections E4204.1 through E4204.3. Bonding by metal-to-metal mounting on a common frame or base shall be permitted. The metal bands or hoops used to secure wooden staves shall not be required to be bonded as required in Section E4204.2. [680.42 and 680.42(B)]

E4204.5 Bonding of indoor hot tubs and spas. The following parts of indoor hot tubs and spas shall be bonded together:

1. All metal fittings within or attached to the hot tub or spa structure. [680.43(D)(1)]
2. Metal parts of electrical equipment associated with the hot tub or spa water circulating system, including pump motors unless part of a *listed* self-contained spa or hot tub. [680.43(D)(2)]
3. Metal raceway and metal piping that are within 5 feet (1524 mm) of the inside walls of the hot tub or spa and that are not separated from the spa or hot tub by a permanent barrier. [680.43(D)(3)]
4. All metal surfaces that are within 5 feet (1524 mm) of the inside walls of the hot tub or spa and that are not separated from the hot tub or spa area by a permanent barrier. [680.43(D)(4)]

   Exception: Small conductive surfaces not likely to become energized, such as air and water jets and drain fittings, where not connected to metallic piping, towel bars, mirror frames, and similar nonelectrical equipment, shall not be required to be bonded. [680.43(D)(4) Exception]

5. Noncurrent-carrying metal parts of electrical devices and controls that are not associated with the hot tubs or spas and that are located less than 5 feet (1524 mm) from such units. [680.43(D)(5)]

E4204.5.1 Methods. All metal parts associated with the hot tub or spa shall be bonded by any of the following methods:

1. The interconnection of threaded metal piping and fittings. [680.43(E)(1)]
2. Metal-to-metal mounting on a common frame or base. [680.43(E)(2)]
3. The provision of an insulated, covered or bare solid copper bonding jumper not smaller than 8 AWG. It shall not be the intent to require that the 8 AWG or larger solid copper bonding conductor be extended or attached to any remote panelboard, service equipment, or any electrode, but only that it shall be employed to eliminate voltage gradients in the hot tub or spa area as prescribed. [680.43(E)(3)]

E4204.5.2 Connections. Connections to bonded parts shall be made in accordance with Section E3406.14.1.

SECTION E4205
BONDING AND GROUNDING

E4205.1 Equipment to be bonded and grounded. The following equipment shall be bonded and grounded:

1. Through-wall lighting assemblies and underwater luminaires other than those low-voltage lighting products *listed* for the application without an equipment grounding conductor.
2. All electrical equipment located within 5 feet (1524 mm) of the inside wall of the pool, spa or hot tub.
3. All electrical equipment associated with the recirculating system of the pool, spa or hot tub.
4. Junction boxes.
5. Transformer and power supply enclosures.
6. Ground-fault circuit interrupters.
7. Panelboards that are not part of the service equipment and that supply any electrical equipment associated with the pool, spa or hot tub. (680.6)

E4205.2 Luminaires and related equipment. Where branch-circuit wiring on the supply side of enclosures and junction boxes connected to conduits run to underwater luminaires are installed in corrosive environments as described in Section E4202.2, the wiring method of that portion of the branch circuit shall be as required in Section E4202.2 or shall be liquid-tight flexible nonmetallic conduit (LFNMC). Where not installed in corrosive environments, branch circuits shall comply with Chapter 38. Wiring methods shall contain an insulated copper equipment grounding conductor sized in accordance with Table E3809.13 but not smaller than 12 AWG. The equipment grounding conductor between the wiring chamber of the secondary winding of a transformer and a junction box shall be sized in accordance with the transformer secondary overcurrent protection provided.

The insulated copper equipment grounding conductor shall be connected to all through-wall lighting assemblies, wet-niche, dry-niche, or no-niche luminaires other than *listed* low-voltage luminaires not requiring grounding. The junction box, transformer enclosure, or other enclosure in the supply circuit to a wet-niche or no-niche luminaire and the field-wiring chamber of a dry-niche luminaire shall be grounded to the equipment grounding terminal of the panelboard. The equipment grounding terminal shall be directly connected to the panelboard enclosure. The equipment grounding conductor shall be installed without joint or splice. [680.23(F)(1), (F)(2) and 680.23(F)(2) Exception]

Exceptions:

1. Where more than one underwater luminaire is supplied by the same branch circuit, the equipment grounding conductor, installed between the junction boxes, transformer enclosures, or other enclosures in the supply circuit to wet-niche luminaires, or between the field-wiring compartments of dry-niche luminaires, shall be permitted to be terminated on grounding terminals. [680.23(F)(2)(a)]
2. Where an underwater luminaire is supplied from a transformer, ground-fault circuit interrupter, clock-operated switch, or a manual snap switch that is located between the panelboard and a junction box connected to the conduit that extends directly to the underwater luminaire, the equipment grounding conductor shall be permitted to terminate on grounding terminals on the transformer, ground-fault circuit interrupter, clock-operated switch enclosure, or an outlet box used to enclose a snap switch. [680.23(F)(2)(b)]

E4205.3 Nonmetallic conduit. Where a nonmetallic conduit is installed between a forming shell and a junction box, transformer enclosure, or other enclosure, an 8 AWG insulated copper bonding jumper shall be installed in this conduit except where a *listed* low-voltage lighting system not requiring grounding is used. The bonding jumper shall be terminated in the forming shell, junction box or transformer enclosure, or ground-fault circuit-interrupter enclosure. The termination of the 8 AWG bonding jumper in the forming shell shall be covered with, or encapsulated in, a *listed* potting compound to protect such connection from the possible deteriorating effect of pool water. [680.23(B)(2)(b)]

E4205.4 Flexible cords. Other than *listed* low-voltage lighting systems not requiring grounding, wet-niche luminaires that are supplied by a flexible cord or cable shall have all exposed noncurrent-carrying metal parts connected to an insulated copper equipment grounding conductor that is an integral part of the cord or cable. This equipment grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure, or other enclosure. The equipment grounding conductor shall not be smaller than the supply conductors and not smaller than 16 AWG. [680.23(B)(3)]

E4205.5 Pool motors. Wiring methods installed in the corrosive environment described in Section E4202.2 shall comply with Section E4202.2 or shall be Type MC cable *listed* for that location. Wiring methods installed in corrosive environments described in Section E4202.2 shall contain an insulated copper equipment conductor sized in accordance with Table E3908.12 but not smaller than 12 AWG.

Where installed in noncorrosive environments, branch circuit wiring methods shall comply with Chapter 38. [680.21(A)(1)].

E4205.6 Feeders. These provisions shall apply to any feeder on the supply side of panelboards supplying branch circuits for pool equipment covered in this chapter and on the load side of the service equipment. Where feeders are installed in corrosive environments as described in Section E4202.2, the wiring method of that portion of the feeder shall comply with Section E4202.2 or shall be liquid-tight flexible nonmetallic conduit (LFNMC). Wiring methods installed in corrosive environments as described in Section E4202.2 shall contain an insulated copper equipment grounding conductor sized in accordance with Table E3908.12, but not smaller than 12 AWG.

Chapter 19 - SWIMMING POOLS

Footnotes:
*--- **(1)** ---*
***Cross reference**— Buildings, Ch. 5; hazards and nuisances, Ch. 12; health and sanitation, Ch. 13.*

Sec. 19-1. - Applicability.

The provisions of this chapter shall be applicable to all new swimming pools or family pools constructed after the effective date of the ordinance from which this chapter derives, other than indoor pools, and shall apply to all existing pools which have a minimum depth of eighteen (18) inches of water. No person in possession of land within the city, either as owner, purchaser, lessee, tenant or licensee, upon which is situated a swimming pool or family pool having a minimum depth of eighteen (18) inches, shall fail to provide and maintain the fence or wall as required by this chapter.

(Ord. No. 234, § 3, 3-9-81)

Sec. 19-2. - Fence or wall required.

Every outdoor swimming pool or family pool shall be completely surrounded by a fence or wall not less than six (6) feet in height, which shall be so constructed as not to have any openings, holes or gaps larger than four (4) inches in any dimension except for doors and gates, and if a picket fence is erected or maintained, the horizontal gap dimension shall not exceed four (4) inches. A dwelling house or accessory building may be used as part of the enclosure.

(Ord. No. 234, § 1, 3-9-81)

Sec. 19-3. - Gates and doors.

All gates or doors opening through or into the enclosure of each outdoor swimming pool or family pool shall be equipped with a self-closing and self-latching device for keeping the gate or door securely closed at all times when not in actual use, except that the door of any dwelling which forms a part of the enclosure need not be so equipped.

(Ord. No. 234, § 2, 3-9-81)

Sec. 19-4. - Variances or modifications.

The mayor or his authorized representative may make variances or modifications in individual cases, upon a showing of good cause, with respect to the height, nature or location of the fence, wall, gates or latches, or the necessity therefor, provided the protection as sought under the provisions of this chapter is not reduced thereby; further, other protective devices or structures may be permitted by him, so long as the degree of protection afforded by the substitute devices or structures is not less than the protection afforded by the wall, fence, gate and latch described in this chapter.

(Ord. No. 234, § 4, 3-9-81)

Sec. 19-5. - Waste water disposal.

All swimming pools or family pools having a minimum depth of eighteen (18) inches shall be equipped to dispose of waste water to the nearest storm water drainage system, without crossing or entering onto any adjoining property, unless permission is obtained from the owner of the adjoining property affected.

(Ord. No. 159, 3-8-93)

Editor's note— Ordinance No. 159, adopted March 8, 1993, added provisions designated as § 19-20. For purposes of section numbering, such provisions have been redesignated as § 19-5 at the discretion of the editor.

Sec. 19-6. - Sanitation and maintenance.

All swimming pools located in the City of Sulphur shall be maintained in a safe and sanitary condition. Swimming pool maintenance shall include the draining of the pool and chemical and equipment maintenance of the pool to prevent stagnation and other health hazards. It shall be the responsibility of the owner, occupant, or agent to ensure that the pool is maintained in a clean, safe, and sanitary condition.

(Ord. No. 496, 8-28-02)

Sec. 19-7. - Alternate penalty provision.

(a) It shall be unlawful for any person to violate or fail to comply with any provision of this chapter. In the alternative to any specific penalty provided therefore, the violation of, or failure to comply with, any provision of this chapter shall be

punished by a fine not to exceed five hundred dollars ($500.00) or imprisonment for a term not to exceed six (6) months, or, by both such fine and imprisonment within the discretion of the court, together with court costs and expenses.

(b) Each day any violation of, or failure to comply with, any provision of this chapter continues, each such violation or failure to comply shall constitute a separate offense.

(c) The City of Sulphur, through the office of property standards, shall have the right to enter upon any and all premises to ascertain whether the terms of this chapter are being complied with and any person denying or obstructing such entry shall be subject to the penalties provided herein.

(Ord. No. 321, 5-11-98; Ord. No. 396, 12-13-99; Ord. No. 496, 8-28-02)

Where installed in noncorrosive environments, feeder wiring methods shall comply with Chapter 38. [680.25(A)].

E4205.7 Cord-connected equipment. Where fixed or stationary equipment is connected with a flexible cord to facilitate removal or disconnection for maintenance, repair, or storage, as provided in Section E4202.3, the equipment grounding conductors shall be connected to a fixed metal part of the assembly. The removable part shall be mounted on or bonded to the fixed metal part. (680.8)

E4205.8 Other equipment. Other electrical equipment shall be grounded in accordance with Section E3908. (Article 250, Parts V, VI, and VII; and 680.6)

E4205.9 Bonding and equipment grounding terminals. Terminals used for equipment grounding and bonding shall be identified for use in wet and corrosive environments. Field-installed terminals in a damp, wet or corrosive environment shall be composed of copper, copper alloy or stainless steel and shall be *listed* for direct burial use. (680.7)

SECTION E4206
EQUIPMENT INSTALLATION

E4206.1 Transformers and power supplies. Transformers and power supplies used for the supply of underwater luminaires, together with the transformer or power supply enclosure, shall be *listed*, labeled and identified for swimming pool and spa use. The transformer or power supply shall incorporate either a transformer of the isolated-winding type with an ungrounded secondary that has a grounded metal barrier between the primary and secondary windings, or a transformer that incorporates an approved system of double insulation between the primary and secondary windings. [680.23(A)(2)]

E4206.2 Ground-fault circuit interrupters. Ground-fault circuit interrupters (GFCIs) shall be self-contained units, circuit-breaker types, receptacle types or other *listed* types. The GFCI requirements in this chapter, unless otherwise noted, are in addition to the requirements in Section E3902. (680.5)

E4206.3 Wiring on load side of ground-fault circuit interrupters and transformers. For other than grounding conductors, conductors installed on the load side of a ground-fault circuit interrupter or transformer used to comply with the provisions of Section E4206.4, shall not occupy raceways, boxes, or enclosures containing other conductors except where the other conductors are protected by ground-fault circuit-interrupters or are grounding conductors. Supply conductors to a feed-through type ground-fault circuit interrupter shall be permitted in the same enclosure. Ground-fault circuit interrupters shall be permitted in a panelboard that contains circuits protected by other than ground-fault circuit interrupters. [680.23(F)(3)]

E4206.4 Underwater luminaires. The design of an underwater luminaire supplied from a branch circuit, either directly or by way of a transformer or power supply meeting the requirements of Section E4206.1, shall be such that, where the fixture is properly installed without a ground-fault circuit interrupter, there is no shock hazard with any likely combination of fault conditions during normal use (not relamping). In addition, ground-fault circuit-interrupter protection for personnel shall be installed in the branch circuit supplying luminaires operating at voltages greater than the low-voltage contact limit to protect personnel performing lamping, relamping or servicing. The installation of the ground-fault circuit interrupter shall be such that there is no shock hazard with any likely fault-condition combination that involves a person in a conductive path from any ungrounded part of the branch circuit or the luminaire to ground. Compliance with this requirement shall be obtained by the use of a *listed* underwater luminaire and by installation of a *listed* ground-fault circuit-interrupter in the branch circuit or a *listed* transformer or power supply for luminaires operating at more than the low-voltage contact limit. Luminaires that depend on submersion for safe operation shall be inherently protected against the hazards of overheating when not submerged. [680.23(A)(1), (A)(3), (A)(7) and (A)(8)]

E4206.4.1 Maximum voltage. Luminaires shall not be installed for operation on supply circuits over 150 volts between conductors. [680.23(A)(4)]

E4206.4.2 Luminaire location. Luminaires mounted in walls shall be installed with the top of the fixture lens not less than 18 inches (457 mm) below the normal water level of the pool, except where the luminaire is *listed* and identified for use at a depth of not less than 4 inches (102 mm) below the normal water level of the pool. A luminaire facing upward shall have the lens adequately guarded to prevent contact by any person or shall be *listed* for use without a guard. [680.23(A)(5) and (A)(6)]

E4206.5 Wet-niche luminaires. Forming shells shall be installed for the mounting of all wet-niche underwater luminaires and shall be equipped with provisions for conduit entries. Conduit shall extend from the forming shell to a suitable junction box or other enclosure located as provided in Section E4206.9. Metal parts of the luminaire and forming shell in contact with the pool water shall be of brass or other approved corrosion-resistant metal. [680.23(B)(1)]

The end of flexible-cord jackets and flexible-cord conductor terminations within a luminaire shall be covered with, or encapsulated in, a suitable potting compound to prevent the entry of water into the luminaire through the cord or its conductors. If present, the connection of the equipment grounding conductor within a luminaire shall be similarly treated to protect such connection from the deteriorating effect of pool water in the event of water entry into the luminaire. [680.23(B)(4)]

Luminaires shall be bonded to and secured to the forming shell by a positive locking device that ensures a low-resistance contact and requires a tool to remove the luminaire from the forming shell. [680.23(B)(5)]

E4206.5.1 Servicing. All wet-niche luminaires shall be removable from the water for inspection, relamping, or other maintenance. The forming shell location and length of cord in the forming shell shall permit personnel to place the removed luminaire on the deck or other dry location for such maintenance. The luminaire maintenance location shall be accessible without entering or