



City of Long Beach
Department of Development Services
Building and Safety Bureau

Swimming Pool and Spa

Information
Bulletin

BU-022

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The purpose of this Information Bulletin is to assist owners, design professionals, and contractors in understanding and complying with the design and construction requirements for swimming pools and spas in the City of Long Beach. This Information Bulletin summarizes the specific pool safety features required by the State and City as part of the permit for swimming pools and spas. In addition, it is the intent of this Information Bulletin to increase awareness of the hazards associated with swimming pools and the appropriate pool safety features to install that will help ensure child safety.

I. DEFINITIONS

For the purpose of enforcement, the following terms in this Information Bulletin shall apply when a permit is issued.

1. "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and above-ground structures and includes, but is not limited to, hot tubs, spas, portable spas, and nonportable wading pools.
2. "Public swimming pool" means a swimming pool operated for the use of the general public with or without charge, or for the use of the members and guests of a private club. Public swimming pool does not include a swimming pool located on the grounds of a private single-family home.

Note: Example of public swimming pools include those located in the following: commercial buildings, hotel, motel, resort, automobile and trailer park, automobile court, mobile home park, campground, duplex, apartment house, condominium, townhouse, lot with 2 or more dwelling units, homeowner association, club, community building, public or private school, gymnasium and health establishment.

3. "Private swimming pool" means a swimming pool, permanent or portable, which is intended for noncommercial use accessory to a single-family dwelling and available only to the family of the household and their guests.

II. GENERAL REQUIREMENTS

1. Permit Requirements.
 - a. Public Swimming Pools. All public swimming pools and spas shall obtain separate building, electrical, and plumbing permits.
 - b. Private Swimming Pools. All private swimming pools and spas shall obtain combination-building permits.

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- c. Pool Enclosures. All pool enclosures constructed of wood, masonry, concrete, corrosion-metal or chain link shall obtain a separate building permit.

Note: Approved construction material for fences include wood, masonry, concrete, corrosion-metal or chain link fence. Pool enclosures shall be properly maintained, kept vertical, uniform and structurally sound.

- d. Permit Exceptions. Permits are not required for the following swimming pools or spas or pool enclosures:
- (i) Swimming, bathing and wading pools not over 2 feet in depth and not having a surface area exceeding 250 square feet, where there is no electrical or plumbing installation. (LBMC Section 18.04.020.B.16)
 - (ii) Prefabricated swimming pools accessory to a Group R-3 occupancy (single-family dwellings and duplexes) in which the pool walls are entirely above the adjacent grade if the capacity does not exceed 5,000 gallons; it contains no plumbing, electrical, or mechanical installations regulated by this title; and is not in violation of Title 21 zoning regulations. (LBMC Section 18.04.020.B.17)
 - (iii) Hot tubs or spas with locking safety covers that comply with the American Society for Testing Materials-Emergency Performance Specification (ASTM-ES 13-89). (CBC Section 3109.4.4.5 Item 2)
- e. Additional Sub-trade Permits: Any additional gas or electrical outlets installed for any of the exception outlined in item (d) above shall obtain separate plumbing or electrical permits.

2. Plan Submittal Requirements.

- a. Number of Plans. Two sets of building plans and one set of structural calculation is required for all swimming pools or spas at the time of plan submittal and permit issuance. Each set of building plans shall include a fully dimensioned plot plan, which shows the location of the pool or spa, pool enclosure, and all accessory equipments and their setbacks to all adjacent buildings, property lines, and slopes.

Exception: The Building Official may waive the requirement for calculation when a valid standard swimming pool plan approved by a recognized agency is used. An agency approval number for the standard plan is required and must be based upon the current code.

Three sets of electrical plans are required for all public swimming pools or spas and accessory equipments.

Two sets of plumbing plans are required for all public swimming pools or spas. Plans should provide distance from gas meter to pool equipment, including B.T.U. rating for each equipment, and all gas pipe sizes and types. Separate

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submittal and approval from the Health Department is required for water backflow devices for pool make-up water.

Note: Pursuant to the requirement of the Long Beach Gas and Oil Department, 1,000 B.T.U. = 1 C.F.H. shall be used to determine gas pipe size.

- b. Signatures on Plans. Building plans and calculations shall be signed and stamped by a registered design professional (i.e., architect or engineer) licensed in the State of California.
 - c. Expansive or Uncertified Fill Soils. Building plans shall indicate “Expansive Soil” or “Uncertified Fill Soil” and shall comply with the structural design criteria of this Information Bulletin and the Code, when applicable.
3. Location of Swimming Pools. The swimming pools shall be located as follows:
- a. Zoning Code Requirements. All pools shall comply with the use and location requirements of the Long Beach Zoning Code. Pools shall not be located in any required yard where fences 5 feet in height are prohibited or the required front yard.
 - b. Building Code Requirements. The setback requirements for swimming pools from the bottom of ascending slopes and the top of descending slopes shall be $H/4$ and $H/6$, respectively, where H is the height of the slope per CBC Section 1808.7.3.
 - c. Glazing in Hazardous Locations. Glazing in walls of a building and fences used as the barrier for swimming pools and spas shall comply with the requirements of CBC Section 2406 when all of the following conditions are present:
 - (i) The bottom edge of the glazing is less than 60 inches above the pool-side of the glazing.
 - (ii) The glazing is less than 5 feet from swimming pool or spa water’s edge.
4. Special Requirements for Swimming Pools.
- a. Public Swimming Pool Deck. All public swimming pools shall provide a continuous, unobstructed, minimum 4 foot-wide slip-resistant non-abrasive (walking or lounging) deck area of concrete or like material flush with the top of the pool shell wall and extending completely around the pool. The deck shall be measured from the poolside edge of the coping lip. The deck shall extend 4 feet on both sides and rear of any diving board or slide and their appurtenances.

Note: There are exceptions and additional requirements in CBC Chapter 11B and Chapter 31B.

- b. State Accessibility Regulations. All public swimming pools and accessory structures shall be accessible to person with disabilities and comply with the

applicable provisions of CBC Chapter 11A or 11B.

- c. Long Beach Health Department (LBHD). All plans to construct public swimming pools shall be approved by the LBHD prior to issuance of the building permit. For more LBHD related information on public swimming pool, please go to www.longbeach.gov/health/eh/forms.asp.

Exception: LBHD approval is not required for public swimming pools on lots with three or fewer dwelling units.

- d. Long Beach Gas and Oil Department (LBGO). All plans to construct public or private swimming pools shall obtain approval from the LBGO for the sizing of gas piping supplied to pool heaters or other external gas appliances prior to issuance of the building permit. LBGO may require that the gas meter be upgraded. For more LBGO related information on pool heater installation or gas meter upgrade, please go to www.longbeach.gov/lbgo/engineering and obtain the "Pool Heater Installation Checklist."

III. POOL ENCLOSURE AND SAFETY FEATURES REQUIRED

1. Private Swimming Pool. All private swimming pools or spas shall be equipped with at least one of the following drowning prevention safety features, per CBC Section 3109.4.4.2:
 - a. The pool shall be isolated from access to a home by an enclosure that meets the requirements of CBC Section 3109.4.4.3. An enclosure shall have all of the following characteristics:
 - (i) Any access gates through the enclosure open away from the swimming pool, and are self-closing with a self-latching device placed no lower than 60 inches above the ground.
 - (ii) A minimum height of 60 inches.
 - (iii) A maximum vertical clearance from the ground to the bottom of the enclosure of 2 inches.
 - (iv) Gaps or voids, if any, do not allow passage of a sphere equal to or greater than 4 inches in diameter.
 - (iv) 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 5 years to climb over.
 - (v) Where the enclosure is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches, the horizontal members shall be located on the swimming pool side of the fence. (CBC Section 3109.4.1.3)
 - (vi) Where the enclosure is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches or more, spacing between vertical members shall not exceed 4 inches.

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- (vii) Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1.75 inches in width. (CBC Section 3109.4.1.4)
 - (viii) Maximum mesh size for chain link fences shall be 2.25 square inches unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 1.75 inches. (CBC Section 3109.4.1.5)
 - (ix) Where the enclosure is composed of diagonal members, the maximum opening formed by the diagonal members shall be no more than 1.75 inches. (CBC Section 3109.4.1.6)
 - (x) Enclosure shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.
- b. The pool shall incorporate removable mesh pool fencing that meets American Society for Testing and Materials (ASTM) Specifications F 2286 standards in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.
- c. The pool shall be equipped with an approved safety pool cover that meets all requirements of the ASTM Specifications F 1346.
- d. The residence shall be equipped with exit alarms on those doors or windows providing direct access to the pool. The exit alarms shall have the following characteristics:
- (i) Doors with direct access to the pool through that wall shall be equipped with an alarm that produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm shall be equipped with a manual means, such as touchpad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall last for not more than 15 seconds. The deactivation switch shall be located 54 inches or more above the threshold of the door. (CBC Section 3109.4.1.8)
 - (ii) Exit alarms shall be permanently attached to the door at a minimum of height of 54 inches above the floor. Exit alarms shall not be permitted when they are attached to the door in a manner where it may be easily removed without the use of tools. The use of "Velcro Alarms" shall not be allowed. "Velcro Alarms" are those exit alarms attached to the door by use of velcro or self-adhesive. Exit alarms may be placed solely on the companion screen door provided the screening is substantially protected to preclude damage and tearing.
 - (iii) Exit alarms may be battery operated or may be connected to the electrical wiring of the building.
 - (iv) Any first floor window that is not separated from a pool by a complying enclosure and has a sill height less than 48 inches above the interior floor

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shall be equipped with an exit alarm. Exit alarm may be placed solely on the companion window screening provided the screening is substantially protected to preclude damage and tearing.

- e. All doors providing direct access from the home to the swimming pool shall be equipped with a self-closing, self-latching device with a release mechanism placed no lower than 54 inches above the floor.
 - f. Swimming pool alarms that, when placed in pools, will sound upon detection of accidental or unauthorized entrance into the water. These pool alarms shall meet and be independently certified to the ASTM Standard F 2208 "Standards Specification for Pool Alarms" which includes surface motion, pressure, sonar, laser, and infrared type alarms. For purposes of this article, "swimming pool alarms" shall not include swimming protection alarm devices designed for individual use, such as an alarm attached to a child that sounds when the child exceeds a certain distance or becomes submerged in water.
 - g. The Building Official may consider other means of protection, if the degree of protection afforded is equal to or greater than that afforded by any of the devices set forth above, and have been independently verified by an approved testing laboratory as meeting standards for those devices established by the ASTM or the American Society of Mechanical Engineers (ASME).
2. Public Swimming Pool. All public swimming pools or spas shall be enclosed by a fence, portion of a building, wall or other approve durable enclosure (CBC Section 31B as adopted or amended by the Health Department). An enclosure shall have all of the following characteristics per CBC Section 3118B.1 (unless determined otherwise by the Health Department):
- a. The enclosure shall have a minimum effective perpendicular height of 5 feet. Enclosure shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the enclosure.
 - b. Openings, holes or gaps in the enclosure, doors and/or gates shall not allow the passage of a 4-inch diameter sphere. The bottom of the enclosure shall be within 2 inches of the finished grade.
 - c. The enclosure shall be designed and constructed so that it cannot be readily climbed by small children. Horizontal and diagonal member designs, which might serve as a ladder for small children, are prohibited. Horizontal members shall be spaced at least 48 inches apart. Chain link may be used, provided that openings are not greater than 1-3/4 inches measured horizontally. The wire should not be less than 11 gauge.
 - d. Gates and doors opening into the pool enclosure shall meet the following specifications (CBC Section 3118B.2):
 - (i) Be equipped with self-closing and self-latching devices,

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- (ii) Open outward away from the pool,
 - (iii) Hand-activated door- or gate-opening hardware shall be located at least 3-1/2 feet above the deck or walkway,
 - (iv) Be capable of being locked during times when the pool is closed,
 - (v) Exit door shall comply with CBC Chapter 10, and
 - (vi) At least one means of egress without a key for emergency purposes and clearly and conspicuously labeled in letters at least 4 inches high "EMERGENCY EXIT."
3. Driveway Gates. Driveway gates are not permitted as part of the pool enclosure unless all of the following conditions are met:
- a. The driveway gate shall be equipped with an electric gate-operating device that is approved by a recognized electrical testing agency.
 - b. The electric gate-operating devices shall be provided with a safety mechanism to interrupt and recycle the device, should the gate become blocked. The electric gate operating devices shall be provided with a time delay-closing device, which is set and maintained to activate a maximum of 20 seconds after the gate has been opened.
 - c. No manual control or override mechanism shall be installed on or in connection with the gate-operating device.
 - d. The driveway gate shall open outward away from the pool.

IV. POOL EQUIPMENT AND DRAINAGE

- 1. Pool Equipment. Plans shall show location of all pool equipments. Every swimming pool or spa shall be equipped with an approved filter unit and drain and shall comply with the requirements of the California Plumbing Code (CPC) and the Long Beach Municipal Code (LBMC).
- 2. Pool Drainage. In accordance with the Long Beach Water Department's requirements and the LBMC Chapter 18.61 NPDES and SUSMP regulations, drainage to the sanitary sewer or storm drain system shall be as follows:
 - a. Periodic Draining of Swimming Pool. Dechlorinated swimming pool water from periodic draining are allowed to discharged into the storm drain system per LBMC Section 18.61.030.A Item 14.

Exception: Rising pool water due to rain may be discharged to the sewer system to lower the water level without obtaining approval from the Water Department. If the pool water must be drained completely for any reason, it should be dechlorinated and discharged into the storm drain system.

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- b. **Deck Drainage.** Uncontaminated water on decks built around the swimming pools or spas shall not drain into the sanitary sewer system and should be conducted to the storm drain system via non-erosive device.
 - c. **Other Types of Drainage.** All other swimming pool, spa or filter backwash discharges, including open and unenclosed shower or washing area adjacent to the pool for general rinsing, shall be discharged into the sanitary sewer system.
 3. **Entrapment Avoidance for Private Swimming Pool.** Whenever a building permit is issued for the construction of a new swimming pool or spa, the pool or spa shall meet all of the following requirements:
 - a. The suction outlet of the pool or spa for which the permit is issued shall be equipped to provide circulation throughout the pool or spa as prescribed in paragraph (b).
 - b. The swimming pool or spa shall have at least two circulation drains per pump that shall be hydraulically balanced and symmetrically plumbed through one or more "T" fittings, and that are separated by a distance of at least three feet in any dimension between the drains. Suction outlets that are less than 12 inches across shall be covered with anti-entrapment grates, as specified in the ASME/ANSI Standard A 112.19.8, that cannot be removed except with the use of tools. Slots or openings in the grates or similar protective devices shall be of a shape, area, and arrangement that would prevent physical entrapment and would not pose any suction hazard to bathers.
 - c. Any backup safety system that an owner of a new swimming pool or spa may choose to install in addition to the requirements set forth in subdivisions (a) and (b) above shall meet the standards as published in the document, "Guidelines for Entrapment Hazards: Making Pools and Spas Safer," Publication Number 363, March 2005, United States Consumer Product Safety Commission.

Whenever a building permit is issued for the remodel or modification of an existing swimming pool, toddler pool, or spa, the permit shall require that the suction outlet of the existing swimming pool, toddler pool, or spa be upgraded so as to be equipped with an anti-entrapment cover meeting current standards of the American Society for Testing and Materials (ASTM) or the American Society of Mechanical Engineers (ASME).

V. STRUCTURAL DESIGN

1. **General Structural Design Requirements.** The pool shall be designed in accordance with the latest code requirements and the following:
 - a. Pneumatically applied mortar (shotcrete) pools shall be designed, tested, and inspected in conformance with CBC Section 1913.

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- b. Gunite may be used for structural purposes, provided it conforms to all applicable requirements of CBC Section 1913 and shall require continuous inspection as required for shotcrete per CBC Section 1704.4 and Table 1704.4. The design and placement of rebar in gunite pools shall be the same as that specified for shotcrete construction.
 - c. Minimum concrete compressive strength, $f'c$, for shotcrete or gunite, shall be 2,500 psi.
 - d. When casting against the earth, the reinforcing steel in gunite or shotcrete pools shall have a minimum cover of 3 inches per ACI-318 Section 7.7.1.
2. Wall Design. Pool walls shall be designed in accordance with the latest ACI-318 requirements and the following:
- a. Pool walls shall be designed for earth pressures as specified in CBC 1610.1 and ASCE 7-05 Section 3.2.1, designed for expansive soil as specified in CBC 1808.6 and this Information Bulletin, or per recommendation in soils report.
 - b. Hydrostatic pressure shall be used in an outward direction as a design criterion where concrete is not deposited against natural undisturbed earth or approved compacted fill.
 - c. Minimum required reinforcing steel in either direction shall be 1/10 of one percent of the wall cross-sectional area with a maximum spacing of 18 inches. (ACI-318 Sections 14.3.5 & 14.3.6)
3. Pools in Expansive Soil. The following minimum construction requirements will be required for all swimming pools located in expansive soil:
- a. All pools shall be provided with a concrete or equally impervious deck sloping away from the pool with a minimum width of 4 feet and having a lip extending 6 inches below the bottom of the deck at its outer edge. All joints in the deck and coping shall have approved permanent resilient waterproof seals. The coping shall be set in a solid bed of mortar.

Exception: The impervious deck may be omitted, provided the pool is designed for lateral earth pressure of $P = 62.4H + P(s)$; and the bond beam has a thickness of not less than 12 inches and is reinforced with a minimum of 3 #4 bars in each face. The soil around the pool shall slope away from the pool to prevent ponding; or a drainage system shall be provided to collect surface water.

- b. To determine the lateral earth pressure on the pool walls, the following formula shall be used:

$$P = 45H + P(s) \text{ but not less than CBC 1610.1 and T-1610.1, where:}$$

P = lateral pressure in pounds per square foot.

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H = vertical distance in feet below the ground surface.

P(s) = lateral pressure due to any superimposed surcharge.

- c. The design of bond beams and the thickness and amount of reinforcing steel in the bottom of pools shall be given special consideration. Bond beams shall have a minimum of 4 No. 3 bars.
4. Pools in Uncertified Fill Soils. The Department may issue permits for “floating type” swimming pools when the following conditions are complied with:
- a. A favorable recommendation from a soils or geotechnical engineer is required. Recommendation in the soils report shall be based upon findings in the field relative to the materials making up the fill, the density, containment, drainage factors, and additional conditions which may affect the pool structure or its foundation.
 - b. The pool is designed under the assumption that it receives vertical support from the soil lying under the pool bottom. The limits of the supporting soil shall be below a line drawn around the perimeter of the pool and located on the bottom of the pool where a line sloping at 33 degrees with the horizontal is tangent to the pool bottom.
 - c. Pool walls shall be designed assuming no support from the surrounding soil as well as a 30 pounds per cubic foot equivalent fluid pressure acting inward.
 - d. All water connections including both inlet and outlet shall be flexible in nature so that some differential settlement between pool and utilities may take place without causing leaks.
 - e. The soils/geotechnical engineer shall verify in the field the capability of the soil to support the pool and that the construction is in accordance with the recommendation in the soils report.