



Plan Submittal – Swimming Pools, Hot Tubs and Spas

March, 2018

Purpose

This handout establishes a procedure for complete plan review submittals for proposed swimming pools, hot tubs and spas in private residential single-family homes (Group R-3 Occupancies). Enclosure provisions also apply to the design and construction of swimming pools based on the 2016 California Building Code (CBC), Chapter 31, and Section 3109. Approval must therefore be obtained from Building Safety & Inspection before commencing any work.

Permits Required

A building permit is required for the following type of construction:

- Indoor and outdoor swimming pools
- In-ground and above-ground spas or hot tubs
- Prefabricated pools installed entirely above-ground with a capacity greater than 5,000 gallons or 24 inches or greater in depth.

Definitions

Approved Safety Pool Cover – a manually or power-operated safety cover that meets all of the performance standards of the American Society for Testing and Materials (ASTM), in compliance with Standard F 1346-91.

Enclosure – a fence, wall or other barrier that isolates a swimming pool from access to the home.

Exit Alarms – devices that make audible, continuous alarm sounds when any door that permits access from the residence to the pool area that is without any intervening enclosure, is opened or is left ajar. Exit alarms may be battery operated or may be connected to the electrical wiring of the building.

The alarm shall sound continuously for a minimum of 30 seconds within seven seconds after the door and its screen, if present, are opened, the alarm shall be listed in accordance with UL 2017 and be

capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions; it shall be equipped with a manual means, such as a touchpad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall not last longer than 15 seconds. The deactivation switch shall be located at least 54-in above the threshold of the door.

Swimming Pool or Pool – any structure intended for swimming or recreational bathing that contains water over **24 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.

Safety Features

Whenever a permit is issued for construction of a new swimming pool at a private, single-family home, it shall be equipped with at least **one OR a combination** of the following safety features:

1. The pool shall be isolated from access to a home by an enclosure (refer to *Enclosure characteristics*).
1. The pool shall incorporate removable mesh pool fencing that meets (ASTM) Specifications F 2286 in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.
2. The pool shall be equipped with an approved safety pool cover.
3. All doors providing direct access from the home to the swimming pool shall be equipped with exit alarms on those doors providing direct access to the pool.
4. All doors providing direct access from the home shall be equipped with a self-closing, self-latching device with a release mechanism placed no lower than **54-in** above the ground.
5. Other means of protection may be used only if the degree of protection afforded is equal to or

greater than that afforded by any of the devices listed above.

Exempt Facilities* - safety features do not apply to any of the following: public swimming pools; hot tubs or spas with **locking safety covers** that comply with the American Society for Testing Materials – Emergency Performance Specification (ASTM-ES 13-89).

Enclosures

An enclosure shall have **all** of the following characteristics:

1. Any *access gates* through the enclosure shall open **away** from the swimming pool and be **self-closing** with a **self-latching** device placed no lower than **54-in** above the ground.
2. A minimum height of **60-in**. 3109.4.4.3
3. A maximum vertical clearance from the ground to the bottom of the enclosure of **2-in**.
4. Gaps or voids, if any, do not allow passage of a sphere equal to or greater than **4-in** in **diameter**.
5. An outside surface free of protrusions, cavities or other physical characteristics that would serve as handholds or footholds that could enable a child below the age of five years to climb over.

Agreements to Build & Notice of Provisions

Any person entering into an agreement to build a swimming pool shall give the consumer notice of the requirements of this article (*Health and Safety Code Section 115924; AB 3305, Statutes 1996, C.925*).

Plan Submittal for Construction

Quantity

- Three (3) complete sets of plans must be submitted to the Building Department; a completed Application for Permit and plan check fee paid. Plans will be distributed to Planning, Public Works, and Building Inspection & Safety for review.
- Two (2) sets of wet-stamped and signed calculation reports and steel schedules prepared by a professional engineer licensed in the State of California.
- Three (3) site plans for Job Copy, File Copy, and the Assessor's office (11-in x 17-in only).

Plan Review Timelines

Review is typically over the counter for most conforming swimming pools and spas provided the submitted information is complete.

If the plans do not conform to the above requirements (such as for new products or alternative engineering practices), allow a minimum of **ten (10)** business days for the first plan review; **five (5)** business days for any subsequent reviews.

Minimum Plan Requirements

Size

Minimum 11-in x 17-in and maximum 18-in x 24-in plans drawn to scale, fully dimensioned and legible.

Information

A. Swimming Pools

- **Site plans** shall include lot dimensions, location of all existing building structures, public utility easements, any existing/proposed retaining walls and drainage.

Setback distances from all property lines and building structures to the swimming pool; include any glazing surfaces (*provide tempered glazing for windows and doors less than 60-in above the pool side and within 5-ft to water's edge of pool*).

Enclosure information such as fences, gates, doors exiting to pool area - including garage doors - and exit alarm mechanism.

Location of pool equipment (*5-ft minimum to adjacent property lines*), disconnects and breaker size; receptacle outlets within 20-ft of the pool; type of conduit (*metal or plastic*); existing service panel and amperage (*underground or overhead*); location and size for gas meter.

Location of A/C or other mechanical equipment within proximity of pool location (*5-ft minimum distance or separated by a permanent barrier*)

Location of hose bibs within 20-ft of the pool and depth of pool.

- **Structural plans** – construction details and steel schedule wet-stamped and signed by a licensed engineer.
- **Approvals** – approval from Home Owners Association is highly recommended.

B. Self-contained (Portable) Hot Tubs & Spas

- **Site plan** shall include lot dimensions, locations of all existing building structures, easements and other utilities.

Setback distances from all property lines and building structures to the hot tub/spa.

If the self-contained spa or hot tub is equipped with a listed safety cover, the enclosure requirements noted above are exempted.

Location of disconnects and breaker size; receptacle outlets within 20-ft of the hot tub/spa;

type of conduit (*metal or plastic*); existing service panel and amperage.

Inspections 408-866-2706

A. Swimming Pools

- **Pre-gunite:** Structural check involves location, excavation and steel placement; equipment pad; grading and removal of excess soil.

Plumbing check involves return line, fill line and all other piping (minimum 35# psi test pressure); gas piping installation and test (minimum 10# psi test pressure); any sewer or water line reroute. Allow a soil embedment depth of 12-in when using plastic PVC in the circulating system, painted with latex paint to provide protection from sun. Any discharge from the swimming pool for the purpose of lowering the water level, must be from a hose connected to a hose bib on the filter or separation tank with drainage to an acceptable location.

Electrical check involves service drop clearance requirements; bonding of pool or spa steel, underwater light fixture forming shells, diving boards, slide, fill line, equipment and metallic objects located within 5-ft of inside walls of pool or spa; electrical conduit; verify approved listings for underwater light fixtures forming shells

Fiberglass and vinyl liner pools must have alarms and barriers at this time.

- **Pre-deck:** (Grid Structure) the equipotential bonding grid shall cover the contour of the pool and the pool deck extending (3 ft) horizontally from the inside walls of the pool. (Refer to the 2016 CEC Article 680.26 for equipotential Bonding).
- **Pre-plaster:** Electrical check involves underwater light fixtures forming a shell, proper bonding, and listed potting compound, encapsulating and covering requirements; required circuits GFCI protected

In addition prior to filling pool with water, ensure all barrier elements are installed (i.e., fence, gates, alarms on doors).

Sign off for barrier requirements is required prior to plastering of pool/spa.

- **Final:** Final grading; location of equipment in conjunction with property lines, structures and windows.

Plumbing check inspection for all exposed piping to detect any leaks; approved gas valve; equipment is secured to equipment pad;

compliance with State energy laws and solar (if any); proper gas connector; prepare PG&E utility tag.

Electrical check inspection for complete grounding and bonding; main panel indexed at breakers; proper operation of switches and receptacles; installation of time clocks; proper wire and breaker sizing; required pool/spa circuits GFCI protected; pool light has low water cutoff.

No excavation or structural portion of the pool to be located in any Public Utility Easements.

B. Self-contained (Portable) Hot Tubs & Spas

- **Pre-cover:** Required if any plumbing (gas line) or electric lines are placed underground.
- **Final:** Enclosure requirements such as fence, gates, alarm, doors OR locking safety covers; all equipment operational.

2016 California Energy Code Requirements:

- **Filtration Pump requirements:** Pools of less than 13,000 must have a pump sized to have a maximum flow rate of less than 30 gmp. Pools over 13,000 must have a pump sized using the following equation:
$$\text{Max Flow Rate (gpm)} = \frac{\text{Pool Volume (gal)}}{360\text{min.}}$$
- **Pool Size in Gallons:** The pool size, in gallons, must be on the plans.

Refer to the 2016 California Energy Code Section 150 (p) for additional requirements, listed below.

Fees

Building fees are based on the total value of all construction work (including labor and materials). Consult with a permit technician for details.

Application Forms

An Application for Permit form may be requested at the Building Safety & Inspection office located at:

Address: 70 N 1st Street, Campbell CA

Phone: (408) 866-2130

Hours: Monday through Friday
8 am – 5 pm

Inspection line 24 hour automated
You have until 12:00 midnight for
the next business day.

408-866-2706

2016 California Energy Code Section 150 (p)

Pool Systems and Equipment Installation. Any residential pool system or equipment installed shall comply with the applicable requirements of Section 114, as well as the requirements listed in this section.

1. Pump sizing and flow rate.

- A. All pumps and pump motors installed shall be listed in the Commission's directory of certified equipment and shall comply with the Appliance Efficiency Regulations.
- B. All pump flow rates shall be calculated using the following system equation:
$$H = C \times F^2$$
Where:
H is the total system head in feet of water.
F is the flow rate in gallons per minute (gpm).
C is a coefficient based on the volume of the pool:
0.0167 for pools less than or equal to 17,000 gallons.
0.0082 for pools greater than 17,000 gallons.
And;
- C. Filtration pumps shall be sized, or if programmable, shall be programmed, so that the filtration flow rate is not greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater; and
- D. Pump motors used for filtration with a capacity of 1 hp or more shall be multi-speed; and
- E. Each auxiliary pool load shall be served by either separate pumps or the system shall be served by a multi-speed pump; and
EXCEPTION to Section 150(p)1E: Pumps if less than 1 hp may be single speed.
- F. Multi-speed pumps shall have controls which default to the filtration flow rate when no auxiliary pool loads are operating; and
- G. For multi-speed pumps, the controls shall default to the filtration flow rate setting within 24 hours and shall have an override capability for servicing.

2. System piping.

- A. A length of straight pipe that is greater than or equal to at least 4 pipe diameters shall be installed before the pump; and
- B. Pool piping shall be sized so that the velocity of the water at maximum flow for auxiliary pool loads does not exceed 8 feet per second in the return line and 6 feet per second in the suction line; and
- C. All elbows shall be sweep elbows or elbow-type that has a pressure drop of less than the pressure drop of straight pipe with a length of 30 pipe diameters.
- D. At least 36 inches of pipe between the filter and the heater must be provided for future solar heating equipment.

3. Filters. Filters shall be at least the size specified in NSF/ANSI 50 for public pool intended applications.

4. Valves. Minimum diameter of backwash valves shall be 2 inches or the diameter of the return pipe, whichever is greater.

Swimming Pools, Hot Tubs and Spas Checklist

Quantity of Plans

- Two (2) complete sets of stamped and wet-signed plans including construction details/steel schedule with a Site Plan attached to each set.
- One additional (1) Site Plan copy for the Assessor's Office.

Site Information

Site Plan to include the following items:

- Dimensions of all property lines; north arrow; distance between the pool/spa and the property lines.
- Location of pool equipment must be at least **5-ft** from adjacent property lines (Planning).
- Location of A/C or other mechanical equipment within proximity of pool must be a minimum distance of **5-ft**, **OR** be separated by a permanent barrier. CEC 680-26(a)
- Location and type of electrical service, (underground or overhead). 680-8(a) overhead conductors shall meet clearance requirements per table 680-8, 22.5' required within 6' of waters edge.
- Distance between pool and house as well as any glazing surfaces, including windows and doors of residence (**tempered** glazing for windows and doors less than 60-in above the pool side and within 5-ft to water's edge of pool).
- Location of electrical panel and gas meter.
- Exit alarms** for any doors leading from the dwelling to the pool area, including garage doors.
- Pool fencing indicating height of fence, height of gate latch, direction of gate swing (must swing **away** from pool) and indication that fence gate is **self-closing** and **self-latching** (vehicle gates leading to pool area must also be self-closing). If fencing is other than a wood-fence, it must be no more than 2-in from the adjacent ground and have rails spaced no more than 4-in apart.
- Show **depth** of the pool on the plans

Campbell Muni Code 18.24.030 (e)

Runways or Decks. Runways, at least thirty inches wide for private pools and four feet wide for public pools, shall be placed adjacent to the pool. Runways shall be sloped one-fourth inch to the foot away from the pool, and should be of a material approved by the building official, which shall be of non-slip texture and easily cleaned. Grading around the pool area shall be such that the surface runoff shall be diverted from the pool.

2016 California Energy Code Requirements:

- Pool Size in Gallons:** The pool size, in gallons, must be on the plans.

2016 California Electrical Code Requirements:

- Equipotential Bonding Grid:** Information regarding bonding must be on the plans. Note: Perimeter Surfaces shall extend (3 ft) horizontally beyond the inside walls of the pool and shall include **unpaved surfaces** as well as poured concrete and other types of paving. Note: reinforcing steel and copper conductor grids are required to be attached to the pool structure at minimum of (4) points uniformly spaced around the perimeter of the pool.

Structural Information Construction details/steel schedule; structural details appropriately highlighted. Plans stamped and wet-signed by a California licensed engineer.