City of Huntington Beach

Department of Community Development

SWIMMING POOL, SPA, HOT TUB REQUIREMENTS & GUIDELINES

2000 Main Street, Huntington Beach, CA 92648
Office: (714) 536 - 5241 Fax: (714) 374 - 1647

(Single Family Residential Only)

PLAN REVIEW # _____
Job Address _____
Owner _____
Designer _____

Please check as applicable: ☐ Pool Only ☐ Spa Only ☐ Pool and Spa

☐ Rock Formations/Slides ☐ Other

PLAN CHECK REQUIREMENTS

D E F I N I T I O N: **"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 non-portable wading pools.**

D Provide name, address and phone number on the plans for:
- o Owner
- o Plan preparer
- o Engineer/Architect
- o Contractor

D Provide a complete site plan showing the following *(Also refer to page 13 for example)*:
- o Minimum site plan size 11"x17" (Ledger)
- o Must show entire property (structure) with property lines clearly identified to scale---(recommended 1/8" scale).
- o Show proposed pool, spa, hot tub, any rock formations/slides shape, dimension and location to show setbacks and clearances from existing and proposed structures.
- o Yard drainage – All drainage shall be collected and conveyed to the public way without draining onto adjacent neighbors. See 2010 CRC section 403.1 for site drainage requirements.
- o Show all pool barriers and gates location, show heights and description/type of fencing with a cross-section detail. See Pool/Spa Safety Fence and Safety Barrier section for specific requirements.

  NOTE: If there is a raised bond beam or similar design to create a planter area adjacent to an existing block wall/fence, provide a cross-section and construction details to convert existing block wall/fence into new retaining wall.
- o Location of pool/spa equipment and distance to property line.
  - Minimum 30 inches for access from property line.

  NOTE: All equipment must be screened from visibility of all sides per Huntington Beach Zoning Subdivision Ordinance 230.76.
- o Pool/spa heater vent termination:

- Minimum four feet below or horizontally to any window or door.
- Not less than one foot above any window or door.

- If occurs, show topography of slopes of the site indicating top and bottom of slopes to adjacent pool/spa and adjacent (neighbors) properties.
- Indicate all easements, overhead utilities and electrical service drops or specify underground utilities.

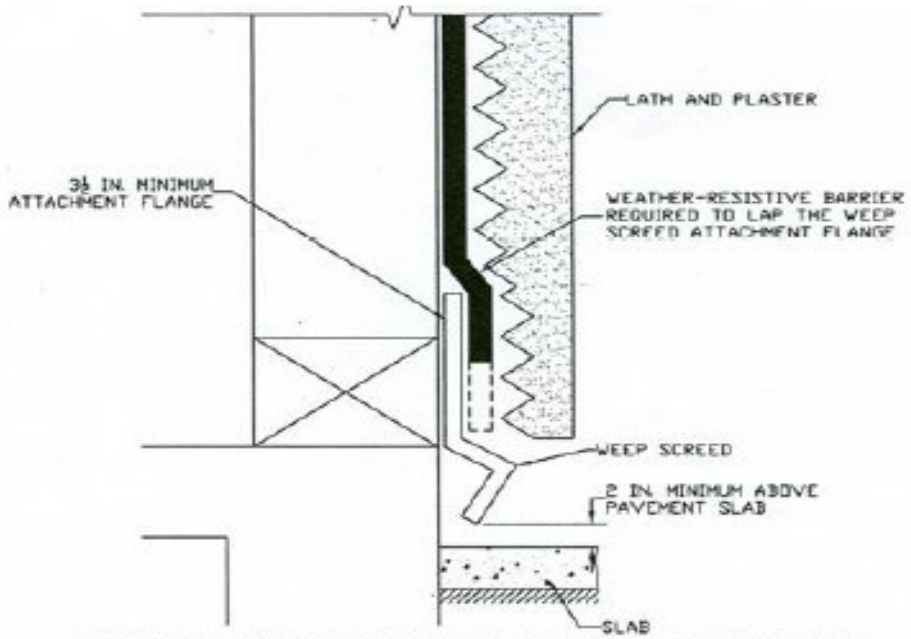
D A PRE-SITE INSPECTION will be required prior to the plan review process to determine:

- That existing conditions of all retaining walls, block walls, fences, R/V access openings and gates are accurately reflected on the construction document.
- Existing conditions on adjacent properties, if any, that may cause a climbable/ladder-effect into the proposed pool/spa. See pool/spa fencing requirements for more information.
- If any barriers including gates have ornamental patterns that do not comply with pool/spa fencing provisions.
- Verify if any glazing requirements are needed such as tempered glass or safety film if water's edge is less than five feet to house.
- Pool equipment locations.
- Verify any overhead or underground utilities.
- Verify if any electrical switch(s), receptacle(s), metal parts, or panel(s) exist where they are prohibited, or where they will need to be bonded within five feet of the pool/spa.

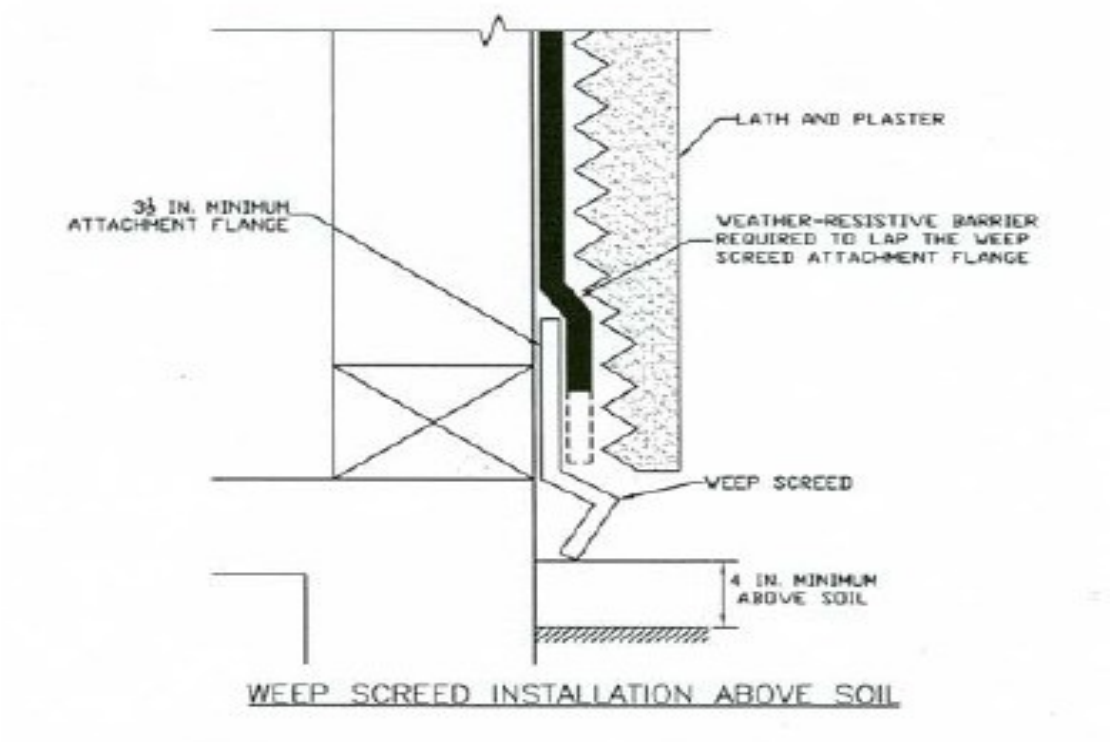
D All new walls and fences above 42 inches and all new retaining walls above 24 inches (measured from bottom of footing) shall require a separate building permit. Information pertaining to walls, fences and retaining wall shall be submitted prior to or along with the pool/spa plans. Minimum information shall include location, construction detailing and material specifications. If needed, structural calculations may be required and must be stamped and signed by a license Civil or Structural engineer.

D Clearly identify and distinguish between existing hardscape and landscape and new/proposed hardscape and landscape improvements (*i.e.: BBQ's, sinks, etc*). See the electrical section for new 2010 California Electrical Code requirements.

D When constructing hardscape and landscape adjacent to buildings, the required minimum distance between finished grade and bottom of stucco weep screed shall be maintained as follows:



WEEP SCREED INSTALLATION ABOVE PAVEMENT SLAB



D A license Civil, Structural, Geotechnical Engineer or Architect must approve the location of the pool by reviewing and stamping the site plan and all other sheets that are applicable to the project. The plan(s) shall be wet signed and stamped by the registered Engineer or Architect.

- Some in-ground fabricated pool/spa may require engineered plans.
- All pre-fabricated pool/spa are required to have recognized listings by approved listing agencies. **Not all approved listing agencies are listed below.**
  - ICC Report
  - IAPMO approval
  - LARR approval

*NOTE: As per **Huntington Beach Municipal Code Section 17.46.060 Construction Requirement** it states that "All swimming pool construction shall be in conformance with engineered design for expansive soils, unless a soils report by a registered engineer, approved by the building official, indicates otherwise."*

D The Engineer or Architect shall cross-reference all sections and details used on the pool/spa plans and delete those that are not used.

D If not a "Typical Standard Structural Detail," structural calculations for pool/spa (including retaining walls) must be prepared by a licensed Civil or Structural Engineer. Calculations should include all surcharges from slope, adjacent structures and vehicular traffic as applicable.

D Due to expansive soil in the City of Huntington Beach, pool and spa shells shall be designed and constructed with expansive soil details using lateral earth pressure of a minimum *45* pcf equivalent fluid pressure (or greater if required by a soils report).

D Specify on the plans that special inspection is required on pools/spa during gunite or shotcrete placement in accordance with 2010 California Building Code (CBC) Table 1704.4 (6 & 7) and 1913.

NOTE: The special inspector shall demonstrate that he or she is qualified to inspect the work by submitting evidence of appropriate certifications prior to reporting to the jobsite. The special inspector shall be present during the taking of the test specimens and placing of all shotcrete (gunite). The special inspector is required to provide continuous inspection of the placement of the reinforcement and shotcreting (guniting) and shall submit a statement indicating compliance with the plans and specifications. Strength (break) test reports shall be submitted prior to final inspection approval.

D **NOTE ON PLANS**: "Pool and spa guidelines shall be a part of the construction documents."

D **NOTE ON PLANS**: "All swimming pools/spas shall comply with all applicable codes such as the 2010 California Residential, Building, Mechanical, Electrical (Article 680), Plumbing, Energy (2008 Standards) Codes, 2009 Uniform Swimming Pool Code, and the Health and Safety Code Section 115920-115929."

D **NOTE ON PLANS**: "Audible alarms at door openings to pools/spas shall be at least 85 dbA when measured 10 feet away from the alarm mechanism and should sound for at least 30 seconds."

NOTE: ALL door alarm devices must be UL Listed and door alarm covers must be ASTM certified.

D Pre-site inspection form must be attached to plans and all outstanding safety barrier issues must be resolved prior to permit issuance.

INSPECTION REQUIREMENTS

D **Overhead Wire Clearance**: Electrical service conductors and other overhead wiring cannot cross over pools/spa within 10 feet horizontally or a special cable must be installed. Please contact Southern California Edison for special cable installations.

D **Main Drain and Circulation**: The swimming pool/spa ***shall have at least two (2) 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***. Suction outlets that are less than 12 inches across shall be covered with **Anti-Entrapment** grates that cannot be removed except with the use of tools. Slots or openings in the grates or similar protective devices shall be of shaped, area and arrangement that would prevent physical entrapment and would not pose any suction hazard to bathers. Covers listed as complying with ANSI/ASME Standards A112.19.8 and A112.19.17 meet the **Anti-Entrapment** criteria.

- The Swimming Pool and Spa Safety Act requires that all suction outlet(s) of the pool/spa shall be upgraded so as to be equipped with an Anti-Entrapment cover meeting current ANSI or ASME Standards when a permit is issued for new or remodel of an existing pool/spa.

- Remodeling of an existing pool/spa includes structural modifications, additions, piping and equipment replacement.

- All circulating piping connected to the pool/spa system shall be pressure tested with a minimum of 35 lbs constant pressure for 15 minutes.

- An approved hydrostatic relief device shall be installed on **ALL** proposed pool/spa. Such as a minimum of 18 inches by 1 ½ inch I.P.S. perforated tube into

an 18x18x24 inch gravel sump with ¾ inch gravel.

D **Steel**: All reinforcing steel shall be of deformed bars conforming to ASTM—A615 grade. All pool/spa construction shall conform to expansive soil conditions.

NOTE: Minimum clearance between earth and steel shall be three inches.

D **Electrical Bonding**: All metallic parts of the pool structure, reinforcing steel, light fixture housings, metal ladders, diving boards and any other metal objects within five feet of pool's edge shall be bonded to an equipotential bonding grid with a minimum of a #8 gauge solid copper bond wire and **APPROVED** clamps such as EK16/EK17 direct burial clamps & SRGC46 grid connectors. *(Also refer to page 17 for example) ****NOT ALL APPROVED CLAMPS ARE LISTED ABOVE****

- Per 2010 California Electrical Code Article 680.26 (A), all equipotential bonding shall be provided and shall incorporate the following:
  - The parts specified in 680.26 (B) (1) through (B) (7) and 680.26 (C) shall be bonded together with a solid copper conductor, insulated, covered, or bare, not smaller than 8 AWG or rigid metal conduit of brass or other identified corrosion-resistant metal conduit.
  - Connection shall be made by exothermic welding or by listed pressure connectors or clamps that are labeled as being suitable for the purpose and are of stainless steel, brass, copper, or copper alloy.
  - Equipotential Bonding Section 680.26 (B) specifies which parts are required:
    - (1) **Conductive Pool Shells**: Bonding to conductive pool shall be provided as specified in 680.26 (B) (1) (a) or (B) (1) (b). Poured concrete, pneumatically applied or sprayed concrete, and concrete block with painted or plastered coatings shall all be considered conductive materials due to water permeability and porosity. Vinyl liners and fiberglass composite shells shall be considered to be nonconductive material.
      - (a) **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 680.26 (B) (1) (b).
      - (b) **Copper Conductor Grid**: A copper conductor grid shall be provided and shall comply with (b) (1) through (b) (4).
        - (1) Be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing.
        - (2) Conform to the contour of the pool and the pool deck.
        - (3) Be arranged in a 300-mm (12-in.) by 300-mm (12-in.) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 100-mm (4-in.)
        - (4) Be secured within or under the pool no more than 150-mm (6-in.) from the outer contour of the pool shell.
    - (2) **Perimeter Surfaces**: The perimeter surface shall extend for 1-m (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. Bonding to perimeter surfaces shall be provided as specified in 680.26 (B) (2) (a) or (2) (b) and shall be attached to the pool reinforcing steel or copper conductor grid at a minimum of four (4) points uniformly spaced around the

perimeter of the pool. For nonconductive pool shells, bonding at four (4) points shall not be required.

- (a) **Strucutural Reinforcing Steel**: Structural reinforcing steel shall be bonded in accordance with 680.26 (B) (1) (a).
- (b) **Alternate Means**: Where structural reinforcing steel is not available or is encapsulated in a conductive compound, a copper conductor(s) shall be utilizes where the following requirements are met:
  - (1) At least one minimum 8 AWG bare solid copper conductor shall be provided.
  - (2) The conductors shall follow the contour of the perimeter surface.
  - (3) Only listed splices shall be permitted.
  - (4) The required conductor shall be secured within or under the perimeter surface 100-mm (4-in.) to 150-mm (6-in.) below the subgrade.

- (3) **Metallic Components**: All metallic parts of the pool structure, including reinforcing metal not addressed in 680.26 (B) (1) (a), shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded.
- (4) **Underwater Lighting**: All metal forming shells and mounting brackets of no-niche luminaires shall be bonded.

  Exception: Listed low-voltage lighting systems with nonmetallic forming shells shall not require bonding.

- (5) **Metal Fittings**: All metal fittings within or attached to the pool structure shall be bonded. Isolated parts that are not over 100-mm (4-in.) in any dimension and do not penetrate into the pool structure more than 25-mm (1-in.) shall not require bonding.
- (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.

  Exception: Metal parts of listed equipment incorporating an approved system of double insulation shall not be bonded.

  - (a) **Double-Insulated Water Pump Motors**: Where a double-insulated water pump motor is installed under the provisions of this rule, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the bonding grid to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool bonding grid and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit.
  - (b) **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.

- (7) **Metal Wiring Methods and Equipment**: Metal sheathed cables and raceways, metal piping, and all fixed metal parts shall be bonded.
- (C) **Pool water**: An intentional bond of a minimum conductive surface area of 5806-mm^2 (9-in.^{2}) shall be installed in contact with the pool water. This bond shall be permitted to consist of parts that are required to be bonded in 680.26 (B).

IMPORTANT: Upon completion and inspector's approval of the above items, pool/spa may be gunited.

D **During Placement of Shotcrete/Gunite**: All swimming pools/spas utilizing shotcrete (gunite) will require special inspection in accordance with 2010 CBC Table 1704.4 (6 and 7) and 1913.

D **Underground Wiring Location** per 680.10: Underground wiring shall not be permitted under the pool or within the area extending 1.5-m (5-ft.) horizontally from the inside wall of the pool unless this wiring is necessary to supply pool equipment permitted by this article. Where space limitations prevent wiring from being routed a distance 1.5-m (-ft.) or more from the pool, such wiring shall be permitted where installed in complete raceway systems of rigid metal conduit, intermediate metal conduit, or a nonmetallic raceway system. All metal conduit shall be corrosion resistant and suitable for the location. The minimum cover depth shall be given in Table 680.10.

D **Gas Piping/Test**: Gas lines must be pressurized to 10 lbs of pressure and hold constant for a minimum of 15 minutes.

D Underground piping may be factory coasted steel pipe installed a minimum of 12 inches below grade. All metal pipe and fittings shall be wrapped with approved (UPC) 10 mil tape, ½ overlapped-double wrapped to six inches above grade (minimum 40 mil covering).

D A shut off valve must be installed within three feet of the heater. A flex gas line may not be used inside of the heater. Black steel iron pipe above grade must be painted to protect the pipe from corrosion.

- o **Receptor**: All pools/spas shall dispose of swimming pool waste water into a three inch P-Trap connected to the house sewer. The receptor shall be a minimum of six inches above grade. Cleanouts are required and a strainer must be provided on the inlet. Backwash drain lines shall not be less than 1 ½ inch in size and provide a two inch minimum air gap.

Exception: Spas less than 750 gallons need not discharge into a sewer system per HB Municipal Code.17.46.030.

D **Decking**: All pool/spa decks shall be designed and constructed for expansive soil conditions and have a minimum sand base with expansion joints every 100 square feet of deck. All reinforcing steel mesh or rebar shall be bonded with a common #8 gauge bare copper bond wire and **APPROVED** clamp. See Electrical Bonding section.

IMPORTANT: Above inspections must be approved by the inspector prior to covering or installation of a deck.

D **Equipment Foundations**: All mechanical equipment and pump motors shall be set on a concrete base or slab minimum of two inches above grade. All heating and electrical equipment shall be approved for outdoor use. Clearances for gas appliance and electric panels must be per Code. All motors shall be secured to the pad/foundation.

D **Electrical Final**: Receptacles shall not be installed less than six (6) feet of the inside face of the walls of the pool, one GFCI protected receptacle shall be within 20 feet of the pool.

Lighting fixtures shall not be permitted within five feet horizontally and five feet vertically of water's edge. See article 680.22 (A) (2 and 3) in the 2010 CEC for more clarifications. For low-voltage lighting requirements, see article 680.22 (C).

D All ground wires shall be properly connected to junction boxes. Motors and heaters are to be connected along with being properly grounded and bonded.

D All pump motors, blowers and lighting shall have G.F.C.I. protected circuits per article 680.22 (B). Disconnects shall be identified (within sight) for each per article 680.12.

D Pool / Spa lighting G.F.C.I. protected circuits. Pool/Spa light must function properly. Junction boxes must be listed by a national recognized third party testing agency for installation of swimming pools. The number of ground terminals shall be no fewer than one more than the number of conduit entries.

D Electric pool covers shall be protected by (G.F.C.I.).

D All electrical breakers installed for pool/spas shall be certified as to manufacturers installed torque requirements by a certified electrician or be torqued in the presence of the inspector.

D Luminaires, lighting outlets, and ceiling-suspended paddle fans shall comply with article 680.22 (C).

D Time switch or similar control mechanism is required for all pool/spa circulation. Pumps then can be set to run in off-peak electric demand period (unless required to operate an active solar pool heating system) and for the minimum time necessary to maintain water in a clean and sanitary condition.

SAFETY BARRIER REQUIREMENTS

*******IMPORTANT NOTICE*******

The Swimming Pool and Spa Safety Act of 2006 requires that:

Commencing January 1, 2007, whenever a building permit is issued for that construction of a new swimming pool or spa, or any building permit is issued for remodeling of an existing pool or spa, at a private, single-family home, it shall be equipped with **at least one of the following seven drowning prevention safety features** *(Also refer to page 14-16 for examples)*:

1. The pool shall be isolated from the home by a barrier conforming to Section 17.46.50 HBMC.
   a. **60 inches high minimum** for pool or spa barrier
   b. without openings that allow a four-inch sphere to pass through
   c. no configuration--allowing ladder like access
   d. Access gates shall be self-closing, self-latching with the release device located 54 **inches minimum** above grade and shall open outward away from the swimming pool or spa.

2. 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.

3. The pool shall be equipped with an approved safety pool cover that meets all requirements of the ASTM Specifications F-1346.

4. The residence shall be equipped with exit alarms on those doors providing direct access to the pool.

5. 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.

6. 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.

7. 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).

D Additionally, when a permit is issued to remodel an existing pool or spa, the permit shall require that the suction outlet(s) of the pool or spa be upgraded so as to be equipped with an **Anti-Entrapment** cover meeting current ASTM or ASME standard A112.19.8 and A112.19.17. *(Also refer to pages 17-22 for examples)*

*NOTE: Remodeling a swimming pool or spa consists of **ANY** structural modifications, additions, piping and equipment replacement.*

D When a permit is issued for remodeling an existing pool or spa, all of the following shall be indicated on the plans, if any, and in the permit description:

- Upgrade existing suction outlets with a listed (approve) anti-entrapment device/cover; and
- Notate in the construction documents which of the seven drowning prevention measures listed above is being utilized.

SAFETY FENCING REQUIREMENTS

NOTE: These provisions are in addition to the barrier required by Section 17.46.050 HBMC to protect access to the swimming pool or spa from adjacent properties or the public right of way.

D All self-closing and self-latching devices required by this section, shall be installed and in proper working order before any water is placed in the pool, and must be inspected and approved by the Building Inspector. *(Also refer to page 14-16 for example)*

D All swimming pool, hot tub, spa or similar outdoor body of water intended for swimming or recreational bathing, 18 inches or more in depth, shall contain an enclosure or barrier to conform to the following requirements:

Exception: Spas and Hot tubs of less than 750 gallons may have a rigid lockable cover.

- A dwelling or appurtenant structure may be used as a part of the required enclosure.

- The top of the barrier shall be at least 60 inches above grade measured on the side of the barrier, which faces away from the swimming pool.

- Openings in the barrier shall not allow passage of a four inch diameter sphere. Shrubs, trees, or landscape materials cannot be considered as part of the barrier.

- Solid barriers, such as masonry or concrete or stone walls shall not contain indentations, protrusions or plants closer than 45 inches apart vertically, horizontally, or from top of wall, except for tooled masonry Joints.

- Any configuration providing ladder-like access allowing illegal entry to the pool area shall be prohibited. Ladder-like access shall mean any method or action such as climbing, crawling, pushing, jumping or other means to gain access to a pool or spa area.

- Where the barrier is composed of horizontal and vertical members, the distance between the tops of the horizontal members shall be 45 inches or more. Openings between vertical members shall not exceed four inches.

- Maximum mesh size for chain link fences shall be a 1-1/4 inch square unless the fence is provided with slats fastened at the top or the bottom which reduces the openings to no more than 1-3/4 inches, the wire shall not be less than nine gauge.

- Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall be no more than 1-3/4 inches.

- All required pool fence and gate enclosures shall extend to within two inches of firm soil or pavement. All access gates shall be constructed in compliance with all requirements stipulated for pool fences in items (a) through (g) above, and shall be equipped to accommodate a locking device. Access gates shall open outward away from the pool, spa, or hot tub and shall be self-closing and have a self-latching device. The release mechanism of the self-latching device is to be located not less than 60 inches from the bottom of the gate or adjoining grade.

- The barriers and all self-closing and self-latching devices required by this section shall be installed and in proper working order before any water is placed in the pool.

IMPORTANT: ***Upon completion of the above items and the inspector's approval, finished plaster may be applied or installed.***

Plumbing/Mechanical/Energy (Swimming Pool/Spa) Final inspection requirements:

******IMPORTANT******

The HOMEOWNER OR CONTRACTOR(s) is responsible to <u>NOTIFY THE BUILDING DIVISION</u> for final inspection and approval.

D All hose bibs must be protected with anti-siphon devices.

D Potable water supply to swimming pools, spas and hot tubs shall be protected by an airgap or a REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER in accordance with the following:

a. The pool is equipped with a submerged auto fill line; or
b. The potable water supply is directly connected to the pool circulation system. 2010 CA Plumbing Code sec. 603.4.22.

D A length of plumbing (36 inch minimum) between the filter and the fossil fuel heater must be provided to allow for the future addition of solar heating equipment.

D All new pools shall be equipped with directional inlets for good mixing of the pool water.

D Gas pool heaters shall have an on-off switch mounted on the outside of the heater for easy access to allow shutting off the operation of the heater without adjusting the thermostat setting.

D A permanent weatherproof plate or card must be provided that provides instructions for the energy efficient operation of the swimming pool and for the proper care of swimming pool water when swimming pools cover is used.

D Any new or replacement fossil-fueled swimming pool heater must have a thermal efficiency of at least 75% and must be so identified on the plan and the heater.

D Outdoor pools equipped with a fossil fuel or electric heater must also be equipped with a pool cover.

D All water piping exposed to sunlight must be painted for protection from ultra violet sunrays.

D **Mandatory Requirements for Pool and Spa Systems and Equipment per Section 114 in the 2010 Energy Code**:

a. **Certification by manufacturers**: Any pool or spa heating system or equipment may be installed if the manufacturer has certified that the system or equipment has all of the following:
   i. Efficiency: A thermal efficiency that complies with the Appliance Efficiency Regulations; and
   ii. **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; and
   iii. Instructions: A permanent, easily readable and weatherproof plate or card that gives instructions for the energy efficient operation of the pool or spa heater and for the proper care of pool or spa water when a cover is used; and
   iv. **Electric Resistance Heating**: No electric resistance heating; and

   Exception 1 to Section 114(a)4: Listed package units with fully insulated enclosures, and with tight-fitting covers that are insulated to at least R-6.

   Exception 2 to Section 114(a)4: Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.

b. Installation: Any pool or spa system or equipment shall be installed with all of the following:
   i. Piping: At least 36 inches of pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or

built-up connections shall be installed to allow for the future addition of solar heating equipment; and

ii. Covers: A cover for outdoor pools or outdoor spas that have a heat pump or gas heater.

iii. **Directional inlets and time switches for pools**: If the system or equipment is for a pool:

1. The pool shall have directional inlets that adequately mix the pool water; and
2. A time switch or similar control mechanism shall be installed as part of a pool water circulation control system that will allow all pumps to be set or programmed to run only during off-peak electric demand period, and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

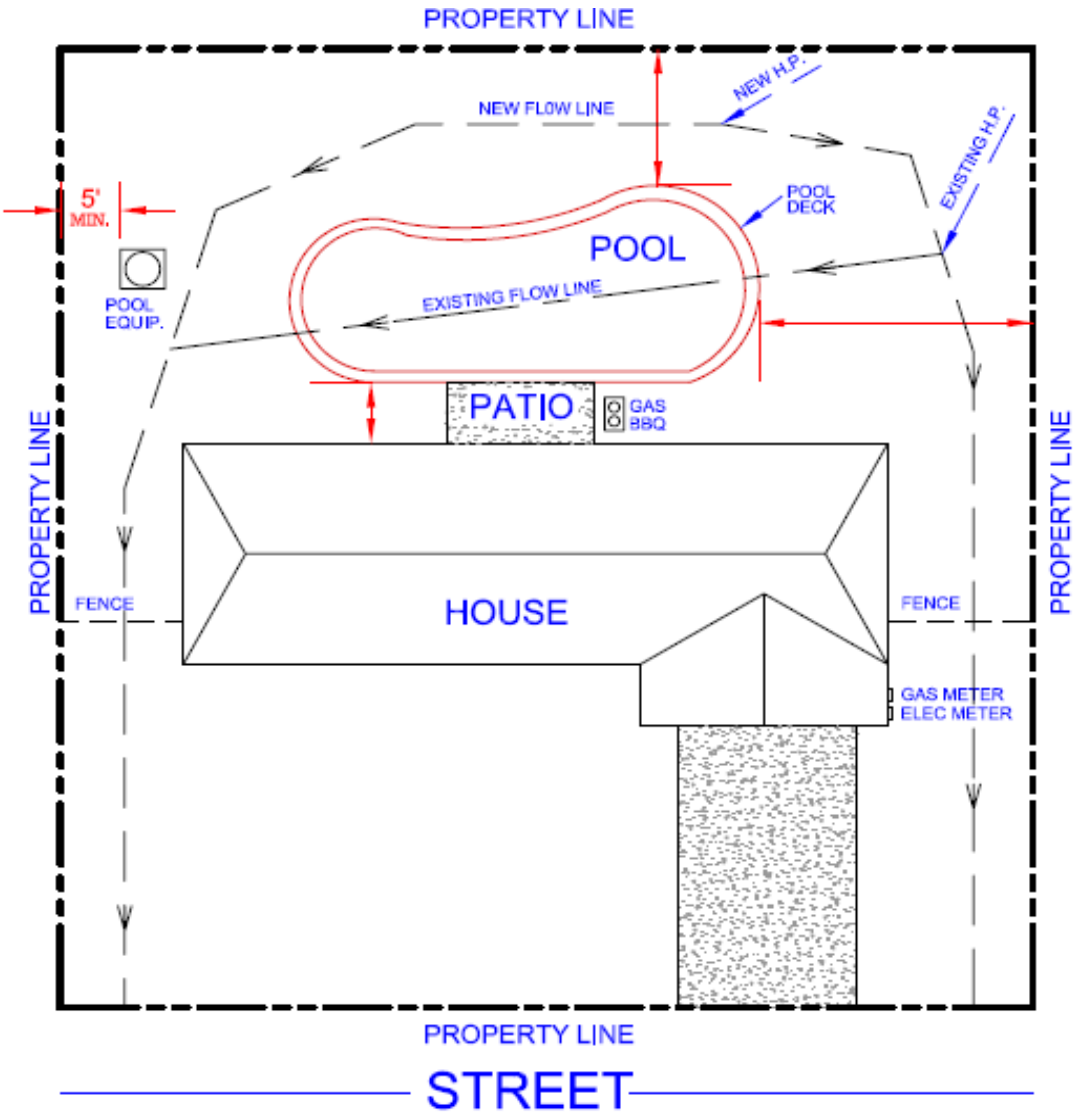
D **Natural Gas Central Furnaces, Cooking Equipment, and Pool and Spa Heaters—Pilot Light Prohibited per Section 115 in the 2010 Energy Code**:

a. **Pool Heaters**
b. **Spa Heaters**

ADDITIONAL NOTES

******See additional pages for Swimming Pool Requirement examples******

TYPICAL SITE (PLOT) PLAN



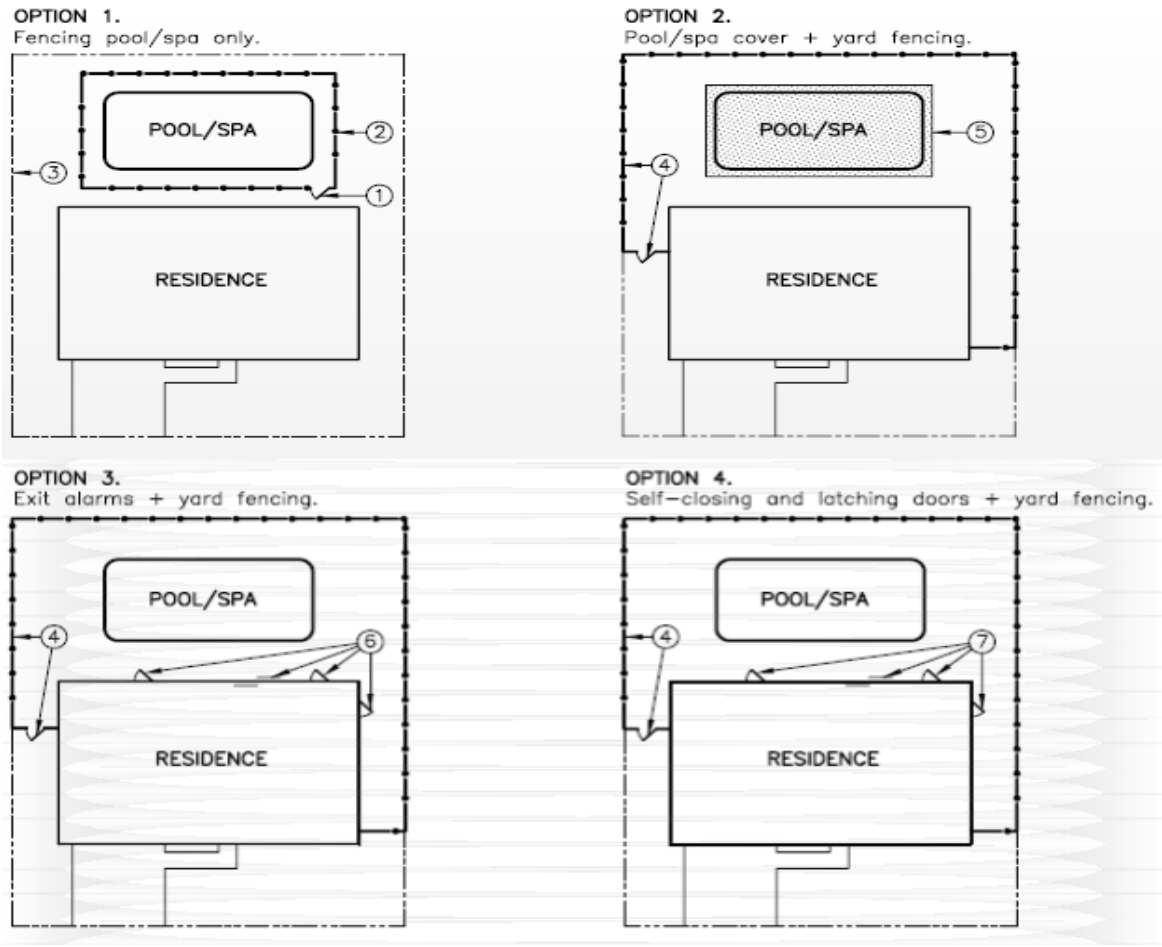
The following information is required on the site plan for Swimming Pool Permits:

1. Must provide entire plot plan of house and accessory structures located on the lot, location of all property lines and setback information as shown above.
2. Specify location of pool barriers, including gates, and provide cross-sections of height and type of barrier.
3. Location of pool equipment with appropriate setback requirements.
4. Location of new and existing hardscape or landscape improvements, such as BBQ's, sinks, etc.
5. Show utility locations.
6. Show drainage.

NOTE: See Plan Check requirements for more information.

SWIMMING POOL/SPA REQUIRED SAFETY FEATURE EXAMPLES

Pools/Spas shall be equipped with one of the following options:



NOTE

1. All access gates through the enclosure shall open away from the swimming pool/spa and shall be self-closing, self-latching with a latching device at a minimum 54 inches above grade.

2. "Safety Fence" (which includes block walls, wood, wrought iron , or chain link fences) shall be a minimum of 60 inches high. The maximum vertical clearance from ground to bottom of a fence enclosure shall not be grater than two inches. Gaps or voids for wrought iron fencing shall not exceed four inches. Gaps or voids for a chain link fence shall not exceed 1 ¼ inch grid design, unless provided with slats, no greater than 1 ¾ inch.

3. No yard fencing required.

4. Yard fencing and access gates must meet City regulations.

5. An approved safety cover. (*Note: Above-ground spas less than 750 gallons may use a self-lock rigid cover.*)

6. All doors shall be equipped with exit alarms. This includes sliding glass and swinging doors and doors from the garage if it allows access to the pool/spa.

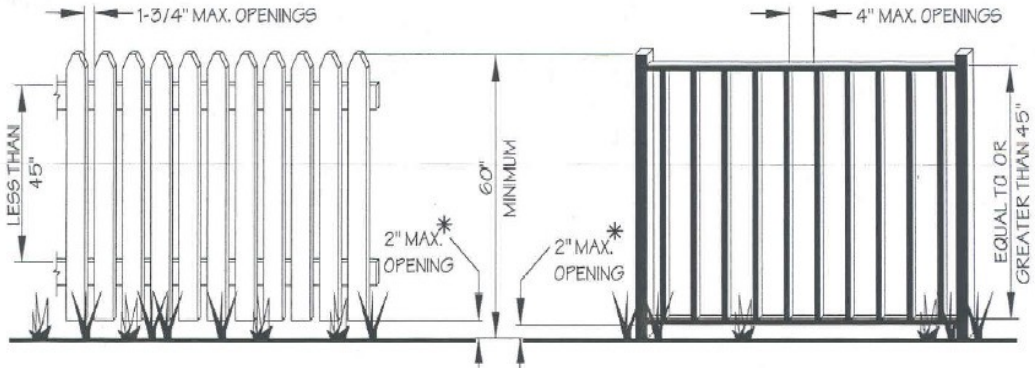
7. Self-closing and latching doors (including sliding glass doors) with a release mechanism shall not be place lower than 54 inched above the floor.

IMPORTANT: ***An alarm installed on doors with direct access to the pool/spa from occupied spaces shall sound continuously for a minimum of 30 seconds within seven seconds after the door and its screen, if present, are opened. Be capable of provide a sound pressure level of not less than 85 dbA when measured indoors at 10 feet. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as a touch pad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall last no longer than 15 seconds and shall be located at a minimum of 54 inches above the threshold of the door.***

*******THE ALARM SHALL NOT HAVE AN ON/OFF SWITCH*******

VARIOUS POOL/SPA FENCING TYPES AND GATE LATCHING REQUIREMTNS

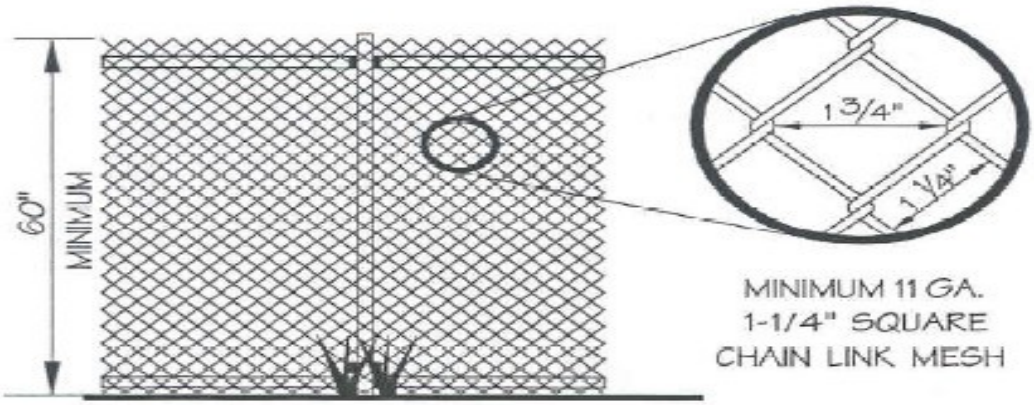
NOTE: Not all possible pool fence design are shown, please verify with the plan check staff or inspector for more information.



If horizontal members are less than 45 inches apart, vertical spacing shall not exceed 1 ¾ inch and horizontal members shall be on pool side.

If horizontal members are equal to or more than 45 inches apart, vertical spacing shall not exceed four inches.

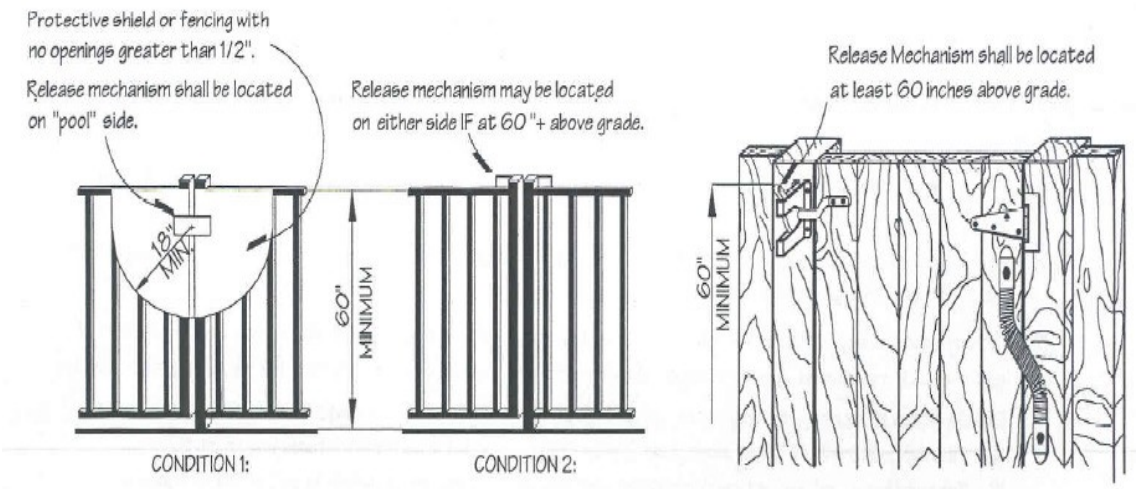
NOTE: Spacing from grade level to bottom of fence, may be four inches if grade below fence has a solid impenetrable surface such as concrete.



NOTE: If chain link dimensions are larger than shown above, then slats may be woven into the chain link mesh and fastened at the top and bottom.

GATE LATCHING REQUIREMENTS

NOTE: ALL GATES MUST SWING AWAY FROM POOL AND MUST BE SELF-CLOSING AND SELF-LATCHING.

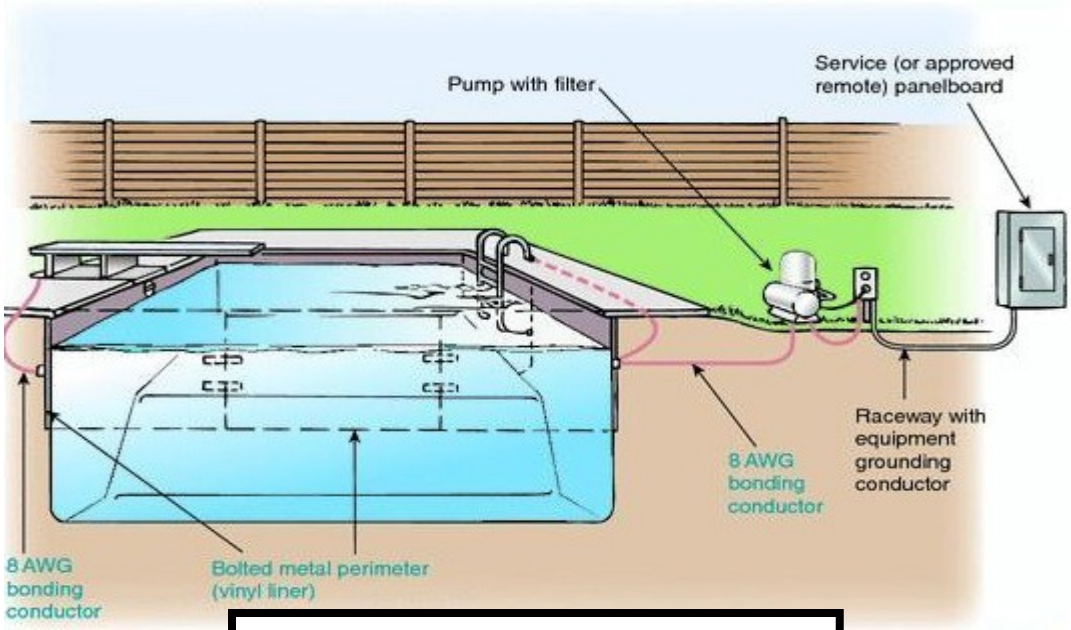


Release mechanism located less than 60 inches above grade.

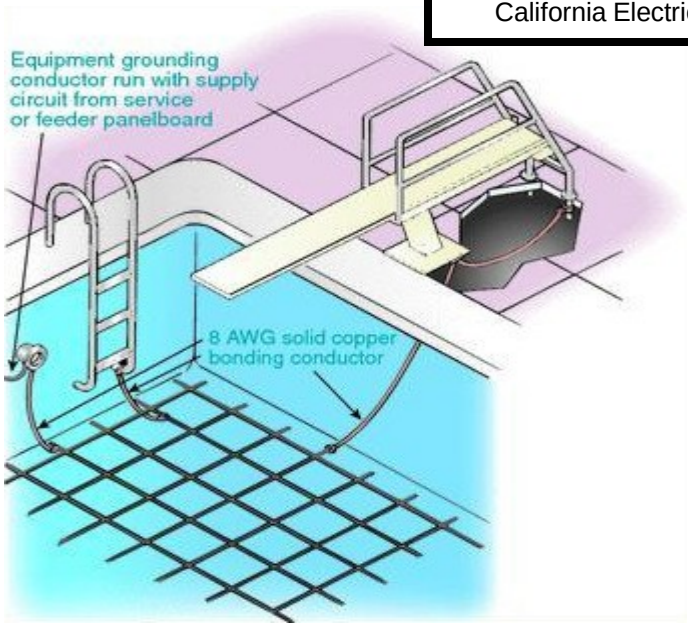
Release mechanism located 60 inches or more above grade.

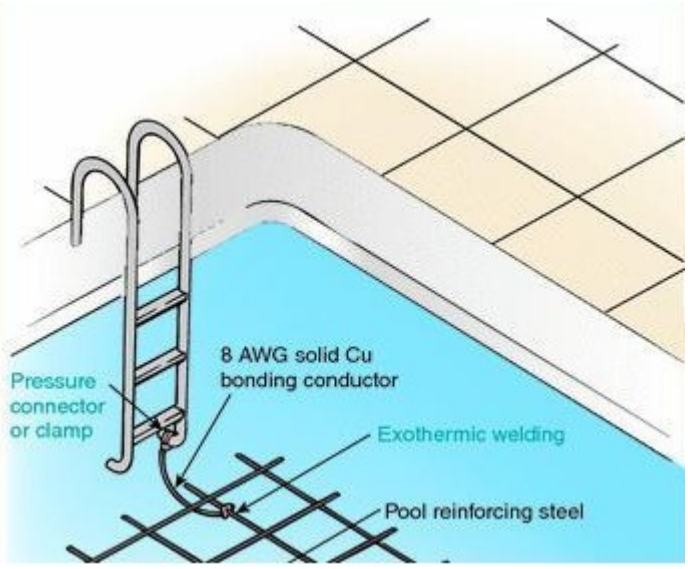
Typical self-latching gate and spring closer.

EQUIPOTENTIAL BONDING REQUIREMENT EXAMPLE



For additional information on equipotential bonding requirements, please refer to the 2010 California Electrical Code, article 680.26.





ANTI-ENTRAPMENT KNOWLEDGE

Anti-vortex vs. Anti-Entrapment, Anti-Entanglement Main Drain Covers

Anti-vortex covers were developed in the early 1970's to protect the more powerful, self-priming, closed face impeller, pumps from running dry and burning up. It was a great idea for protecting the pump. Its engineering design was revolutionary for pump protection and was not intended to protect children.

The curiosity of children can and will draw them to the most dangerous feature of a pool or spa, the main drain. Their curiosity can become deadly as we all are becoming aware. Anti-vortex

covers have only one attribute for protecting children from main drain suction entrapment: a domed shape. The anti-vortex cover is a drain fitting design to prevent the circular or swirling motion of water that tends to form a vacuum or suction at the center and draws the body or hair into the drain pipes. The domed shape on top can help a child avoid entrapment or evisceration but, the anti-vortex apertures around the edges can injure or trap fingers, toes or entangle hair. The anti-vortex cover may protect the pump for which it was designed, but does not protect our children from all four entrapment potentials, only one.

On the other hand the newest technology protects our children as well as protecting the pump. **ANSI/NSF Standard 50** Certified anti-entrapment drain covers implement: Materials, UV protection, Chemical resistance, and protection against: Child evisceration, Body entrapment, Mechanical finger entrapment and Hair entanglement. The anti-entrapment is a drain fitting design is to prevent entrapment, typically star-like, dome-shaped to reduce the likelihood of creating a body seal.

If you install a flat grate or an anti-vortex cover, you may be the cause of a traumatic occurrence or deadly hazard. Keep in mind that a typical main drain is designed with a 2" PVC pipe with an 8" grated cover and it can sustain a vacuum pressure approximately 350 pounds. With that suction, an average adult can not fight against this animal---so imagine your kids!!!

Entrapment survivors: These swimmers escaped death, but they bear the marks of their struggles. With a typical l8-inch main drain and pool pump exerting 350 pounds of pressure, the suction can create a powerful force.

Helpful Dual Drain Design Guidelines

1. Do not use anti-vortex covers, use only anti-entrapment covers. Anti-vortex covers present a potential hazard for hair entanglement, and the smaller open area of some anti-vortex cover designs results in higher hold down forces (>15 lbs force) should one of the dual drains be blocked by a bather.
2. Dual drains should only be constructed with sumps having two inch connections or larger. Sumps with less than two inches connections (1-1/2" or less) result in higher hold down forces (>15 lbs force) should one of the dual drains be blocked by a bather.
3. Dual drain connector piping (sump to connector tee) should be 2-1/2" diameter or larger to minimize hold down forces (<15 lbs force) should one of the dual drains be blocked by a bather.

4. Dual drain separation distances should be minimum three feet and should be kept less than six feet. Greater separation distances must be compensated for through the use of larger diameter connector piping in order to minimize hold down forces (<15 lbs force) should one of the dual drains be blocked by a bather.

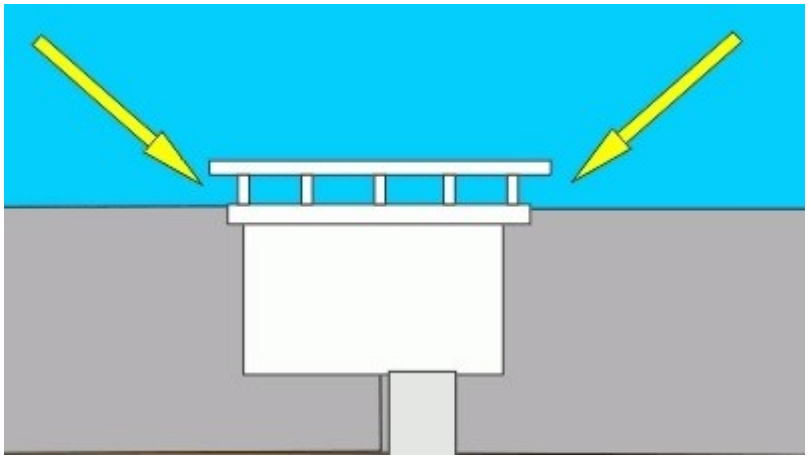
Pool Intakes - Drain Covers

Drain Covers

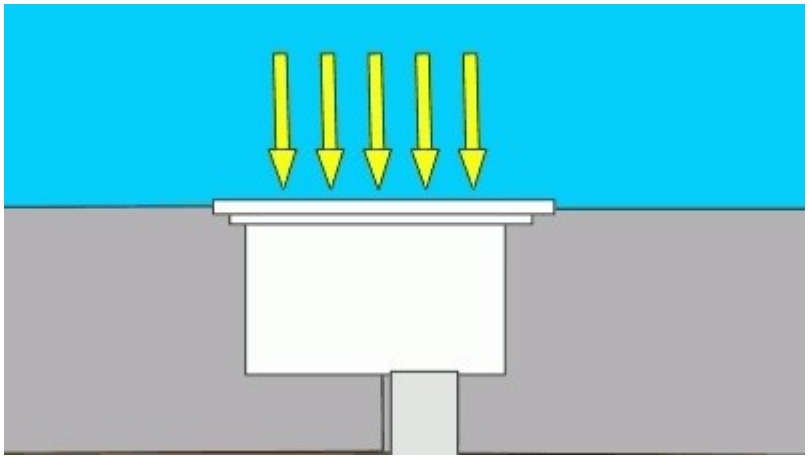
The pool drain cover should be an anti-vortex or anti-entrapment type as shown in the first diagram. Notice that the plate on top of the drain is a solid flat plate. It is raised off of the drain and the water enters around the side of the cover.

The second drawing is of a standard drain cover. It is generally flush with the bottom of the pool and the water enters through the cover because it is more like a grate.

The danger in the standard type of cover (second diagram) is that someone could sit on top of it and be held in place by the suction. Be alert to any drain covers that are not anti-vortex and close the pool until they are brought into compliance.



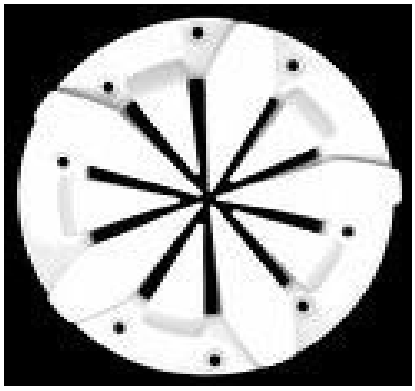
Anti-vortex drain cover (required in most cases)

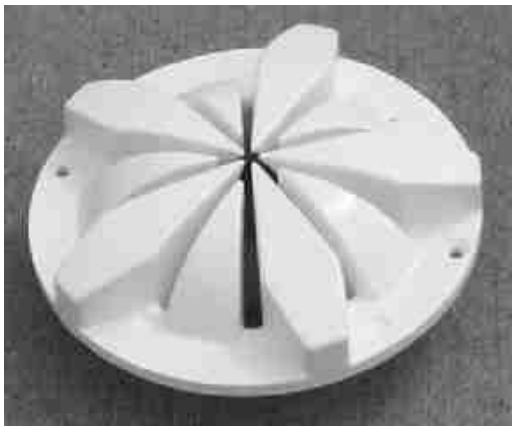


Standard drain cover (banned in most cases)

Example of Anti-Vortex Covers

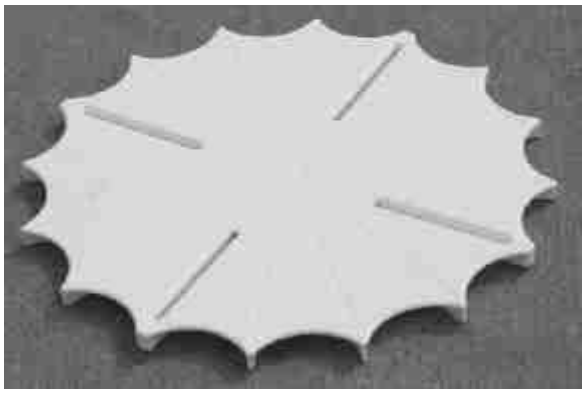
Example of Anti-Entrapment Covers





Above: *Anti-Hair Snare Plus TSS – 2000C*
This model eliminates hair entanglement and child evisceration and minimized main drain entrapments.

Below: *Star 100 Anti-Entrapment Cover*
With its distinctive star shape, this is designed to prevent most body entrapments. The four slots allow different screw patterns so that the cover can fit to any sump up to 10 inches.



NOTE: Not all anti-entrapment covers are shown…please see Main Drain and Circulation section for specific requirements.

Safety Guide for Home Swimming Pools and Spas

Drowning takes the lives of more California toddlers than any other kind of accident. Children who manage to survive a "near drowning" incident often suffer permanent brain damage from lack of oxygen.

Children one to four years old are at greatest risk for drowning. They are very active and curious, and they learn new skills every day. One day they suddenly learn how to open the sliding door and wander from the house to the pool and spa area. A child may fall in and drown silently without calling out for help. The whole event can happen in just a minute or two. Most of these drownings take place at the homes of parents, relatives, or neighbors.

Fortunately, you can prevent toddler drowning by combining these two methods:

- **ADULT SUPERVISION**

  AND

- **SAFETY BARRIERS**

Tips for Improving Adult Supervision

Supervision of children around water is not "normal" supervision, where we check on a child every couple of minutes. When around water, children must be kept in **direct sight at all times.** Children in water or next to water can drown immediately and silently, so there is no room for error.

- Never leave a young child alone in or around a pool, spa, or wading pool, even for a few seconds.
- When young children are in or around the pool or spa, assign a "Water Watcher" to keep them in DIRECT SIGHT. Relieve the watcher every 20 minutes or so.
- Get into the habit of keeping doors and gates leading to water closed, even when using the pool or spa. Never prop doors or gates open.
- Be especially alert at the start and end of "planned" pool parties for toddlers.
- If a child is missing, ALWAYS look first in the pool or spa. Seconds count!
- Keep rescue equipment (safety ring, long pole) and a portable phone next to the pool or spa.

Tips for Using Safety Barriers

A safety barrier helps prevent or slow a child from getting to the water.

A four-sided isolation fence is the best barrier as it completely surrounds the pool or spa. It is different from a property line or "perimeter" fence that keeps neighbors' children from accessing your pool. Isolation fencing separates the pool or spa from the house. Isolation fences are specially designed so that children cannot easily get over, under, or through them.

- Make sure all fence gates and ladders leading to a pool or spa are self-closing

Produced by California Department of Health Services as authorized by the Swimming Pool Safety Act (Health and Safety Code Section 115920-115929).

and self-latching, with latches above child's reach.

Other barriers approved by California law for use with new or remodeled home pools include pool safety covers, removable mesh pool fencing, self-closing and latching devices on the home's doors, exit alarms on doors, swimming pool alarms, or any other barrier approved by local building officials. (See box below.)

- California law approves only certified safety covers. They must completely cover the pool or spa so children can not climb them or fall into the water.
- All doors opening into pool or spa areas should be fixed to close and latch by themselves. Latch releases should be child-resistant or out of reach.
- Doors and windows leading to the pool or spa area should be equipped with approved exit alarms (battery or wired to home electrical system) that make a loud sound throughout the house and have a temporary bypass switch located out of a child's reach.
- Pet doors should be kept locked when children are present in the home.
- Approved swimming pool alarms should be placed in the water to detect movement. CAUTION: These alarms should not be used without some other physical barrier.

Other Safety Tips

- Experts agree it is best to use more than one safety method to increase the likelihood of directing a child away from danger.
- Parents, guardians, and babysitters should learn cardio pulmonary resuscitation (CPR) and update their skills every year.
- Teach children how to dial the emergency phone number (9-1-1).
- Restrict access to the pool or spa when it cannot be properly supervised. Doors and gates should be closed and locked.
- Keep chairs and other climbable objects away from pool fences or gates.
- Have a professional regularly inspect your pool or spa for entrapment or entanglement hazards.
- Teach children how to swim when they are old enough. The American Academy of Pediatrics recommends starting at four years old.

California's Swimming Pool Safety Act (Health and Safety Code Sections 115920-115929) requires at least one approved safety barrier be in place for all pools and spas built after January 1, 1998, and for any pools being remodeled.

Property owners with swimming pools built before 1998 should voluntarily install barriers around the pool that meet these standards.

Contact your local Building Department for details on how to meet this requirement.

If you have any comments or questions, please contact the EPIC Branch at (916) 552.9800 or EPIC@dhs.ca.gov.

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