



Pool Plan Review Worksheet 2018 IRC

Community Development Services Department, **Building Safety**
913/477-7500

Date **Residential Plan Review**
Resident Name: **Project Address:**
Resident/owner Phone:

Applicant/Contractor name: **E-mail:**
Company Name: **Address:**
Phone:

POOL REQUIREMENTS

Swimming Pools

JCW does not require any type of pool be connected to the sanitary sewer system. Private pool discharges aren't accepted. If the City requires a public or semi-public pool be connected to the sanitary sewer, intermittent discharges can be accepted; but, must be regulated by an orifice discharge not to exceed 50 gallons per minute. An intermittent discharge rate less than 50 gpm may be stipulated in older areas of the sanitary sewer system. Of course, continuous discharges at such rates could not be accommodated by the sanitary sewer system.

Inspections required – call 477-7500

All work, especially if underground, needs to be inspected prior to coverage or concealment. Inspection requests must be scheduled the day prior to the inspection except for concrete inspection that may be scheduled on a 6 hour notice. Call 913/477-7500, if you have questions regarding inspections. Depending on the type of pool or spa, all of the inspections listed below may not be applicable. **All installations will require a final inspection.**

1. A bonding inspection is required prior to pouring concrete to verify that all metallic parts of the pool are electrically bonded (connected together) including reinforcing bars in the concrete for the pool walls, bottom and deck; diving boards, ladders, handrails, fixtures for pool lights, electrical conduits and metal fences. **CODE 165, Partial Underground Electrical Inspection.**
2. A gas line inspection is required for any relocated or added gas line. The line must be inspected and tested prior to covering. **CODE 330. Gas Inspection**
3. A wet or dry niche light electrical grounding inspection should be performed prior to filling the pool with water. **CODE 165, Partial Underground Electrical**
4. A final inspection must be performed after all work is complete. **CODE 998, Final Inspection**

Building codes

The pool/spa or hot tub must be constructed in accordance with *Chapter 42 of International Residential Code IRC* or and per 2018 ISPSC codes

1. In-ground pools shall be designed and constructed in conformance with *ANSI/NSPI-5*.
2. Above-ground pools shall be designed and constructed in conformance with *ANSI/NSPI-4*.

Fence - Section 4-1-B-24-F-13

- a) The height of the fence must be at least 4 feet (measured from the adjacent ground level to the top of the fence on the side that faces away from the pool) - maximum height 8 feet.
- b) Ground clearance between the fence and finished ground level shall not exceed 2 inches.
- c) Openings in the fence shall not allow passage of a 4-inch diameter sphere.
- d) Where the fence 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. Spacing between vertical members shall not exceed 1-3/4 inches width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1-3/4 inches width.
- e) Where the fence 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.
- f) Fence enclosures shall also comply with the city requirements for fences (see "Requirements for Fence Permits and Fence Construction in Residential Areas").
- g) Some homes associations have special requirements or covenants regarding fence locations and materials. You may wish to check with your homes association prior to selecting a fence design.

Gates

- a) Gates in the enclosure must swing away from the pool area and be self-closing and self-latching.
- b) Where the release mechanism is located less than 54 inches from the bottom of the gate, the release mechanism and opening shall comply with the following:
 - The release mechanism shall be located on the poolside of the gate at least 3 inches below the top of the gate.
 - The gate and barrier shall have no opening greater than 1/2 inch within 18 inches of the release mechanism.

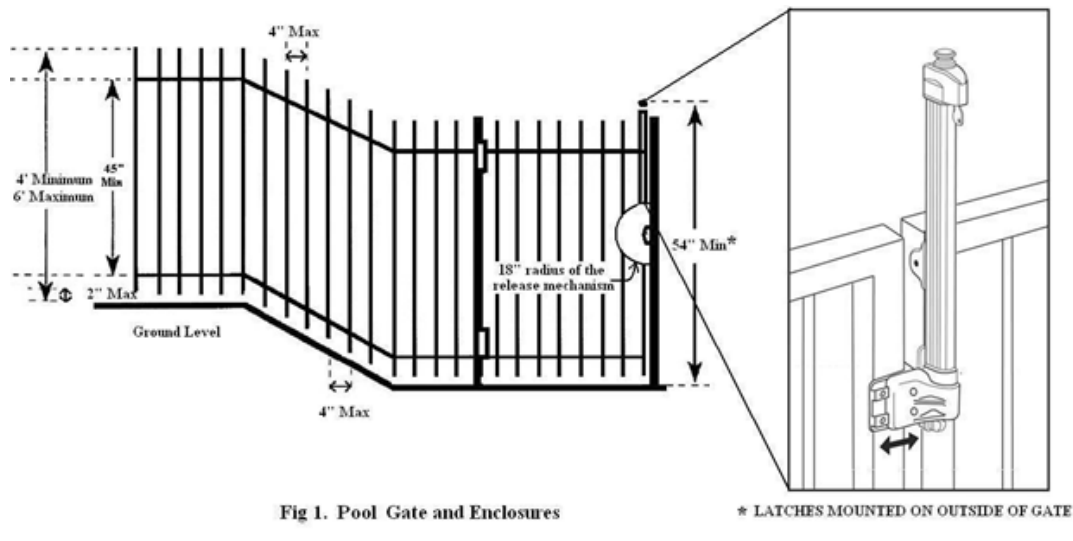


Fig 1. Pool Gate and Enclosures

* LATCHES MOUNTED ON OUTSIDE OF GATE

3. A dwelling unit wall that serves, as part of the barrier shall comply with one of the following:
 - a) All doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and its screen are opened. The alarm shall sound for a minimum of 30 seconds immediately after the door is opened and shall be heard throughout the house. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad 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 at least 54 inches above the threshold of the door; or
4. Other means of equivalent protection, such as self-closing doors with self-latching devices, which are approved by the City of Lenexa, Building Safety Division. Exceptions:
 - a) Ladder - a ladder on aboveground pools is considered as complying with the gate requirements for restriction of access if it is lockable or removable.
 - b) Spa and hot tub cover - spa and hot tub covers that comply with *ASTM F1346*, as listed in *Section AG107*, shall be exempt from the barrier requirements listed above.
 - c) The pool spa (Hot tub style units) shall be equipped with a powered safety cover complying with *ASTM F1346*.
5. Electrical installations
 - a) All electrical wiring for the pool must be in accordance with *Section Chapter 42 of the 2018 IRC*.
 - b) Clearance from services - residential pools/spas/hot tubs must be located so that there is at least a 10-foot horizontal clearance from the edge of the pool to any overhead power line and at least a 5-foot horizontal clearance from the edge of the pool to any underground electrical wiring.
6. Receptacles
 - a) Receptacles that provide power for water-pump motors or other loads directly related to the circulation and sanitation system shall be permitted to be located between 5 feet and 10 feet from the inside walls of pools, outdoor spas and hot tubs and, where so located, shall be single and of the locking and grounding type and shall be GFCI-protected.
 - b) At least one 125-volt, 15- or 20-ampere receptacle supplied by a general-purpose branch circuit shall be located a minimum of 10 feet from, but not more than 20 feet, from the inside walls of pools, outdoor spas and hot tubs. This receptacle shall be located not more than 5 feet, 6 inches above the floor, platform or grade level serving the pool, spa or hot tub.
 - c) All 125-volt receptacles located within 20 feet of the inside walls of pools and outdoor spas and hot tubs shall be GFCI-protected.

Underground utility lines - care should be taken when excavating to minimize potential problems with buried gas, water, sewer, and underground electrical lines. Applicants may obtain assistance regarding the location of underground utilities by calling 1-800-DIG-SAFE (1-800-344-7233).

Pumps and Filter

1. Pool Equipment shall be screened so it is not visible from the street by a fence or landscape _____ Initial.
2. Pool pump shall be sized to provide a turnover of the pool water at least once every twelve hours.
3. Pool and spa pumps shall be listed by a nationally approved testing laboratory such as NSF. Pumps less than 3 HP shall comply with ANSI/UL 1081, "*Standard for Swimming Pool Pumps, Filters and Chlorinators.*"
4. Filters shall be capable of maintaining water clarity.

Note: Certificate of Compliance will be sent to the permit applicant to certify completion of the project and compliance with city code requirements when all work is inspected and approved.

**Acknowledgement by permit applicant or owner required for all the following
GENERAL REQUIREMENTS**

Print Name: _____

1. All pools which contain water 24" or more in depth at any point must be entirely enclosed by some form of barrier (walls, fences, etc.) which is at least 4' high and makes the pool inaccessible to small children. (IBC 3109) _____ Initial.
2. If the water level of the pool is to be maintained by use of a hose from a hose bibb or sill cock, some means of backflow prevention must be provided. (IPC Section 608) _____ Initial.
3. A permanently installed pool must have at least one GFCI protected electrical receptacle located between 10-20 feet from the inside edge of the pool. (NEC 680-6(a) _____ Initial.
4. An electrical receptacle for a recirculation pump motor must be located at least 5' from the inside edge of the pool, and must be of the single and locking type. (NEC 680-6(a) exception) _____ Initial.
5. Existing lighting fixtures may not be located within 5', measured horizontally, and 5' measured vertically from the inside edge of the pool and the maximum water level of the pool. New lighting fixtures may not be located within 5' measured horizontally from the inside edge and 12' measured vertically from the maximum water level of the pool. _____ Initial.
6. All metal parts must be bonded together by a copper conductor, #8 or larger, and all electrical equipment, to include the circulator motor, must have an insulated copper grounding conductor, #12 or larger, which must be run with the circuit conductors in conduit back to the electrical panel. (NEC 680-22, 24 & 25) _____ Initial.
7. Conductors for in-pool lighting must be run in conduit from the junction box(deck box)pool, back to the electrical panel, and must include an insulated copper ground wire #12 or larger. (NEC 680-20) and All 125 volt receptacle located within 20' of the pool must have ground-fault circuit protection. (NEC 680-6(a) _____ Initial.
8. Provide a minimum two Safety Vacuum Release System (SVRS) to reduce likelihood of entrapment. Drain covers shall be listed and approved in accordance with ASME/ANSI a 112.19.8. _____ Initial.
9. Doors with direct access to the pool through that wall (house) shall be equipped with an alarm which produces an audible warning when the door and its screen are opened. The alarm shall sound continuously for a minimum or 30 seconds immediately after the door is opened and be capable of being heard throughout the house. _____ Initial.
10. Self-closing door (Fence doors and if door from garage to pool exist) with self-latching device is required. _____ Initial.
11. Handrail is required when more than 4 risers are present. _____ Initial.
12. Permanent fence shall be installed prior to filling the pool. _____ Initial.
13. Pool related equipment shall be screened from view from the street. _____ Initial.

***** If site conditions require retaining walls or major grading work exceeding 4-foot in height or beyond the scope during or after the issuance of the permit, an engineering analysis by a licensed Engineer in the state of Kansas shall be required as a condition before closing the permit.*****

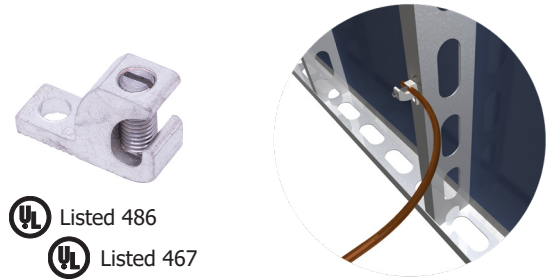
Pool Grounding & Bonding



Harger provides pool grounding & bonding solutions
that meet the requirements of
NEC 2017 *Equipotential Bonding* Article 680.26

Typical Pool Grounding & Bonding Layout

Pool Grounding & Bonding Components



UL Listed 486
UL Listed 467

1 - One-Hole Tinned Copper Lay-In Lug

Part No.	Conductor Range (AWG)	Bolt Hole Size
TCLI414DB	4 - 14	#10

- Suitable for direct burial.



UL Listed 486
UL Listed 467

2 - Copper Split Bolt

Part No.	Range for Equal Main (AWG)	Minimum Tap
GESB8	16 Str. - 8 Str.	16 Sol.
GESB6	4 Sol. - 8 Sol.	16 Str.

- Suitable for direct burial.



UL Listed 486

3 - Copper Offset Terminal Lug

Part No.	Conductor Range (AWG)	Bolt Hole Size
GEOL2	14 Str. - 6 Str.	#8

- Not suitable for direct burial.

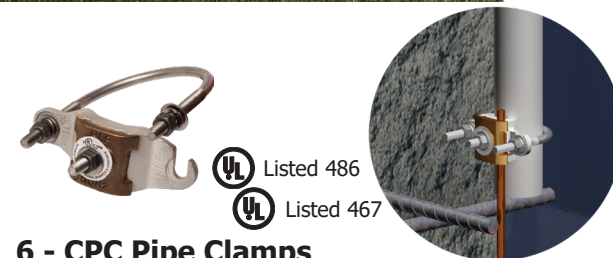


UL Listed 467

4 & 5 - Rebar & Water Pipe Ground Clamps

Part No.	Pipe & Rebar Range	Conductor Range (AWG)
RB12A	3/8" - 1"	10 Sol. - 2 Str.
RB12B	3/8" - 1"	10 Sol. - 2 Str.

- Suitable for direct burial.



UL Listed 486
UL Listed 467

6 - CPC Pipe Clamps

Part No.	Material	Nom. Pipe Size Range	Pipe Outside Diameter
CPC1.5/2	Tinned Bronze	1.5" - 2"	1" - 2.4"
CPC2.5/3	Tinned Bronze	2.5" - 3"	2.25" - 3.5"

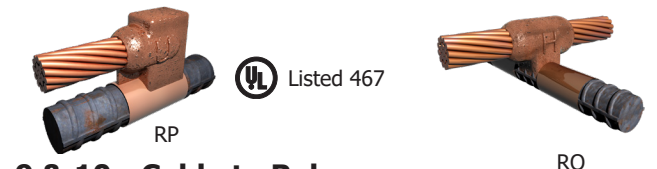
- Suitable for direct burial.
- Conductor Range #6 - 250 MCM.
- Other sizes available.



UL Listed 467

7 & 8 - Cable to Cable Ultraweld Exothermic Connection Molds

Part No.	Weld Metal		Required Handle
	UltraShot	NUWTUBE	
PT8S8SB	US25	NUWTUBE25	MH1
PS8S8SL	US25	NUWTUBE25	MH3 (Included)
PS8S6SL	US25	NUWTUBE25	MH3 (Included)



9 & 10 - Cable to Rebar Ultraweld Exothermic Connection Molds

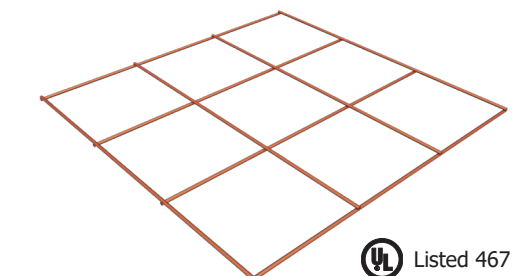
Part No.	Weld Metal		Required Handle	Packing Mat'l No.
	UltraShot	NUWTUBE		
RP38SB	US25	NUWTUBE25	MH1	WRPSLV
RP4L8SA	US25	NUWTUBE25	Included	CERPM1
RO38SB	US65	NUWTUBE65	MH1	WRPSLV
RO48SB	US65	NUWTUBE65	MH1	WRPSLV
RO58SB	US65	NUWTUBE65	MH1	WRPSLV



11 - Rebar Grounding Assembly

Part No.	Rebar Size	Conductor Type (AWG)	Conductor Length (ft.)
RB3GA8SX5	3	8 Sol.	5

- Prefabricated rebar grounding assembly with exothermically welded connection.
- Standard 24" long rebar.
- Can be wire tied or welded to rebar cage prior to concrete pour.



12 - UL Listed Prefabricated #8 Solid Copper Ground Mesh

Part No.	Width (ft.)	Length (ft.)	Conductor Spacing (in.)	Approx. Wt. (lbs.)
GM350812	3	50	12	32
GM375812	3	75	12	42
GM3100812	3	100	12	51

- Other mesh sizes and wire gauges available.

TECHNICAL NOTES:

• 680.26 Equipotential Bonding* (Summarized)

(A) Performance. The equipotential bonding required by this section shall be installed to reduce voltage gradients in the pool area.

(B) Bonded Parts. The parts specified in 680.26(B)(1) through (B)(7) shall be bonded together using solid copper conductors, insulated covered, or bare, not smaller than 8 AWG or with rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with 250.8**. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes.

(1) Conductive Pool Shells. Bonding to conductive pool shells 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 materials.

(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. The bonding shall be in accordance with 250.8 or approved means.

(2) Conform to the contour of the pool.

(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 to be bonded shall be considered to extend for 1 m (3 ft.) horizontally beyond the inside walls of the pool and shall include unpaved surfaces and other types of paving. Perimeter surfaces separated from the pool by a permanent wall or building 1.5 m (5 ft.) less than 1 m (3 ft.) in height or more shall require equipotential bonding only on the pool side of the permanent wall or building. 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 points shall not be required.

(a) *Structural 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 nonconductive compound, a copper conductor(s) shall be utilized 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 450 to 600 mm (18 in. to 24 in.) from the inside walls of the pool.

(5) The required conductor shall be secured within or under the perimeter surface 100 to 150 mm (4 in. to 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.

(5) Metal Fittings.

(6) Electrical Equipment.

(7) Fixed Metal Parts. All fixed metal parts shall be bonded including, but not limited to, metal-sheathed cables and raceways, metal piping, metal awnings, metal fences, and metal door and window frames.

Exception No 1: Those separated from the pool by a permanent barrier that prevents contact by a person shall not be required to be bonded.

Exception No 2: Those greater than 1.5 m (5 ft.) horizontally from the inside walls of the pool shall not be required to be bonded.

Exception No 3: Those greater than 3.7 m (12 ft.) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, or platforms, or any diving structures, shall not be required to be bonded.

(C) Pool Water. Where none of the bonded parts is in direct connection with the pool water, the pool water shall be in direct contact with an approved corrosion-resistant conductive surface that exposes not less than 5800 mm² (9 in.²) of surface area to the pool water at all times. The conductive surface shall be located where it is not exposed to physical damage or dislodgement during usual pool activities, and it shall be bonded in accordance with 680.26(B).

• 250.8 Connection of Grounding and Bonding Equipment**

(A) Permitted Methods. Equipment grounding conductors, grounding electrodes conductors, and bonding jumpers shall be connected by one or more of the following means:

(1) Listed pressure connectors

(2) Terminal bars

(3) Pressure connectors listed as grounding and bonding equipment

(4) Exothermic welding process

(5) Machine screw-type fasteners that engage not less than two threads or are secured with a nut

(6) Thread-forming machine screws that engage not less than two threads in the enclosure

(7) Connections that are part of a listed assembly

(8) Other listed means

(B) Methods Not Permitted. Connection devices or fittings that depend solely on solder shall not be used.

*NEC 2017 Equipotential Bonding Article 680.26

**NEC 2017 Connection of Grounding and Bonding Equipment Article 250.8