Swimming Pool & Spa Electrical Requirements (per 1990 N.E.C.)

No restrictions on existing weather exposed receptacles on adjacent properties in regards to G.F.I. requirements or being within 10 feet (3.05m) of pool edge. Adjacent property is not controlled by the pool owner.

G.F.I.'s are required for weather exposed receptacles.

Where a permanent pool is installed at a dwelling unit(s), at least one 125 volt convenience receptacle shall be installed a minimum of 10 feet (3.05m) from and not more than 20 feet (6.08m) from the inside wall of the pool. (Sec. 680-6)

Weather exposed receptacles are not allowed within 10 feet (3.05m) of the inside wall of the pool even if a G.F.I. were installed.

Exceptions:

A receptacle for the cord connection of the pool water pump may be installed not less than 5 feet (1.52m) from inside wall of the pool. Must be a single locking and grounding-type device and it must be protected by a G.F.I. device. (Sec. 680-6)

G.F.I.'s are required on weather exposed receptacles

Electrified operated pool covers shall be G.F.I. protected. (Sec. 689-36)

No restrictions of non-weather exposed receptacles in regards to locations from pool edge, weatherproofing or installation of G.F.I.'s when located in a weatherproof structure such as a dwelling or a garage.

Ground fault interrupter requirements and approved electrical receptacle locations for swimming pools.
4. 680-20(a). The forming shall for underwater light fixtures must be installed so that the top of the fixture lens is at least 18 inches below the normal water level.

5. 680-20(b). Underwater light fixtures must be specifically designed, manufactured and UL listed for underwater use. A hard-wired, ground fault circuit interrupter shall be installed in the branch circuit supplying fixtures operating at more than 15 volts and 120 volts. The cord supplying the underwater light fixture must have an insulated copper grounding wire that is an integral part of the cable. The grounding wire must be equal in size to the hot wire but in no case smaller than No. 14 AWG. Fixtures which depend on submersion for safe operation shall be inherently protected against the hazards of overheating when not submerged.

6. 680-20(c). The following parts shall be bonded together: all metallic parts of the floor structure, all framing members, all parts of electric equipment associated with the water well circulation system, including pump motors, all metal parts of pool equipment, metal piping, and all fixed metal parts that are within 5 feet (1.52 m) of the inside walls of the pool (i.e., ladders, fountains, spindles, light fixtures, etc.) and are not separated from the pool by a permanent barrier.

7. 680-20(d). These parts shall be connected together with a solid copper conductor, insulated covered, not smaller than No. 8 AWG (the small steel tie wires are adequate for bonding the reinforcing steel together).

8. 680-20(e). Insulated parts which are no more than 4 inches in any dimension and do not penetrate the pool structure more than 1 inch shall not require bonding.

9. 680-20(f). Pool associated motors shall be connected to an equipment ground conductor sized in accordance with Table 310-95 but not smaller than No. 12 A.W.G. It shall be an insulated copper conductor and shall be installed with the pool circulation system rigid metal conduit, or rigid nonmetallic conduit.

10. 680-20(g). Electrical metallic tubing, or intermediate metal conduit where installed on or within buildings.

11. 680-20(h). Where necessary to employ flexible connections at or adjacent to the motor, liquid tight flexible conduit with approved fittings shall be permitted.

12. 680-20(i). Any of the wiring methods recognized in Chapter 2 of this Code and which contain an equipment grounding conductor shall be permitted to be used in the interior of one family dwelling units.

13. 680-21. All junction boxes shall be installed so that they are 8 inches above the pool flume rim or 4 inches above the pool water, whichever is greater, and shall be located at least 4 feet (1.22 m) from the edge of the pool. Junction boxes shall not be located in walkways and will be considered adequately protected when installed under diving boards or adjacent to fixed structures such as fountains, walls, etc. The pool light junction box shall be made of copper, brass, or other corrosion resistant material and must be provided a number of grounding terminals which shall be one more than the number of electrical conductors in the box (not metal is class corroded). The termination of a flexible cord of an underwater lighting fixture within a junction box, transformer enclosure, ground-fault circuit interrupter or other enclosure shall be provided with a strain relief.

14. 680-21. All receptacles shall be located within 10 feet (3.05 m) of the inside edge of the swimming pool. In determining the above distance the distance to be measured is the shortest path the supply cord of an appliance connected to the receptacle would follow without piercing a wall, ceiling or floor of a building or other effective permanent barrier.

15. 680-21(a). A receptacle shall be installed in the final shell of the underwater lighting fixture and the junction box. The conduct shall be furnished with bushings of type M (copper) with brass or silver solder connections or rigid nonmetallic conduit. When nonmetallic conduit is used, a No. 8 A.W.G. green insulated copper ground conductor shall be installed with the conduct. The termination of the No. 8 conductor in the finishing shell shall be encapsulated in a listed potting compound.
TYPICAL POOL PLOT PLAN AND SITE CHECK LIST
680-B.

1. 680-B. Overhead Clearances.
   The following parts of swimming 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:
   (A) Swimming pool and the area extending 10 feet horizontally from the inside walls of the pool.
   (B) Diving structure.
   (C) Observation towers or platforms.

   Exception #1: Structures listed in (A), (B) and (C) above shall be permitted under utility owned, operated and maintained supply lines or service drops where such installations provide the following clearances:

<table>
<thead>
<tr>
<th>Insulated supply or service drop cables, 0-750 volts to ground, supported on and carried together with an effectively grounded bare messenger</th>
<th>All other supply or service drop conductors</th>
<th>Voltage to ground</th>
<th>0-15 KV</th>
<th>15-50 KV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Clearance in any direction to the water level edge of water surface, base of diving platform or permanently anchored raft</td>
<td>18 feet</td>
<td>25 feet</td>
<td>27 feet</td>
<td></td>
</tr>
<tr>
<td>B. Clearance in any direction to the diving platform or tower</td>
<td>14 feet</td>
<td>16 feet</td>
<td>18 feet</td>
<td></td>
</tr>
<tr>
<td>C. Horizontal limit of clearance measured from inside wall of the pool.</td>
<td>This limit shall extend to the outer edge of the structures listed in (A), (B) or (C) above but not less than 10 feet (3.05 m).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Exception #2: Utility owned, operated, and maintained communication conductors, community antenna system coaxial cables complying with Article 820 and the supporting messengers shall be permitted at a height of not less than 10 feet (3.05 m) above swimming and wading pools, diving structures and observation stands, towers or platforms.

MINIMUM RADIAL AND VERTICAL CLEARANCE FOR OVERHEAD CONDUCTORS ABOVE AND ADJACENT TO POOL AREA
SWIMMING POOL WIRING REQUIREMENTS FOR
ELECTRICAL GROUNDING AND BONDING

[Diagram of swimming pool wiring requirements]

LEGEND
- No. 8 A.W.G. SOLID COPPER BOND (MIN.)

City of Poway
Development Services Department
Building Division
(858) 668-4645
(858) 668-4646 (Inspection Line)
building@poway.org

13325 Civic Center Drive
Poway, California 92064
www.poway.org

Revised 04/14
680-5(B) LIGHTING FIXTURES AND LIGHTING OUTLETS

(1) Lighting fixtures and lighting outlets shall not be installed over the pool or over the area extending 5 feet horizontally from the inside walls of a pool unless 12 feet (3.66 m) above the maximum water level.

Exception #1: Existing lighting fixtures and lighting outlets located less than 5 feet (1.52 m) measured horizontally from the inside walls of a pool shall be at least 5 feet (1.52 m) above the surface of the maximum water level and shall be rigidly attached to the existing structure.

Exception #2 Lighting fixtures may be installed less than 12 feet (3.66 m) above the water level of indoor pools.

If the lighting fixtures are totally enclosed and supplied by a circuit with GFCI protection, they may be installed where there is at least 7½ feet (2.29 m) of clearance between the maximum water level of an indoor pool and the lowest part of the fixture.

(2) Lighting fixtures and lighting outlets installed in the area extending between 5 feet (1.52 m) and 10 feet (3.05 m) horizontally from the inside walls of a pool shall be protected by a ground-fault circuit-interrupter unless installed 5 feet (1.52 m) above the maximum water level and rigidly attached to the structure adjacent to or enclosing the pool.

(3) Cord-connected lighting fixtures when installed within 18 feet (4.88 m) of any point on the water surface, measured radially, rated 20 amperes or less, other than an underwater lighting fixture for a permanently installed pool, shall be permitted to be connected with a flexible cord to facilitate the removal or disconnection for maintenance or repair. For other than storable pools, the flexible cord shall not exceed 3 feet (0.91 m) in length and shall have a copper equipment grounding conductor not smaller than No. 12 with a grounding-type attachment plug.

See Section 680-25(E) for connection with flexible cords.

680-5(C) SWITCHING DEVICES.

Switching devices on the property shall be located at least 5 feet (1.52 m) from the inside walls of a pool unless separated from the pool by a solid fence, wall, or other permanent barrier.

LIGHTING FIXTURES AND LIGHTING OUTLETS AROUND POOLS
680-40 OUTDOOR INSTALLATIONS SPA OR HOT TUB
A SPA OR HOT TUB INSTALLED OUTDOORS SHALL COMPLY WITH REQUIREMENTS OF A PERMANENTLY INSTALLED POOL.

Exception #1: Metal bands or hoops used to secure wooden staves are exempt from bonding.

Exception #2: Listed packaged units may be cord connected with a cord no longer than 15 feet (4.57 m) and shall be protected by a G.F.C.I.

Exception #3: Bonding by metal-to-metal mounting on a common frame or base is permitted.

680-41 INDOOR INSTALLATIONS SPA OR HOT TUB
A SPA OR HOT TUB INSTALLED INDOORS SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS, AND SHALL BE CONNECTED BY A PERMANENT WIRING METHOD COMPLYING WITH THE NATIONAL ELECTRICAL CODE.

Exception: Listed units rated 20 amperes or less shall be permitted to be connected with a flexible cord.

(1) Receptacles shall be located at least 5 feet (1.52 m) from the inside walls of the spa or hot tub.
(2) Receptacles of 125 volts located within 10 feet (3.05 m) of the inside walls of a spa or hot tub shall be G.F.C.I. protected.

(In determining the above dimensions, follow the shortest path without piercing a floor, wall, ceiling or other effective permanent barrier.)

(3) Receptacles that provide power for a spa or hot tub shall be G.F.C.I. protected.

(4) Lighting fixtures and lighting outlets located over the spa or hot tub or within 5 feet (1.52 m) horizontally from the inside walls 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.

Exception #1: Lighting fixtures and lighting outlets located 12 feet (3.65 m) or more above the maximum water level shall not require protection by a ground-fault circuit-interrupter.

Exception #2: Lighting fixtures meeting the requirements of a. or b. below and protected by a ground-fault circuit-interrupter 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 trim suitable for use in wet locations.

b. Surface-mounted fixtures with a glass or plastic globe and a nonmetallic body suitable for use in wet locations.

(5) Underwater lighting fixtures shall comply with the requirements of a permanently installed pool.

(6) Wall switches shall be located at least 5 feet (1.52 m) horizontally from the inside walls of the spa or hot tub.

(7) All metallic items associated with the spa or hot tub, and other metal items located within 5 feet (1.52 m) of the spa or hot tub, shall be bonded together by any of the following methods: The interconnection of threaded metallic piping and fittings; metal-to-metal mounting on a common frame or base; or by a copper insulated wire (covered or bare) not smaller than No. 8 solid.

(8) All electric equipment located within 5 feet (1.52 m) of the inside walls of the spa, hot tub, or associated with the circulating system of the spa or hot tub shall be grounded as per Article 250 of the National Electrical Code.

1. G.F.I. required for lighting in this area.

2. Receptacles and wall switches are not allowed in this area.

680-70 HYDROMASSAGE BATHTUB INSTALLATIONS
Protection (Section 680-70). Hydromassage bathtubs and their associated electric components shall be supplied by a circuit protected by a ground-fault circuit interrupter.

Other Electric Equipment (Section 680-71). Lighting fixtures, switches, receptacles, and other electric equipment located in the same room, and not directly associated with a hydromassage bathtub, shall be installed in accordance with the requirements of Chapters 1 through 6 in this Code covering the installation of such equipment in bathrooms.
POOL HEATERS MUST BE INSTALLED IN
ACCORDANCE WITH THE MANUFACTURERS
RECOMMENDATIONS [HEATER LOCATION,
VENTS, COVERS, ETC.]

NOTE: Combustion vents (flues) must be
4' away from property lines, except
those adjacent to a public way. Also
4' away from operable windows,
doors, etc.

CONNECTOR WITH VALVE

GAS SUPPLY LINE TO HEATER [MINIMUM,
DEPTH OF BURIAL: 12" (18" BURIAL FOR
PLASTIC) EXCEPT FOR VERTICAL RISER TO
GAS METER AND HEATER]

GROUND JOINT UNION PERMITTED AT METER

GAS INSTALLATION

GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH CHAPTER 12 OF THE
UNIFORM PLUMBING CODE; HOWEVER, GROUND JOINT UNIONS WHERE NECESSARY
TO REASONABLY ACCOMPLISH A SWIMMING POOL INSTALLATION ARE PERMITTED.
ALL UNIONS MUST BE INSTALLED IN AN ACCESSIBLE LOCATION AND ABOVE GRADE.
GAS PIPING IS TO BE BURIED 12" MINIMUM OR SUPPORTED 6" ABOVE GRADE AND
SHALL BE STANDARD WEIGHT WROUGHT IRON OR STEEL. "YELLOW BRASS" (CONTAIN-
ING NOT MORE THAN 75 PERCENT COPPER) OR OTHER APPROVED MATERIAL. THE
GAS PIPING SHALL BE PROVIDED WITH AN APPROVED FACTORY APPLIED WRAPPING
OR COATING. PLASTIC GAS LINES MUST BE BURIED A MINIMUM OF 18" DEEP AND
BE INSTALLED WITH PLASTIC-TO-METAL RISERS. PLASTIC LINES ALSO REQUIRE A
NUMBER 18 [MINIMUM] COPPER TRACER WIRE TO BE ATTACHED AND EXPOSED AT
ONE END.

PERMANENT POOL GAS SUPPLY
FILL LINE WITH VACUUM BREAKER  
(Figure 2)

*IF AN AUTOMATIC CONTROL FILL LINE IS INSTALLED THE ATMOSPHERIC VACUUM BREAKER MAY NOT BE USED. USE A DOUBLE CHECK VALVE, PRESSURE VACUUM BREAKER OR RP VALVE INSTALLED IN ACCORDANCE WITH THE UPC.

PLUMBING INSTALLATION
A positive means of potable water supply to each swimming pool is recommended as indicated by the following:

1. An over the rim fill spout with a 1" minimum air gap above the flood rim of the pool (the spout must be protected from damage by a diving board or other means). See Figure 1 or

2. A fill spout located above the grade beam and below the coping which is protected from back flow by an approved breaker located at least 4" above the flood rim of the pool. See Figure 2.

RECOMMENDED POOL WATER SUPPLY
Building Division Counter is open between the hours of 7:30 a.m. and 5:30 p.m. (closed for lunch 11:30 a.m. - 12:30 p.m.) Monday through Thursday. City Hall and the Building Division counter are closed on alternating Fridays (see calendar). Our Friday hours are 8:00 a.m. – 5:00 p.m. (closed for lunch 11:30 a.m. - 12:30 p.m.).

***Please contact the Poway Building Division if you have any questions or concerns at (858) 668-4645 or building@poway.org***

1. During the steel and bonding inspection, the hydrostatic relief valve assembly shall be inspected by the field inspector.
2. Inspection of the hydrostatic relief valve assembly requires that:
   a) Gravel blanket to be placed to all wet areas.
   b) Ground water to be pumped below level of valve.
   c) Sump body steel to be in place.