

# SACRAMENTO COUNTY BUILDING INSPECTION

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## Construction Requirements for Swimming Pools and Spas

### 1. Introduction

This booklet was prepared in order to assemble the major regulations affecting swimming pools or spas in a single package. It is primarily oriented toward installations at private residences. It is best to begin this booklet with the following definitions, as given in Section 16.36.120 of the Sacramento County Code.

#### Swimming Pool

Any structure intended for swimming, recreational bathing or human immersion that contains water over 18 inches deep. This includes in-ground, above ground, and on-ground swimming pools; hot tubs; portable and non-portable spas; and fixed in-place wading pools.

#### Swimming Pool, Indoor

A swimming pool that is totally contained within a residential structure and surrounded on all four sides by walls of said structure.

#### Swimming Pool, Outdoor

Any swimming pool that is not an indoor pool.

#### Swimming Pool, Specialty

Such as vinyl liner or fiberglass specialty pools

### 2. Barriers – Group R, Division 3 Occupancies SCC Section 16.36.130

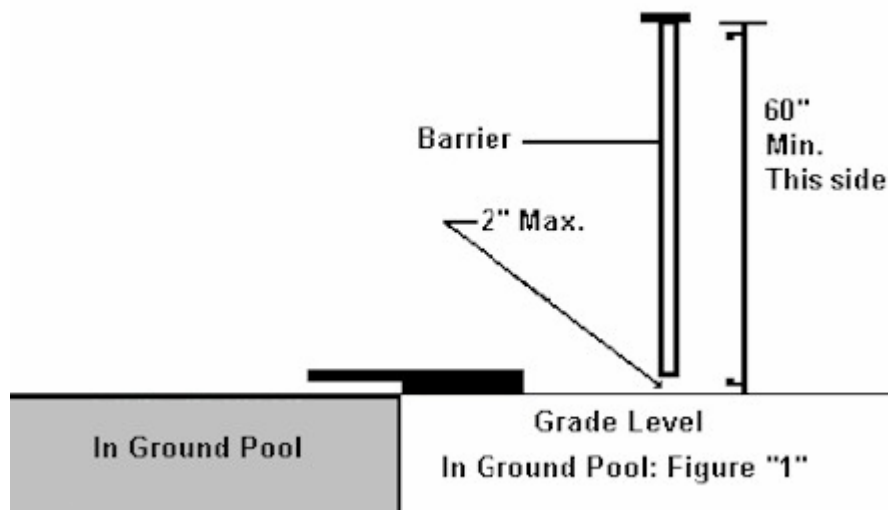
An outdoor swimming pool shall be provided with a barrier that, once installed, shall be inspected and approved by a Building Inspection official prior to filling the swimming pool with water. Perimeter fencing may be approved as a barrier.\* The barrier shall comply with each of the following:

- a. The top of the barrier shall be at least 60 inches above grade measured on the side of the barrier that faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches measured on the side of the barrier that faces away from the swimming pool. (See Figure 1) The maximum vertical clearance at the bottom of the barrier may be increased to 4 inches when grade is a solid surface such as a concrete deck or when the barrier is mounted on the top of the above ground pool structure. (See Figure 2 and Figure 3) When barriers have horizontal members spaced less than 45 inches apart between the tops of the horizontal members, the horizontal members shall be placed on the pool side of the barrier (See Figure 4). Any decorative design work on the side away from the swimming pool, such as protrusions, indentations, or cutouts that render the barrier easily climbable, is prohibited.
- b. Openings in the barrier shall not allow passage of a 1 ¾ inch or greater diameter sphere. (See Figure 4)
  - a. Exception: For fencing composed of vertical and horizontal members, the spacing between vertical members may be increased to a maximum 4 inches when the distance between the tops of the horizontal members is 45 inches or more. (See Figure “5”)
    - \* **“No-climb fencing” is not acceptable as a barrier.**

- c. Chain link fences used as the barrier shall not be less than 11 gauge and no opening greater than 1 ¾ inches. See Figure 5.
- d. Solid barriers that do not have openings, such as masonry or stone walls, shall not contain indentations or protrusions except for tooled masonry joints.
- e. Access gates shall comply with the requirements of subdivisions a through (d) above. Pedestrian access gates shall be self-closing and have a self-latching device. Where the release mechanism of the latching device is located less than 54 inches from grade, (i) the release mechanism shall be located on the pool side of the gate at least 3 inches below the top of the gate, and (ii) the gate barrier shall have no opening greater than ½ inch within 18 inches of the release mechanism. (See Figure 6) Pedestrian gates (in fences isolating the pool from the dwelling) shall swing away from the pool. Any gates other than pedestrian access gates shall be equipped with lockable hardware or padlocks and shall remain locked at all times when the pool is not in use.
- f. Where a wall of a Group R, Division 3 Occupancy dwelling unit serves as part of the barrier and contains door openings between the dwelling unit and the outdoor swimming pool that provide direct access to the pool, a separation fence meeting the requirements of subdivisions (a) through (e) above shall be provided.
- g. Any other alternate barrier product maybe approved on a case by case basis by the Chief Building Official.

Exception:

- a. An Approved Child Safety Device, as defined in Section 16.36.120(b), Sacramento County Code (SCC), subject to a prior written determination by the Chief of Building Inspection that the degree of protection to small children afforded by such an approved device is equal to that provided by a separation fence meeting the requirements of Items 1 through 6 of Section 16.36.130, SCC (see subdivisions (a) through (f) above).
- b. Pool covers meeting AST F1346-91 standards may also be used.
- h. Where an above ground pool structure is used as a barrier or where the barrier is mounted on the top of the pool structure and the means of access is a ladder or steps, either (i) the ladder or steps shall be capable of being secured, locked, or removed to prevent access, or (ii) the ladder or steps shall be surrounded by a barrier that meets the requirements of subdivisions (a) through (f) above. When the ladder or steps are secured, locked, or removed, any opening created shall be protected by a barrier complying with subdivisions (a) through (f) above.
  - a. Pool Alarms meeting UL standard 20/17. (refer to 3.i for list of approved alarms.)



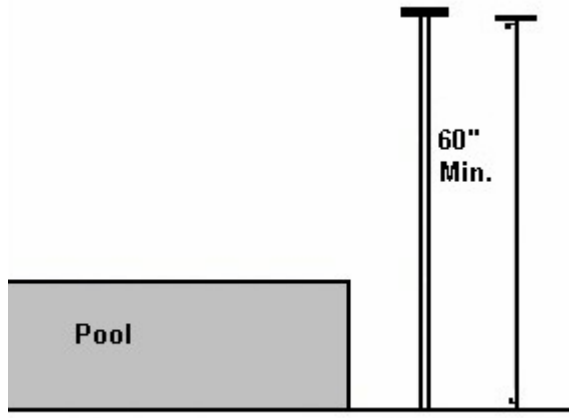


Figure "2"

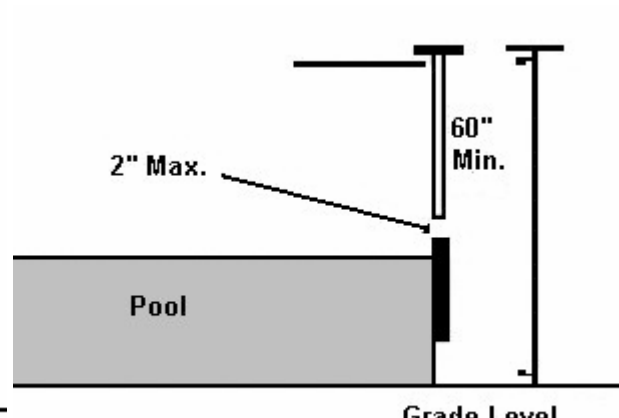


Figure "3"

**Horizontal Members**  
 If less than 45" between members, install members on pool side.

**Vertical Members**

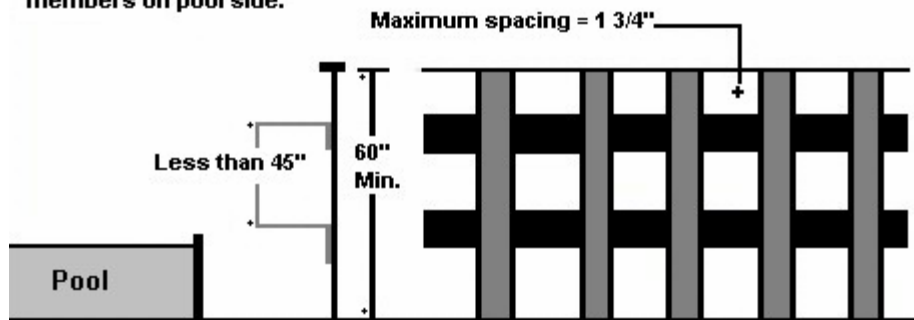


Figure "4"

**Horizontal Members**  
If more than 45" between members  
members may be installed either side.

**Vertical Members**

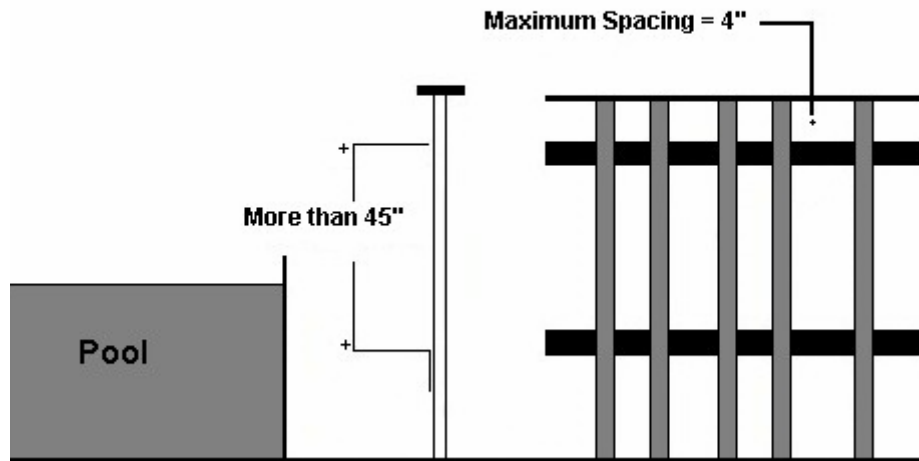


Figure "5"

For gates other than pedestrian access gates, where  
latch is less than 54" from bottom of gate.

No opening greater than 1/2" within 18" of  
release mechanism

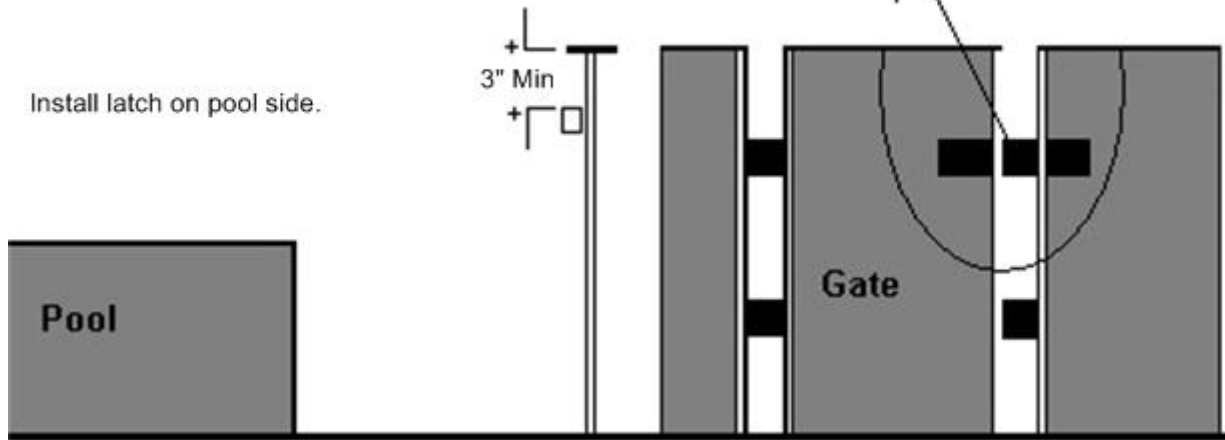


Figure 6

Gate to swing outward

## Indoor Swimming Pool

For an indoor swimming pool, protection shall comply with the requirements of subsection ( f ) above.

## Spas and Hot Tubs

A spa or hot tub with a locking safety cover that complies with ASTM (American Society for Testing and Materials) Standard F 1346-91 shall not be required to provide other barriers. Where a locking safety cover is not provided, the spa or hot tub shall comply with the requirements of subsection ( a ) through ( g ) above.

### 3. Electrical

a. CEC Section 680-8

The following parts of pools shall not be placed under existing service-drop conductors or any other open overhead wiring; nor shall such wiring be installed above the following:

1. Pools and the area extending 10 ft (3.05 m) horizontally from the inside of the walls of the pool,
2. Diving structures
3. Observation stands, towers, or platforms unless the installations provide the clearances in Table 680-8

	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.	All other supply or service drop conductors	
		Voltage to Ground	
		0-15kV	Greater than 15 to 50kV
A. Clearance in any direction to the water level, edge of water service, base of diving platform, or permanently anchored raft.	22.5 ft (6.9 m)	25 ft (7.5 m)	27 ft (8.0 m)
B. Clearance in any direction to the diving platform or tower.	14.5 ft (4.4 m)	17 ft (5.2 m)	18 ft (5.5 m)
C. Horizontal limit of clearance measured from inside wall of the pool.	This limit shall extend to the outer edge of the structures listed in (A) and (B) above but not less than 10 feet (3.05 m)		
See Figure 7			

## Electrical Guidelines for Swimming Pools

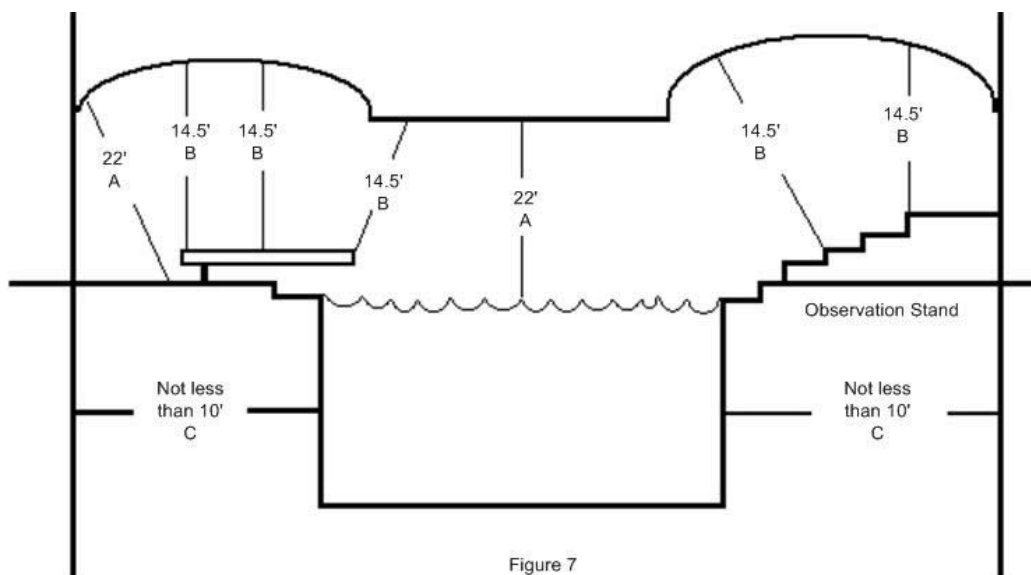


Figure 7

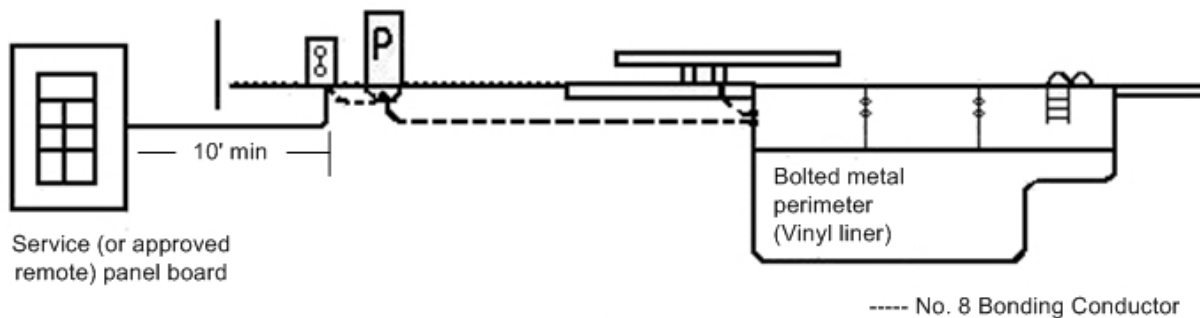


Figure 7B

Figure 680-7.

Illustrated as a metal (e.g. steel or aluminum) perimeter pool with bolted ( or welded ) sections. The metal perimeter serves as the common bonding grid to which the metal ladder, the diving board, and the pump motor are connected. Note that the pump motor is connected to a receptacle within 5' of waters edge as specified in Section 680-6 and 680-7.

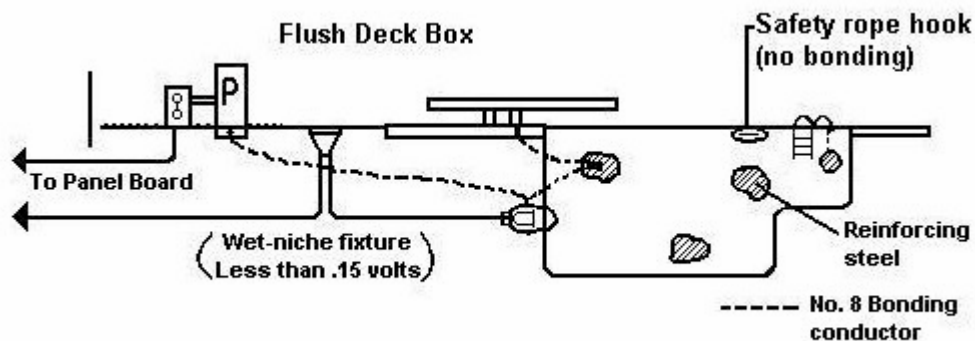


Figure 680-8.

Gunnite concrete pool. The structural reinforcing steel serves as the common bonding grid to which all metal apparatuses associated with the pool are connected. Safety rope hooks are not required to be bonded as specified in Section 680.26(B)(3). The flush deck box meets the provisions of Section 680.24(A)(2)(C)

Pool Bonding  
Figure 8

- b. CEC Section 680-22(A) (3).  
At least one receptacle shall be installed between 10 feet and 20 feet of a pool or spa and shall be protected by a ground-fault circuit-interrupter. See Figure 8.
- c. CEC Section 680-22(B).  
Swimming pool and spa lighting outlets over and alongside pools and spas shall be protected by a GFCI.
- d. CEC Section 680-22(C).  
Switching devices on the property shall be located at least 5 feet from the inside surface of pool or spa walls, unless separated by a solid fence or wall.
- e. CEC Section 680-26(B)(1).  
All metallic parts of the pool structure, including the reinforcing metal of the pool shell, coping stones, and deck. The usual steel tie wires shall be considered suitable for bonding the reinforcing steel together, and welding or special clamping shall not be required. This tie wires shall be made tight. Where reinforcing steel is effectively insulated by a listed encapsulating nonconductive compound, at the time of manufacture and installation, it shall not be required to be bonded.
- f. CEC Section 680-26(B)5

Metal conduit, metal-sheathed cables, metal piping, and all fixed metal parts that are within 5 feet of the inside walls of the pool or spa and that are not separated from the pool by a permanent barrier shall be bonded together to the common bonding grid.

- g. CEC Section 680-27(B).  
Electrically operated pool covers.
- a. CEC Section 680-27(B) (1).  
The electric motors, controllers, and wiring shall be located at least 5 feet from the inside wall of the pool unless separated from the pool or spa by a wall, cover, or other permanent barrier.
  - b. CEC Section 680-27(B) (2)  
The electric motor and controller shall be connected to a GFCI protected circuit.
- h. CEC Section 680-24.  
The following equipment shall be grounded:
- Wet-niche and no-niche underwater lighting, other than those low-voltage systems listed for the application without a grounding conductor.
  - Dry-niche underwater lighting fixtures.
  - All electric equipment located within 5 feet (1.52 m) of the inside wall of the pool.
  - Junction boxes.
  - Transformer enclosures.
  - Ground-fault circuit-interrupters.
  - Panel boards that are not part of the service equipment and that supply any electric equipment associated with the pool.
- i. Approved Pool Alarms  
There are currently 4 different pool alarms approved by the County.
- Pool Guard, Model DAPT, UL tested and listed, UL # 2017
  - Techko or Telco, Model S087 SAFE POOL, ETL tested and listed, UL#2017
  - Yard Guard by Smart Pool, ETL tested and listed, UL # 2017
  - P.B.M. UL # 2017

#### 4. Mechanical and Plumbing.

- a. SCC 16.36-330 Wastewater Disposal Sec. 310  
No direct or indirect connection shall be made to any storm drain, sewer, drainage system, seepage pit, underground leaching pit, or subsoil drainage line from any line connected to a swimming pool unless approved by the administrative authority.
- b. USPC Section 309.1 and 309.2
- a. Listed plastic pressure water piping and fittings shall be not less than Schedule 40.
  - b. Listed plastic threaded circulating pipe and fittings shall be not less than Schedule 80.
- c. USPC Section 314.3.2  
All transitions from metallic to plastic piping shall be by the use of plastic female to metallic male fittings or by the use of listed stainless steel mechanical compression coupling using a synthetic rubber electrometric-sealing sleeve.
- d. SCC 16.36.320 Turnover Time Sec 302  
The entire design of matched components shall have sufficient capacity to provide a complete turnover of pool water in:
- Private pools                                      12 hours or less
  - Wading pools                                        2 hours or less
  - Private spas and hot tubs                        1 hour or less
- e. USPC Section 416.5

Vent termination for fuel burning heaters shall be not less than 4 feet below or 4 feet horizontally from, nor less than 1 foot above any door, window, or gravity air inlet into any building.

- f. USPC Section 406.6  
When swimming pool, spa, or hot tub heating equipment is installed with a shut off valve between the outlet of the heater and the pool, spa, or hot tub, a pressure relief valve shall be installed on the discharge side of the water heating equipment.
- g. USPC Section 416.  
No venting system shall terminate less than 4 feet from any property line except a public way.\*  
\*For a stackless type heater, the outside of the heater shall be no closer than 4 feet from the property line.

## **5. Energy Efficiency Standards – Mandatory Requirements for Pool and Spa Heating Systems and Equipment.**

- a. Certification by Manufacturers.  
Any pool or spa heating system or equipment may be installed only if the manufacturer has certified that the system or equipment has all of the following:
  - (1) Efficiency.  
A thermal efficiency that complies with the appliance efficiency regulations.
  - (2) On-Off Switch.  
A readily accessible on-off switch mounted on the outside of the heater that allows shutting off the heater without adjusting the thermostat setting.
  - (3) Instructions.  
A permanent, easily readable, and weatherproof plate or card that gives instructions for the energy efficient operation of the pool or spa and for the proper care of pool or spa water when a cover is used.
  - (4) Electric Resistance Heating.  
Electric resistance heating shall not be installed unless meeting the exceptions below.  
  
Exception No. 1.  
Listed package units with fully insulated enclosures and with tight fitting covers that are insulated to at least R-6.  
  
Exception No. 2.  
Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.
- (5) Pilot Light.  
No pilot light shall be permitted.
- b. Installation.  
Any pool or spa heating system or equipment shall be installed with all the following:
  - (1) Piping.  
At least 36 inches of pipe between the filter and the heater to allow for the future addition of solar heating equipment.
  - (2) Covers.  
A cover for outdoor spas.  
  
Exception.  
Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.
  - (3) Directional Inlets and Time Switches for Pools.  
If the system or equipment is for a pool:



- a. The pool shall have directional inlets that adequately mix the pool water.
- b. The circulation pump shall have a time switch that allows the pump to be set to run in the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

Exception.

Where applicable public health standards require on-peak operation.

## 6. Solar Pool and Spa Heaters.

- a. SCC 16.36.335 Sec. 317 (a)

All pool, spa, and hot tub piping shall be inspected and approved before being covered or concealed. It shall be tested and proved tight to the satisfaction of the Chief Building Inspector under a static water or air pressure test of not less than 35 psi. for 15 minutes.

Exceptions:

- (1) All exposed equipment need not be tested as required in the section.

- (2) Pool and/or spa solar systems and their related above ground piping shall be tested under actual operating conditions.

- b. 16.24.100 Section 506.3

All domestic solar water systems are required to have a tempering valve.

## 7. Allowed Pool and Spa Locations.

- a. SCC Section 305-85.

Location of Swimming Pools and Spas.

Swimming pools and spas shall not be located:

- Within a recorded setback except rear yards of through lots unless otherwise prohibited by a recorded subdivision map.
- Within a public utility easement or public easement.  
**Note:** No excavation or structural portion of the pool may be located within the easement.
- Within the required front or side street yards.
- Within 3 feet of side or rear property lines except that the Chief of Building Official, may approve setbacks less than 3 feet from side or rear property lines as provided for the Swimming Pool Code, County Code 16.36.250. For the purpose of this section, setback shall be from the right-of-way line or property line to the water line.
- The provisions herein shall not affect codes of the Special Planning Areas as applicable.

- b. SCZC Section 305-86.

Location of Swimming Pool and Spa Equipment.

Swimming pool and spa equipment may encroach into a front or side street yard not to exceed 5 feet providing said equipment is within a solid fenced yard or enclosure. This Zoning Code section permits such equipment to be a minimum of one foot from any side or rear property line.

- c. SCZC Section 305-87.

Location of Mechanical Equipment other than Swimming Pool, Air Conditioning Equipment, and Spa Equipment. Mechanical equipment other than swimming pool, air conditioning, and spa mechanical equipment may encroach into any yard not to exceed 5 feet and in no case shall the equipment be closer than 2 feet from any property line. However, the Environmental Health Division (EHD) reinforces noise standards in the unincorporated area of the County. These noise standards require that no mechanical equipment shall be located between the front and rear of the building where the equipment is within 12 feet of the interior side lot line. Exceptions granted by EHD are to be documented on the plot plan, with the exclusion of pool or spa pumps located 5 or more feet from the side property line.

- d. Policy PP-10. Miscellaneous Structures in Easements.  
Swimming pool equipment, water, gas, return lines, and a deck that is not a structural part of a pool requires approval from Building Official.
- e. Safety Glazing.  
Provide safety glazing for glazing in hazardous locations as per CBC Section 2406.4.9. Glazing within 5 feet of the water line shall be safety glazed.

## Foundation Surcharges

The water line of any swimming pool or spa shall be a minimum of 3 feet from any structure that would cause a surcharge load on the pool or spa walls. If closer than 4 feet, the pool or spa plan shall include a surcharge schedule. See Figure 9.

The water line of a preformed fiberglass or vinyl liner swimming pool or spa shall be a minimum of 5 feet from any structure that would cause a surcharge load on the pool or spa walls. If located closer than 5 feet from a structure or affected by a surcharge because of pool depth, the plan shall include an engineered surcharge schedule.

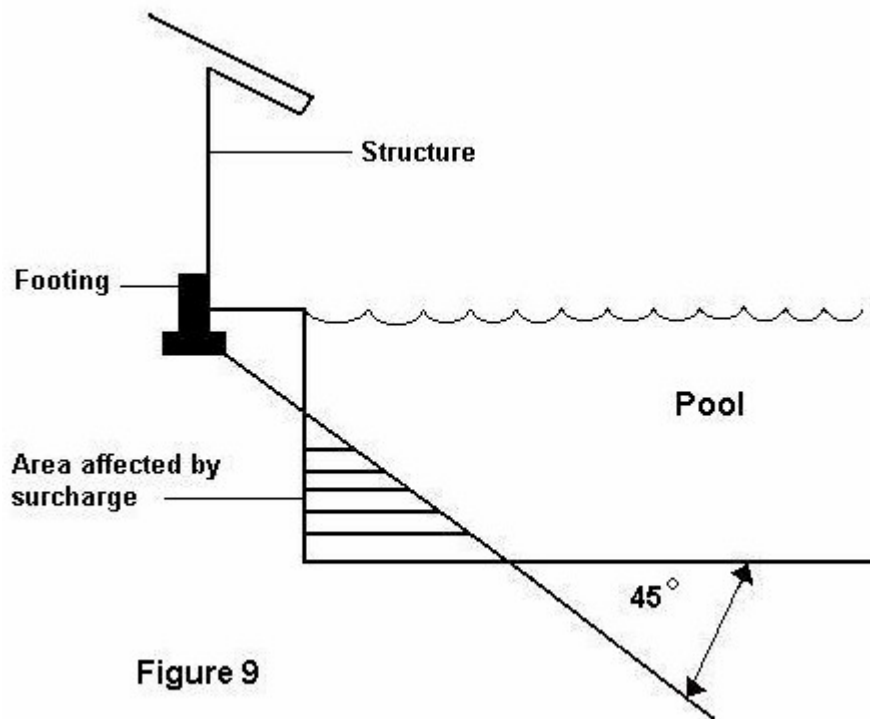


Figure 9

## 9. Checklist for Swimming Pool and Spa Inspections.

- a. Pregunite.
  - (1) Structural Check::
    - Location, excavation, and steel placement.
    - Location of equipment pad.
    - Grading and removal of excess soil to comply with Storm Water Pollution Prevention Program requirements.
  - (2) Plumbing Check:
    - Return line, fill line, and all other piping (minimum 35lb pressure test).
    - Gas piping installation and test (minimum 10lb with approved gauge).
    - Any sewer or water line reroute will require a retest.
  - (3) Electrical Check:
    - Service drop clearance requirements. 22 feet above the pool if within 10 feet horizontal. (See Figure 7)

- Bonding of pool or spa steel, underwater light fixture forming shells, diving board, slide, fill line, equipment, and metallic objects located within 5 feet of the inside walls of a pool or spa.
- Electrical conduit for burial depth and CEC Standards.
- Check for approved listings for underwater light fixtures forming shells and that they are installed with the top of the fixture at least 18 inches below normal water level unless identified at a depth not less than 4 inches.
- Provide gate requirements to the owner.
- Specialty Pools such as vinyl liners or fiberglass must have alarms or barriers installed at this time.
- All plumbing is required to be under test, full assembly.

b. Predeck.

Electrical Check

- Final bonding of diving board, grab rails and slides, disabled access inserts, and rope ties.

c. Preplaster (Fences, Gates or barriers alternates required to be installed at this time).

(1) Structural Check.

- The enclosure fence must be a minimum of 5 feet high, and all gates must be self-closing and self-latching or padlocked and swing outward. \* **“No-climb fencing” is not an acceptable barrier material.**

(2) Alarms

- Alarms meeting UL 2017 Standard are required at this time in conjunction with barrier requirements.

(3) Electrical Check

- For an underwater light fixture forming a shell, check for proper grounding, listed potting compound, and encapsulating and covering requirements.
- The required GFCI's must be installed.
- If fiber-optics are used and equipment is set, the pool can be finalized at this time.
- Light Niche Cord shall be long enough to service outside of the pool.

**THE ABOVE IS TO BE SIGNED OFF PRIOR TO PLASTERING OF THE POOL OR SPA.**

d. Final.

(1) Structural Check.

- Sidewalks.
- Final grading.
- Location of equipment in conjunction with property lines, structures, and windows.
- General appearance of the pool, spa, and decks.
- Solar.
- Required Barriers

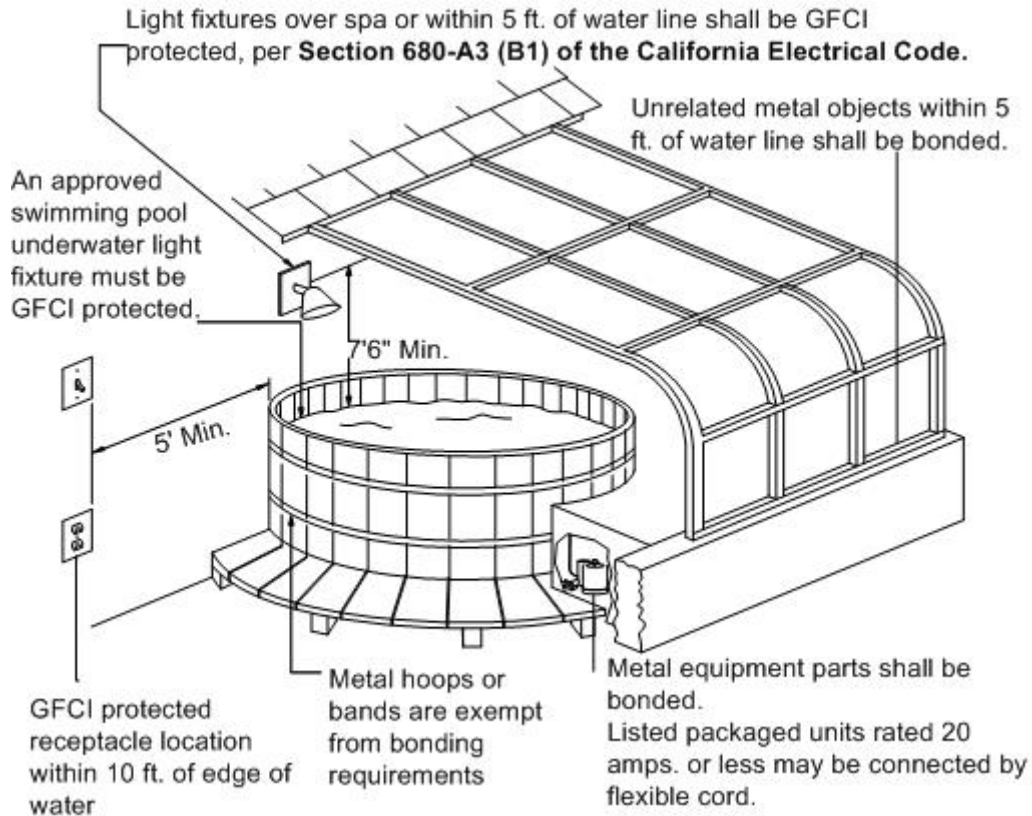
(2) Plumbing Check.

- Inspect all exposed piping for leaks.
- Approved gas valve.
- T & P relief valve on the heater (if required) and termination of the drain.
- Equipment secured to the equipment pad.
- Pool Cover Compliance with State energy laws.
- Proper gas connector.
- Prepare the PG&E utility tag. (If needed)
- Paint all PVC plumbing lines

(3) Electrical Check.

- Service Drop Clearance requirements.
- Grounding and bonding complete.
- Main panel indexed at breakers.
- Proper operation of switches and receptacles.
- Installation of time clocks.

- Proper wire and breaker sizing.
- Required circuits GFCI protected.
- Pool light has low water cutoff.
- Pool or spa light properly GFCI Protected.



b. Lighting Fixtures, Lighting Outlets, and Ceiling Fans.

- (1) Lighting fixtures, lighting outlets and ceiling fans located over the spa or hot tub or within 5 feet (1.5 m) from the inside walls of the spa or hot tub shall be a minimum of 7 feet 6 inches (2.29 m) above the maximum water level and shall be protected by a ground-fault circuit-interrupter.

Exceptions:

- (1) Lighting fixtures, lighting outlets, and ceiling fans located 12 feet (3.66 m) or more above the maximum water level shall not require protection by a ground-fault circuit-interrupter.
- (2) Lighting fixtures meeting the requirements of items (a) or (b) below and protected by ground-fault circuit-interrupters shall be permitted to be installed less than 7 feet 6 inches (2.29 m) over a spa or hot tub.
  - a. Recessed fixtures with a glass or plastic lens and nonmetallic or electrically isolated metal trim, suitable for use in damp locations.
  - b. Surface-mounted fixtures with a glass or plastic globe and a nonmetallic body or a metallic body isolated from contact. Such fixtures shall be suitable for use in damp locations.

## Chapter 16.36 of the Sacramento County Code

### Article 1

#### Barriers for Swimming Pools, Spas and Hot Tubs.

### 16.36.100 General.

The provisions of this article apply to the design and construction of barriers for swimming pools located on the premises of Group R, Division 3 Occupancies.

### 16.36.120 Definitions.

For the purpose of this article, certain terms, words, and phrases are defined as follows:

- a. Above Ground/On-ground Pools.  
See definition of "Swimming Pool."
- b. Approved Child Safety Device.  
This is a swimming pool safety device that has been tested and listed by UL and meeting UL 2017 standard, or any other independent testing agency that has been recognized and accepted by the Chief of Building Inspection, specifically for use as a swimming pool safety device, such as a tested and listed door alarm system or a tested and listed swimming pool cover. Refer to Section 3.i (Approved Pool Alarms)
- c. Barrier.  
A fence, wall, building wall, or combination thereof that completely surrounds the swimming pool and obstructs access to the swimming pool. **Excludes "no-climb fencing."**
- d. Grade.  
The underlying surface such as earth or a walking surface.
- e. Hot Tub.  
See definition of "Swimming pool."
- f. In-ground Pool.  
See definition of "Swimming pool."
- g. Separation Fence.  
A barrier which separates all doors of a dwelling unit with direct access to a swimming pool from the swimming pool.
- h. Spa.  
See definition of "Swimming pool."
- i. Swimming Pool.  
Any structure intended for swimming or recreational bathing that contains water over 18 inches deep. This includes in-ground, above ground, and on-ground swimming pools; hot tubs, portable and nonportable spas; and in-place wading pools.
- j. Swimming Pool, Indoor.  
A swimming pool which is totally contained within a residential structure and surrounded on all four sides by walls of said structure.
- k. Swimming Pool, Outdoor.  
Any swimming pool which is not an indoor pool.