Swimming Pools

Building Guide for Homeowners

Did You Know?

- The suction from a pool drain can be so powerful that it can hold an adult under water. Most drain related incidents involve children. Entrapment avoidance is a mandatory requirement of the code.
- Nearly 9 of 10 drowning related deaths happen while a child is under some form of supervision, according to a Safe Kids Worldwide study.
- 77% of drowning victims had been missing from sight for less than 5 minutes

Why Do I Need a Permit?

There are many important reasons to obtain building permits and to have inspections performed for your construction project the following are just a few.

Protects property values

Your home is typically your largest investment. If your construction project does not comply with the building codes, your investment could lose value. If others in your neighborhood make unsafe or substandard changes to their homes, it could lower the resale values for the entire community.

Saves Money

Homeowners insurance policies may not pay for damages caused by work done without permits and inspections.

Makes Selling Property Easier

Listing associations require owners to disclose any home improvements or repairs and if permits were obtained. Many financial institutions will not finance a purchase without proof of a final inspection. If you decide to sell a home or building that has had modifications without a permit, you may be required to tear down the addition, leave it unoccupied or do costly repairs.

Improves safety

Your permit allows the building department to inspect for potential hazards and unsafe construction. By ensuring your project meets the minimum building code standards of safety, the building department can reduce the risk of fire, structural collapse and other issues that might result in costly repairs, injuries and even death. Inspections complement the contractor's experience and act as a system of checks and balances resulting in a safer project.

It's the Law

Permits are required by ordinance. Work without a permit may be subject to removal or other costly remedies.

The purpose of this guide is to assist you in the permitting process. This handout is intended to cover information for a basic plan submittal and typical project under the building codes. It is not intended to cover all circumstances. Depending on the scope and complexity of your project, additional information may be required.

What do I need in order to apply for a building permit?

The following must be submitted:

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What is a Site Plan?

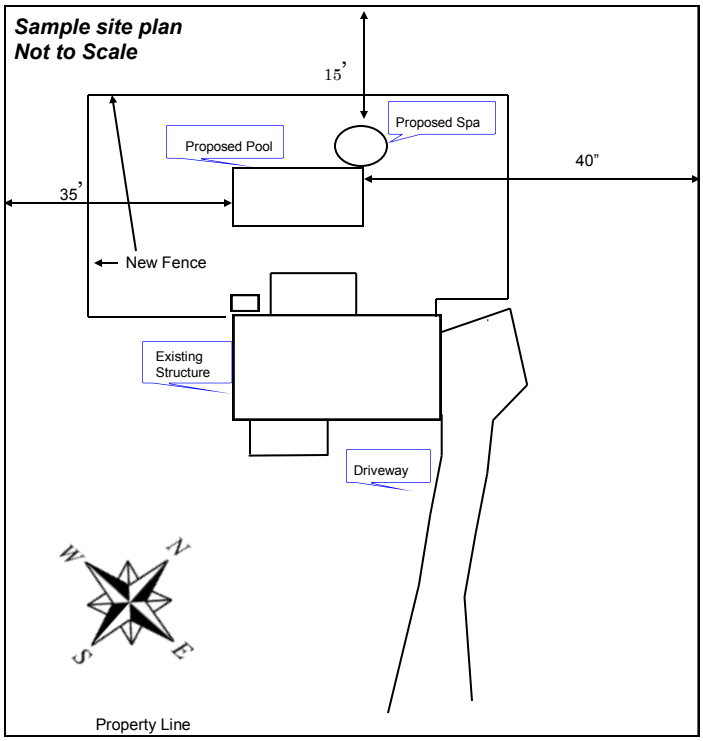
A site plan is a detailed drawing of your property, also known as a survey of your land. These are usually drawn by a land surveyor. The site plan will show the dimensions of your project and its relationship to existing setbacks, easements, utilities, other structures on the property, and distance to your property lines. If your project will require moving any utilities (gas, water, sewer/septic, electric, etc.), show where those utilities will be relocated.

What is REQUIRED for a Permit?

☐ Provide copies of the SITE PLAN

Notes:

1. Structures must meet zoning requirements.
2. A survey from a registered land surveyor will be required if your project is located within the setbacks or in a protected area. If your property is on a slope, you may be required to install silt fence to keep the dirt on your property.
3. If you are on a septic tank, you may be required to have approval from the county health department prior to submitting your pool application.
4. Certificate of elevation may be required on any lot of record that includes or abuts any portion of a flood plain.
5. Entry to your pool must be secured, and a fence or other barrier must be shown on the site plan.



Construction Plan Requirements

What is REQUIRED for a Permit?

☐ Provide copies of a POOL PLAN, drawn at a legible scale. Such plans shall include details, drawings, and notes that sufficiently describe the work to be done and clearly shows building code compliance: Include the following :

- Address, lot number, owner's name & contact information, designer's name & contact information, list of plan pages in the set.
- Dimensioned, detailed plans showing pool location, decking, fencing, equipment location, retaining walls, spas, pool house location, fire pits, etc.
- Location of electric meters & panels, pool heater gas lines, overflow, backwash, pool fill, etc.
- Profile section of pool
- Entrapment protection provisions
- Include any notes or statements on the plan that clarify what work is to be by the pool contractor and what work is to be completed by the property owner
- Notes and/or statements on the plans that clarify who will be responsible for alarm installation, fencing and landscape requirements.

NOTES

- Separate structures (Pool houses, outdoor fireplaces, etc.) all require a separate permit.

Tips For Hiring Contractors

- Hire only licensed contractors
- Get at least 3 bids—Get 3 references and ask to see a project
- Get it in writing - but before you sign the contract, make sure you completely understand
- Don't make final payment until you have a Certificate of Completion (CC) and you are satisfied
- **Have the contractor apply for the required permits**

What the inspector will look at: Required Inspections

1. **Pool Structure.**
   IN GROUND POOLS (Basket)
   - Made after the pool has been excavated and cleaned of all loose soils, debris, and organic matter all required forms are in place and properly supported
   - All drain and circulation piping is in place and under required test.
   - All reinforcement steel is in place, properly tied, and supported with concrete bricks or approved chairs to guarantee the required 3" minimum cover.
   - All electrical conduits, lighting fixtures (or shells), etc are in place and properly supported.
   - All supports or sockets for ladders, diving boards, etc are in place and properly supported.
   - The Basket is completely ready for shotcrete.
   - For in ground pools not constructed as above (vinyl liners, fiberglass shell), the manufacturer's installation instructions, and/or structural installation plans sealed by a Colorado Registered Design Professional must be on site at all times during construction.

   ABOVE GROUND POOLS
   Made after erection of the pool structure and before any structural members and connections are covered. The installer must provide safe access to all areas of the pool, have the Manufacturer's installation instructions on site at all times, and be ready to perform any tests of connections required by the inspector.

2. **Circulation/Drain Piping Test**. To be made with a basket inspection listed above. A water pressure test of 1½ times (150%) the maximum operating pressure is required. Bypass the pool equipment and do not exceed the piping maximum test pressure for the piping.
   Exceptions
   - Air pressure test of not less than 35 psi (if allowed by the piping manufacturer)
   - Listed pre-fabricated package pool assemblies do not require pressure tests.

3. **Electrical Bonding**. Made when all metal parts of a pool structure, deck bonding grid, and equipment is properly bonded together and ready to be covered. **Note:** Depending on pool design and site conditions, this inspection may require several trips to be completed and shall be at the inspector's discretion.

4. **Back Flow**. Made prior to or with the final pool inspection. State law requires backflow prevention for all pools connected to a potable water supply. If the pool fill has an indirect connection, protection is usually not required. **Note:** Building inspectors do not make backflow inspections, but will check pool fills for compliance. Only Certified Backflow Testers can perform and Certify backflow tests. Written certification of passing the test must be provided to the building department before a Certificate of Completion is issued.

5. **Gas Piping**. Made at any time during construction but before Final inspection. A gas pressure test of at least 10 psi is required. Piping must be under pressure with a working gauge for inspection. **Note:** Gas piping may not be covered or concealed without passing this inspection.

6. **Electrical System**. Made at any time during construction but before Final. All of the electrical system, including low voltage systems, must be in place and ready for electrical rough-in inspection. The system must meet the requirements of NEC 680 for locations, GFCI protection, bonding, etc. **Note:** Underground electrical may not be covered or concealed without passing this inspection.

7. **Permanent Fence**. Must be complete, with entry warning alarms working, prior to filling the pool with water. May be done at anytime during construction. **Note:** Construction safety barriers must remain in place until permanent fencing is 100%.

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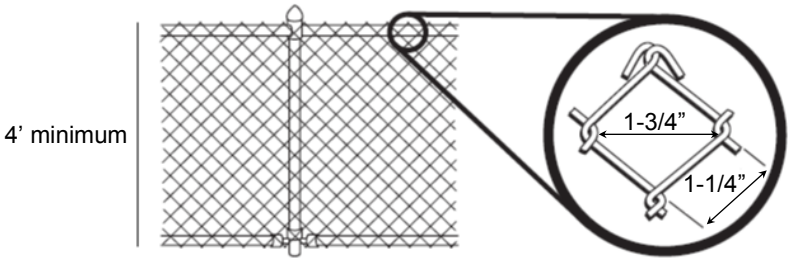
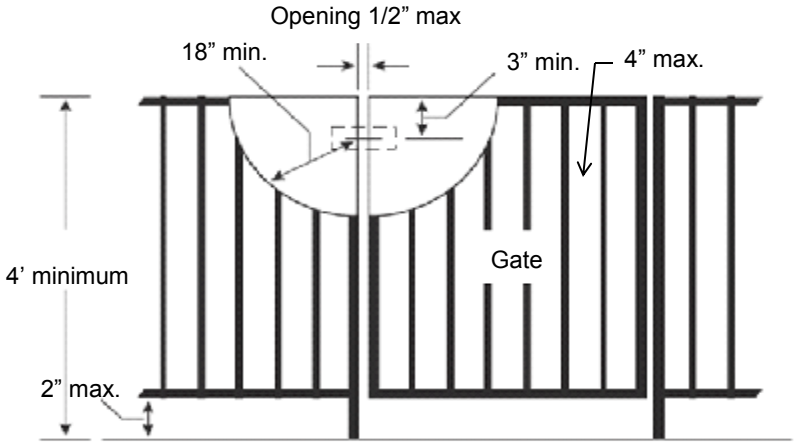
REMINDER:

Permits are only issued after plan review. The time required to conduct this review will depend on the completeness of the information we receive in the application and plans.

Construction Details

Fence and Gate Barriers





- A fence or other permanent barrier, such as a wall, is required to be completely around the pool. If the house is part of the barrier, the doors leading from the house to the pool must be protected with an alarm.
- The fence or other barrier must be a minimum of 4' tall.
- Details for a chain link fence barrier is shown. A 1-3/4 x 1-1/4" maximum opening allowed.
- Details for a vertical fence barrier is shown. A 4" maximum opening allowed.
- Gate must swing outwards away from pool and be self-closing.

Required Inspections (cont.)

8. **Pool Final**. Made after the pool and all associated construction is complete and ready for use.
   - The pool must be full of water and all equipment, lights, ladders, steps, and other pool accessories in place, connected, and working as designed for a completed ready for use pool.
   - All permanent fences, gates, and entry warning alarms must be in place and working.
   - All life safety equipment must be in place.
   - All site work, walks, drives, paved areas, and landscaping included in the plans submitted at permitting must have final inspections, and sign-off's by the various departments and authorities as required.

How do I schedule a required inspection?

Please call the inspection line listed on your permit card and leave all information requested in the message.

Want to know more? Need more help?

We hope you found the information in this guide useful. If you have any questions, please feel free to contact us.

ELECTRICAL REQUIREMENTS

POOL INSTALLATION CHECKLIST

2011 NEC

General Location Information:

A) The location of the pool must be so that any overhead service entrance cables are 22.5' from the water level in any direction. If installing a diving board of platform a distance of 14.5' must be maintained. **680.8 A & B**

B) If it's an underground pool, consideration for any underground utilities should be taken. No non-pool related underground wire within 5' of pool wall unless in an approved conduit. **680.10**

Bonding - *The sole purpose of an equipotential grid is to create an area where there is no significant difference in voltage between objects that can be touched simultaneously. Example of objects at a pool that can be touched simultaneously include the concrete decking, ladders, hand rails, light fixtures, drains, and the pool water. An equipotential grid is created by intentionally connecting all these objects together electrically, otherwise known as bonding them together.*

A) All metal parts of structure and equipment must be bonded

Exception—isolated parts less than 4" in any dimension and do not penetrate the pool structure less than 1"

B) Bonding with a 8 AWG or larger conductor—lugs for bonding must be rated. **110.3(B)**

Lighting

A) Underwater Wet-Niche
- Installed where top of fixture lens is not less than 18" below water line.
- Bonded and secured to shell required a tool for fixture removal
- Low voltage lines from UL listed transformer separate from line voltage
- Over 15V must be GFCI protected **680.23 (A) (3)**
- Connections in Wet-Niche must be potted **680.23 (B) (4)**
- Metal parts in contact with pool water need to be corrosion-resistant.
- Junction Boxes for pools must be UL listed for use

B) Dry-Niche
- Provided with a means for drainage of water
- One equipment-grounding conductor for each conduit entry

A) No-Niche
- UL listed for use
- Installed in forming shells connected by means of a bracket

Grounding

A) Grounding conductors must be insulated. **680.25 B**

B) No splices in conductors—must land in terminals

Lighting Outlets

A) Existing lights less than 5' from pool and at least 5' above the water level need to be GFCI protected

B) New installation above pool or within 5' of pool wall need installed at least 12' above the water line

C) Indoor lights with a totally enclosed fixture or identified for use can be 7'6" above the water if GFCI protected.

D) Switches other than ones UL listed need to be at least 5' from pool wall.

Receptacles

A) Receptacles for circulation and sanitation systems of pools need to be located more than 3' but not less than 5' from pool wall and be a single receptacle. GFCI protected with ground and be of a locking type. **680.22 (A) (1)**

B) Permanently installed pools require a receptacle at least 10' but no more than 20' from pool wall. **680.22 (A) (3)**

C) All Exterior receptacles within 20' of pool walls need to be GFCI protected. **680.22 (A) (4)**

Pool Wiring

A) Feeder wires and branch circuit wires need to be installed in conduit **680.25 A**

B) Conduit must be of the following type: RMC, IMC, LFNMC, PVC