

# **CODE REQUIREMENTS/ GUIDE FOR RESIDENTIAL SWIMMING POOLS**

2022 CONNECTICUT STATE BUILDING CODE

2021 INTERNATIONAL RESIDENTIAL CODE

2021 INTERNATIONAL SWIMMING POOL AND SPA CODE

2020 NATIONAL ELECTRICAL CODE

2021 INTERNATIONAL ENERGY CONSERVATION CODE

The Town of Middlefield Building Department is offering this informational handout as a guide to help and assist homeowners, applicants and contractors who are considering to install either an in-ground or above ground swimming pool, spa or hot tub. Note, the Town assumes no responsibility for errors or omissions, and the installer is required to follow all applicable codes and regulations of the State of Connecticut and all of its applicable codes.

Date: May 2024

# GUIDE FOR SWIMMING POOLS

## PERMIT APPLICATION REQUIREMENTS

### ABOVE-GROUND:

- Copy of **Plot Plan** (showing location of pool)
- **Building Permit** application (with permit fee)
- **Electrical Permit** application (with permit fee)
- **Zoning Permit** application
- Permission to sign (if required)
- Proof of Home Improvement Contractor's License (if applicable)
- Proof of Electrical Contractor's License (if applicable)
- Certificate of Workman's Compensation insurance (if applicable)
- Specifications for: pool, filter, alarm, etc.
- **East Shore Health Department approval** (if property has well and/or septic)

### IN-GROUND:

- Copy of **Plot Plan** (showing location of pool)
- **Building Permit** application (with permit fee)
- **Electrical Permit** application (with permit fee)
- **Zoning Permit** application
- Permission to sign (if required)
- **Zoning Permit** application
- Permission to sign (if required)
- Proof of Swimming Pool Builder License (if applicable)
- Proof of Electrical Contractor's License (if applicable)
- Certificate of Workman's Compensation insurance (if applicable)
- Construction of drawings of pool
- Specifications for: filter, heater alarm, blanket, cover, suction fittings, etc.
- **Plainville-Southington Health District approval** (if property has well and/or septic)

# PLOT PLAN REQUIREMENTS

## Guide Lines

The following information must be incorporated on all plot drawings submitted for building/zoning permits:

1. **Determine the boundaries** of the subject property and represent said boundaries on the plot plan.
2. **Draw the distance of the side yard** to the proposed improvement.
3. If the proposed improvements is in a front or rear yard, **draw the rear yard or front yard distances.**
4. **Draw proposed improvement** and placement on lot to scale.
5. **Represented all information provided on the plan in ink.**
6. Verify dimensions and **initial or sign plot plan** as to the accuracy of the information provided.
7. **When a pool is being constructed, the pool location must be shown along with distances to the side and rear property lines. The fencing protecting the pool must be shown on the plot plan.**
8. Contact the Plainville-Southington Regional Health District for approval if a septic tank, leaching field or well exists on the property.

Please utilize the foregoing instruction to facilitate the processing of your application. **Lack of this necessary information could result in processing delays of your application for a permit.**

Note: If you do not have a plot plan for your property, you may use the Town's GIS system to select and print your parcel. GIS Mapping may be found on the Town's website ([www.middlefieldct.org](http://www.middlefieldct.org)) and look under "Quick Links"- GIS Maps.

The Town of Middlefield Building Department is offering this informational handout as a guide which is representative of typical issues or questions that may arise on a typical swimming pool, spa or hot tub job. The Town assumes no responsibility for any errors or omissions and the installer is required to follow all applicable codes. Keep in mind that this and no handout could possibly cover all situations, details, information, etc.

## POOL CHECKLIST

### GENERAL

1. Obtain building and electrical permits.
2. Barrier (fence, pool, wall, etc.) shall be **not** less than 48" in height.
3. Openings shall not allow passage of a 4" sphere.
4. No indentations or protrusions should be present in solid barriers, other than construction tolerances and masonry joints.
5. Horizontal rails less than 45" apart on inside barrier; 1 3/4" vert. spacing.
6. Horizontal rails spaced 45" or more (vertical/picket spacing); openings shall not allow the passage of a 4" diameter sphere.
7. Maximum mesh size for chain link fences shall be 2 1/4" square.
8. Maximum diagonal openings (lattice, chain link w/slats etc.) 1 3/4".
9. Maximum opening in diagonal members (lattice fence) shall not be more than 1 3/4".

### ACCESS GATES

1. Gate material shall comply w/#2 through #9 above.
2. Gates shall open outward, away from pool.
3. Gates shall be self-closing, self-latching, and equipped to accommodate a locking device.
4. Gate latches less than 54" above ground shall be **inside** the gate, at least 3" **below** the top of the gate, and gate material shall have openings 1/2" maximum within 18" of the latch.
5. For doors and gates in barriers, the door and gate latch release mechanisms shall be located not less than 54 inches above the finished floor or ground surface.

### ALARMS FOR DOORS DIRECTLY FROM HOUSE

1. Alarm shall be audible and distinct when door and/or screen are opened.
2. Alarm sounds continuously for minimum of 30 seconds within 7 seconds when the door and/or screen, if present, are opened.
3. Alarm shall automatically reset under all conditions.
4. Alarm override is allowed, in either direction, for up to 15 seconds maximum.
5. Touch pads or switches shall be located a minimum of 54" minimum above the threshold of the door.
6. Other means of protection shall be acceptable when approved by the Building Official.

# DEFINITIONS

## **Swimming Pool –**

Any structure intended for swimming or recreational bathing that contains water over 24 inches deep. This includes in-ground, above-ground and on-ground swimming pools, hot tubs and spas.

## **Permanently Installed Swimming and Wading Pools –**

Those that are constructed in the ground or partially in the ground, and all others capable of holding water with a depth greater than 42 inches, and all pools installed inside of a building, regardless of water depth, whether or not served by electrical circuits of any nature.

## **Storable swimming or wading pools –**

Those that are constructed on or above the ground and are capable of holding water with a maximum depth of 42 inches, or a pool with non-metallic, molded polymeric walls or inflatable fabric walls regardless of dimension.

## **Pool cover, electrically operated –**

Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame.

# STORABLE SWIMMING POOLS

## **Pumps.**

A cord connected pool filter pump for use with storable pools shall incorporate an approved system of double insulation or its equivalent and shall be provided with means for grounding only the internal and non-accessible non-current-carrying metal parts of the appliance.

The means for grounding shall be an equipment grounding conductor run with the power supply conductors in a flexible cord of any length that is properly terminated in a grounding-type attachment plug having a fixed grounding contact.

## **Ground-fault circuit-interrupters required.**

Electrical equipment, including power supply cords, used with storable pools shall be protected by ground-fault circuit-interrupters.

## **MISCELLANEOUS**

### **EQUIPMENT, LOCATION AND CLEARANCES**

#### **Location –**

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 6 feet and 10 feet from the inside walls of pools, and, where so located shall be protected by ground-fault circuit interrupters. Other receptacles on the property shall be located not less than 6 feet from the inside walls of the pool.

#### **Where Required –**

At least one 125-volt 15- or 20-ampere receptacle supplied by a general purpose branch circuit shall be located a minimum of 6 feet from and not more than 20 feet from the inside wall of the pool. This receptacle shall be located not more than 6 feet, 6 inches above the floor, platform or grade level serving the pool.

#### **GFCI protection –**

All 125-volt receptacles located within 20 feet of the inside walls of pools shall be protected by a ground-fault circuit interrupter. Outlets supplying pool pump motors from branch circuits with short-circuit and ground-fault protection rated 15 or 20 amperes, 125 volt or 240 volt, single phase, whether by receptacle or direct connection, shall be provided with GFCI protection for personnel.

#### **Electric pool water heaters –**

All electric pool water heaters shall have the heating elements subdivided into loads not exceeding 48 amperes and protected at not more than 60 amperes. The ampacity of the branch-circuit conducts and the rating or setting of overcurrent protective devices shall be not more than 125 percent of the total nameplate load rating.

#### **On-Off switch –**

All pool heaters shall be equipped with an ON-OFF switch mounted for easy access to allow shutting off the operation of the heater without adjusting the thermostat setting and to allow restarting without relighting the pilot light.

### **Pool covers - Heated Pool -**

Heated swimming pools shall be equipped with a pool cover.

EXCEPTION: Outdoor pools deriving more than 60 percent of the energy for heating from renewable sources (computed over an operating season) are exempt from this requirement.

### **Electrically operated pool covers –**

The electric motors, controllers, and wiring for pool covers shall be located not less than 5 feet from the inside wall of the pool except where separated from the pool by a wall, cover or other permanent barrier. Electric motors installed below grade level shall be of the totally enclosed type. The electric motor and controller shall be connected to a circuit protected by a ground-fault circuit-interrupter. The device that controls the operation of the motor for an electrically operated pool cover shall be located so that the operator has full view of the pool.

### **Flexible Cords –**

Flexible cords used in conjunction with a pool, spa, hot tub or hydro massage bathtub shall be installed in accordance with the following:

1. For other than underwater luminaries, fixed or stationary equipment, rated at 20 amperes or less 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 in length, except spas and hot tubs, not longer than 15 feet where protected by ground fault circuit interrupter. Cords that supply swimming pool equipment shall have a copper equipment grounding conductor not smaller than 12 AWG and shall be provided with a grounding-type attachment plug.
2. Flexible cord that is supplied as part of a listed underwater swimming pool lighting luminaire shall be permitted to be installed in any of the permitted wiring methods from the luminaire to a deck box or other enclosure. Splices shall not be made within a raceway. The equipment grounding conductor shall be an insulated copper conductor that is not smaller than the supply conductors and not small than 16 AWG.

### **Outdoor wet locations –**

Where installed outdoors in a wet location, 15- and 20-ampere, 125- and 250-volt receptacles shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted and shall be listed and identified as “extra duty”.

# PERMANENTLY INSTALLED SWIMMING POOLS, SPAS & HOT TUBS

## ELECTRICAL

1. Receptacles shall be 6' minimum from pool edge.
2. At least one 125v convenience GFCI receptacle between 6' to 20' from pool.
3. Convenience receptacle and pump cannot be on same circuit.
4. Time clock shall be installed so that pump can be set to run in the off peak demand period.
5. Receptacles associated with the circulation and sanitation system (pump motor, heater, etc) within six (6) and ten (10) feet from the pool edge shall be GFCI protected and grounding type. No receptacles are allowed within six (6) feet of the water.
6. Pump receptacle grounding conductor not less than #12AWG, insulated.
7. All 125v/15-20A receptacles outdoors to be GFCI protected and weather-resistant (WR) rated.
8. Maximum pool equipment flex cord length is 3' except underwater lighting fixtures or storable pools.
9. Wiring method type/burial depths: **Trench inspection required.**
  - Rigid metal conduit RMC not less than 6"
  - Intermediate metal conduit IMC not less than 6"
  - Rigid non-metallic conduit RNC not less than 18"
  - Pool wiring using NMC or MC cable (with **insulated** equipment ground) is only allowed in sizes #12 and larger inside single family homes. The wiring method must be changed to conduit outside the house.
10. Bonding required; #8 AWG solid copper bonding conductor or larger, for the following:
  - Structural reinforcing (rebar) of concrete pool
  - Walls of bolted or welded metal pools
  - All metallic parts of pool structure
  - All fixed metal parts within 5' horizontally from pool edge
  - All pump motors, filter casings and other metal electrical equipment associated with the pool.
  - **Inspection required prior to backfill.**



## ELECTRICAL BONDING

**E4204.2 Bonded parts.** The parts of pools, spas, and hot tubs specified in Items 1 through 7 shall be bonded together using insulated, covered or bare solid copper conductors not smaller than 8 AWG or using rigid metal conduit of brass or other identified corrosion-resistant metal. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool, spa, or hot tub area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes. Connections shall be made by exothermic welding or by listed pressure connectors or clamps that are labeled as being suitable for the purpose and that are made of stainless steel, brass, copper or copper alloy. Connection devices or fittings that depend solely on solder shall not be used. **Sheet metal screws shall not be used** to connect bonding conductors or connection devices:

**2. Perimeter surfaces.** The perimeter surface shall extend for 3 feet (914 mm) horizontally beyond the inside walls of the pool and shall include unpaved surfaces, poured concrete and other types of paving. Bonding to perimeter surfaces shall be provided as specified in Item 2.1 or 2.2 and shall be attached to the pool, spa, or hot tub reinforcing steel or copper conductor grid at a minimum of four points uniformly spaced around the perimeter of the pool, spa, or hot tub. For nonconductive pool shells, bonding at four points shall not be required.

**2.2 Alternate Means.** Where structural reinforcing steel is not available or is encapsulated in a nonconductive compound, a copper conductor(s) shall be used in accordance with Items 2.2.1 through 2.2.5:

**2.2.1** At least one minimum 8 AWG bare solid copper conductor shall be provided.

**2.2.2** The conductors shall follow the contour of the perimeter surface.

**2.2.3** Splices shall be listed.

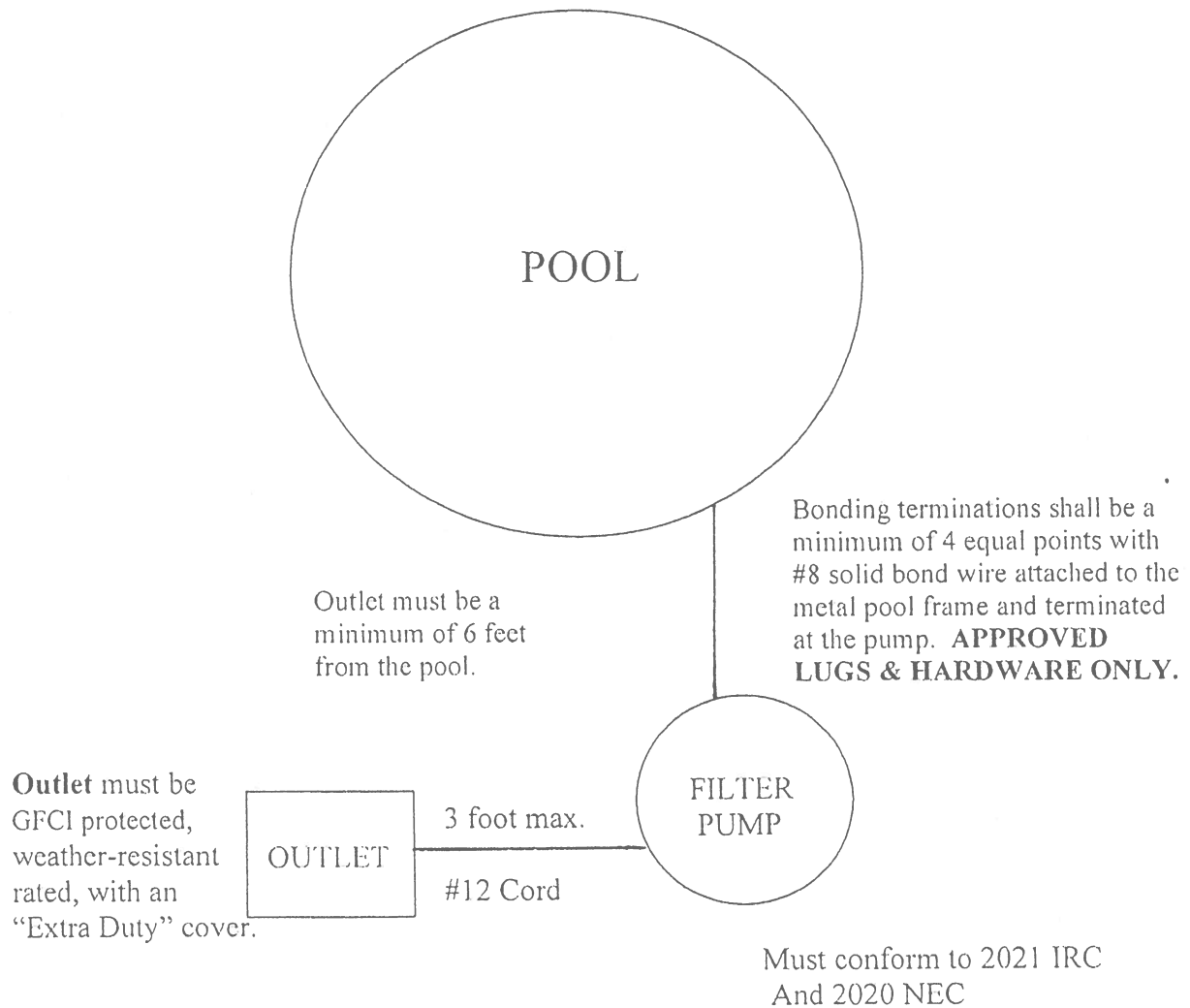
**2.2.4** The required conductor shall be 18 to 24 inches (457 to 610 mm) from the inside walls of the pool.

**2.2.5** The required conductor shall be secured within or under the perimeter surface 4 to 6 inches (102 mm to 152 mm) below the subgrade.

**E4204.3 Pool Water.** The pool water shall be intentionally bonded by means of a conductive surface area not less than square inches (5806 mm<sup>2</sup>) installed in contact with the pool water. This bond shall be permitted to consist of parts that are required to be bonded in Section E4204.2.

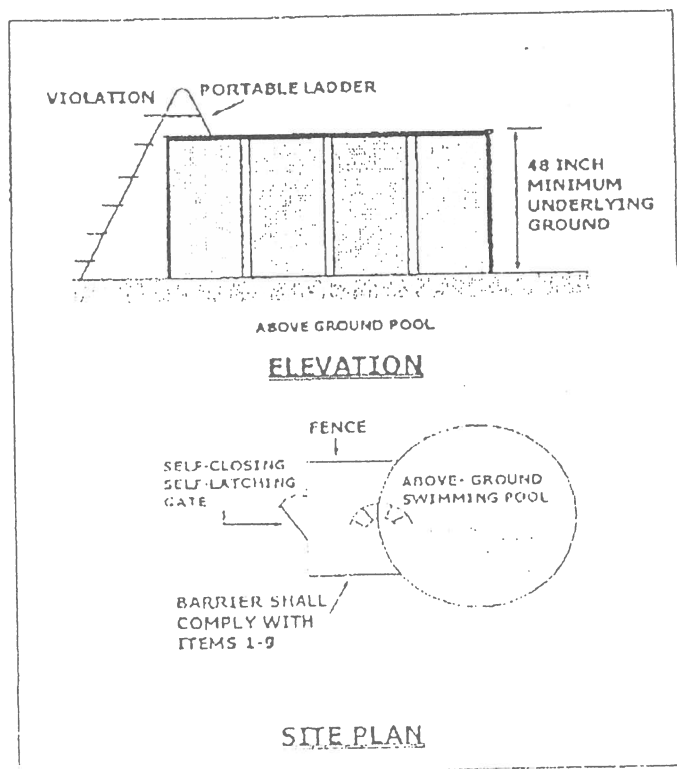
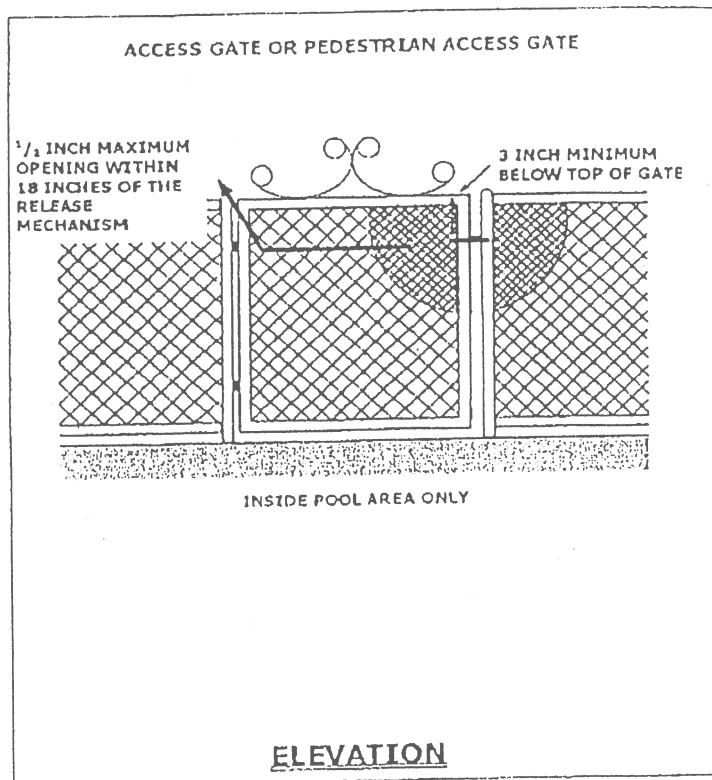
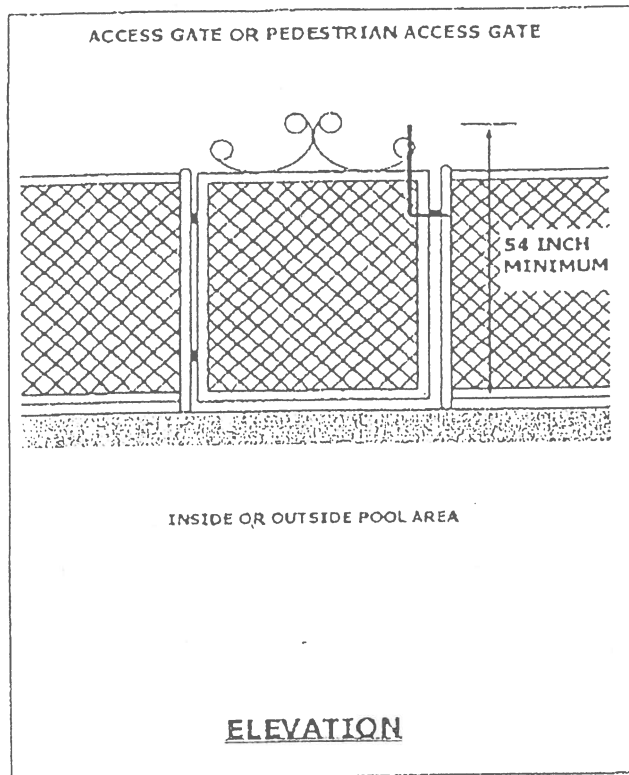
**SWIMMING POOLS MUST BE A MINIMUM OF 10 FEET FROM THE HOUSE**  
**AND 10 FEET FROM THE REAR AND SIDE PROPERTY LINES**

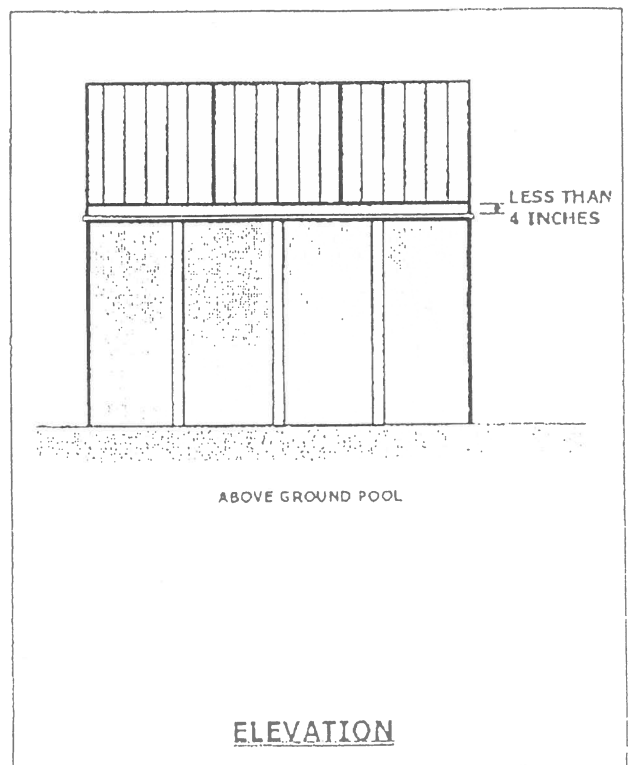
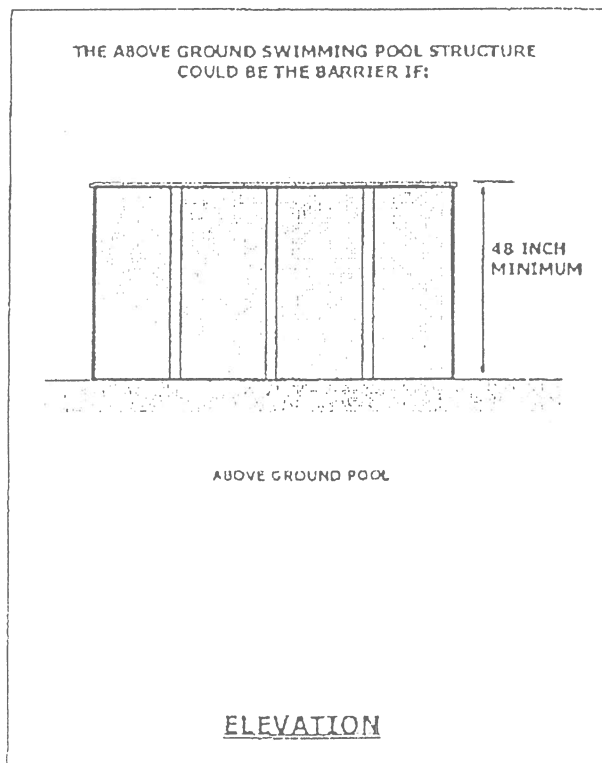
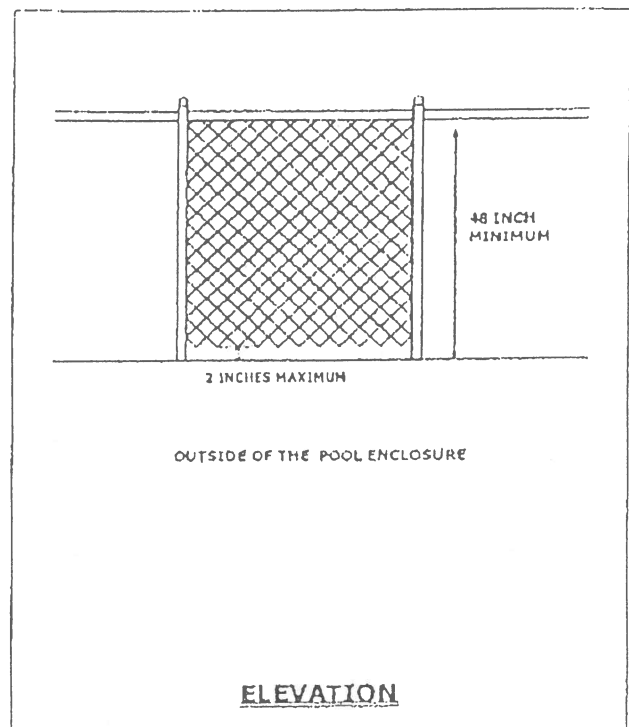
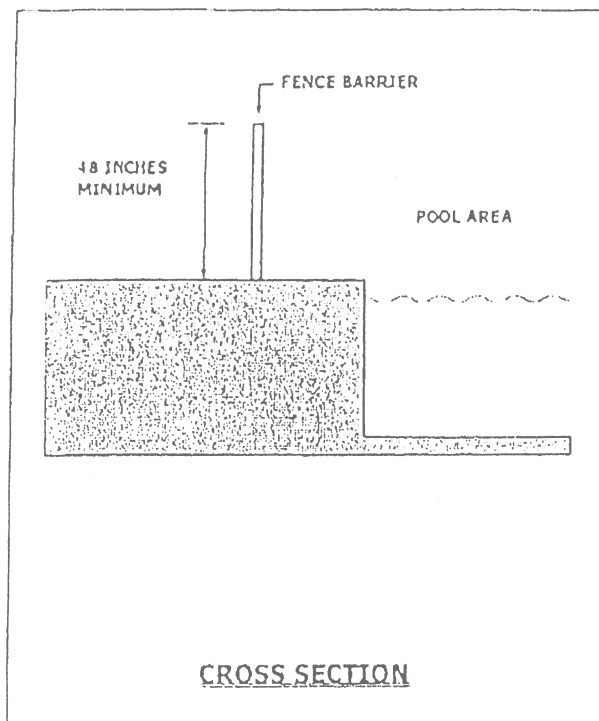
Pool must be 4 feet high around the entire circumference, or enclosed by a 4 foot fence.



#12 wiring to house with insulated #12 ground in conduit. Pool pump motor **must** be time clock controlled.

Additional ground fault protected/weather resistant outlet **is required** 6 to 20 feet from the pool and must be separate from the pool pump circuit.





THE DOOR ALARM SHALL:

- Produce an audible warning when the door and its screen are opened.
- Audible warning sounds within 7 seconds of opening the door and
- Sound continuously for 30 seconds minimum.
- Have a minimum sound pressure rating of 85 dba at 10 feet.
- Be distinctive from other household sounds.
- Automatically reset under all conditions.
- Be equipped with manual means to temporarily deactivate the alarm for a single opening from either direction.
- Allow deactivation to last not more than 15 seconds.
- Have deactivation touch pads/switches located a minimum of 54 inches above the door threshold.

OPTION 2 OF 3

- SELF-CLOSING AND SELF-LATCHING DEVICE
- SWING AWAY FROM POOL

54 INCH  
MINIMUM

ELEVATION

OPTION 1 OF 3

ALARM  
DEACTIVATION  
SWITCH OR  
TOUCHPAD

54 INCH  
MINIMUM

ELEVATION

OPTION 3 OF 3

HOUSE

BACKYARD

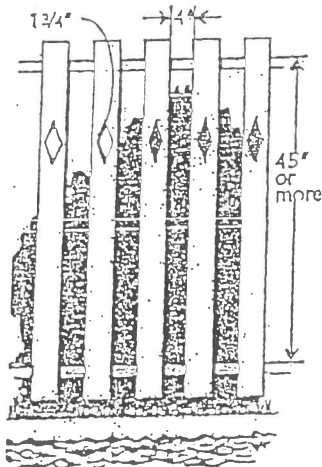
APPROVED  
POWER SAFETY  
COVER  
ASTM F1346

SWIMMING  
POOL

FENCE  
(BARRIER)  
ENCLOSURE

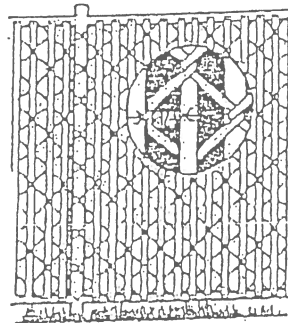
SITE PLAN

If the distance between the tops of the horizontal members is more than 45 inches, the horizontal members can be on the side of the fence facing away from the pool. The spacing between vertical members should not exceed 4 inches. This size is based on the head breadth and chest depth of a young child and is intended to prevent a child from passing through an opening. Again, if there are any decorative cutouts in the fence, the space within the cutouts should not exceed 1-3/4 inches.



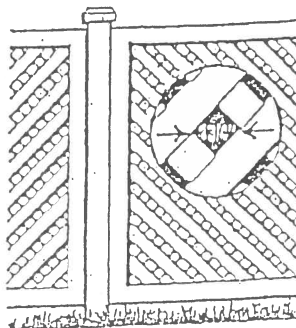
#### For a Chain Link Fence:

The mesh size should not exceed 2 1/4 inches square unless slats, fastened at the top or bottom of the fence, are used to reduce mesh openings to no more than 1-3/4 inches.

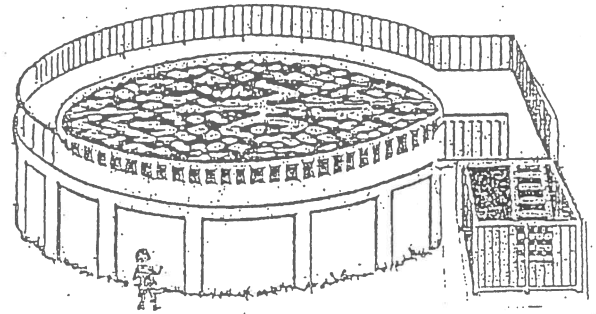


#### For a Fence Made Up of Diagonal Members (Latticework):

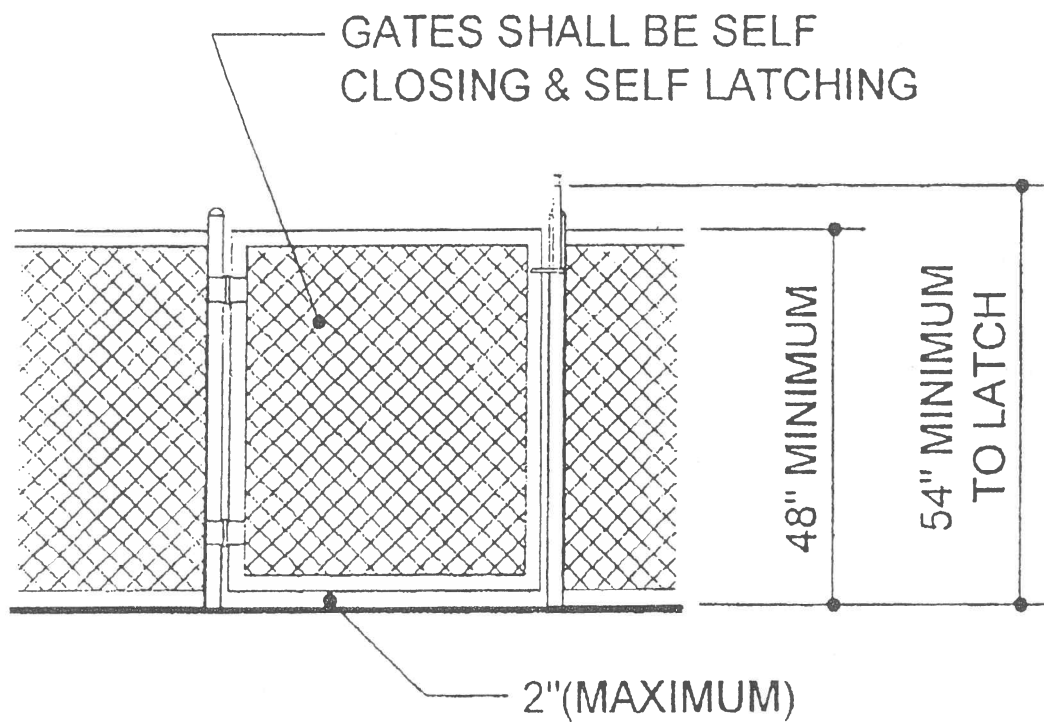
The maximum opening in the lattice should not exceed 1-3/4 inches.



#### For Aboveground Pools:



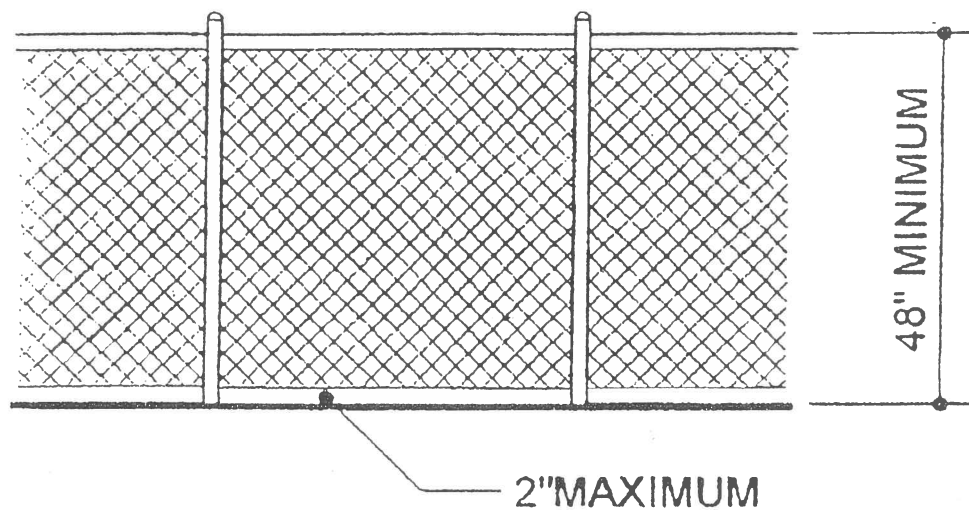
Aboveground pools should have barriers. The pool structure itself serves as a barrier or a barrier is mounted on top of the pool structure.



ELEVATION

PEDESTRIAN ACCESS GATE

SECTION AG105.2, ITEM 8



ELEVATION

OUTSIDE OF THE POOL ENCLOSURE

SECTION AG105.2, ITEM 1



## AG 105.7 – Pool Alarm (CT Add — CGS 29-265a)

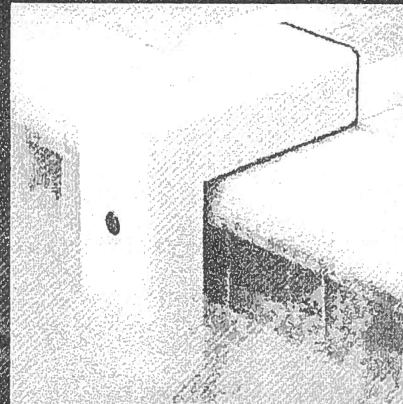
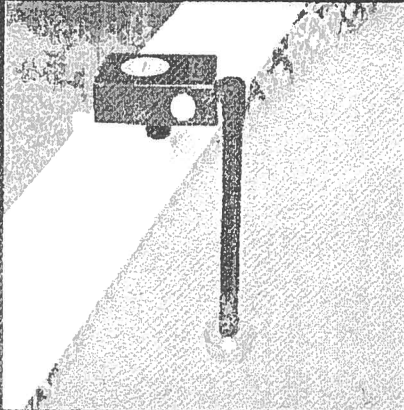
Be on building permit and for substantial alteration

One or more families - residence

Must be installed with pool

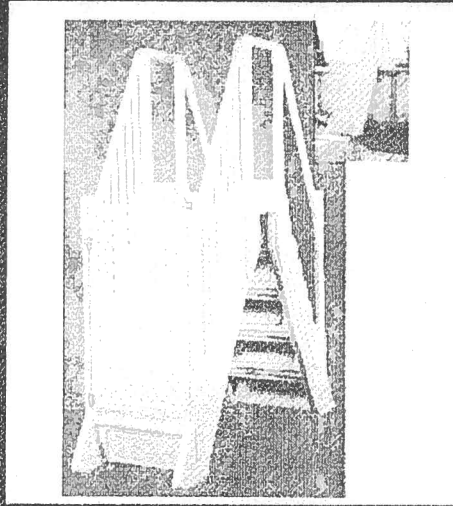
50 db alarm when 15 lbs or more enters pool

*Exempt: Hot tubs & portable spas*



## Barrier Requirements – AG 105.2

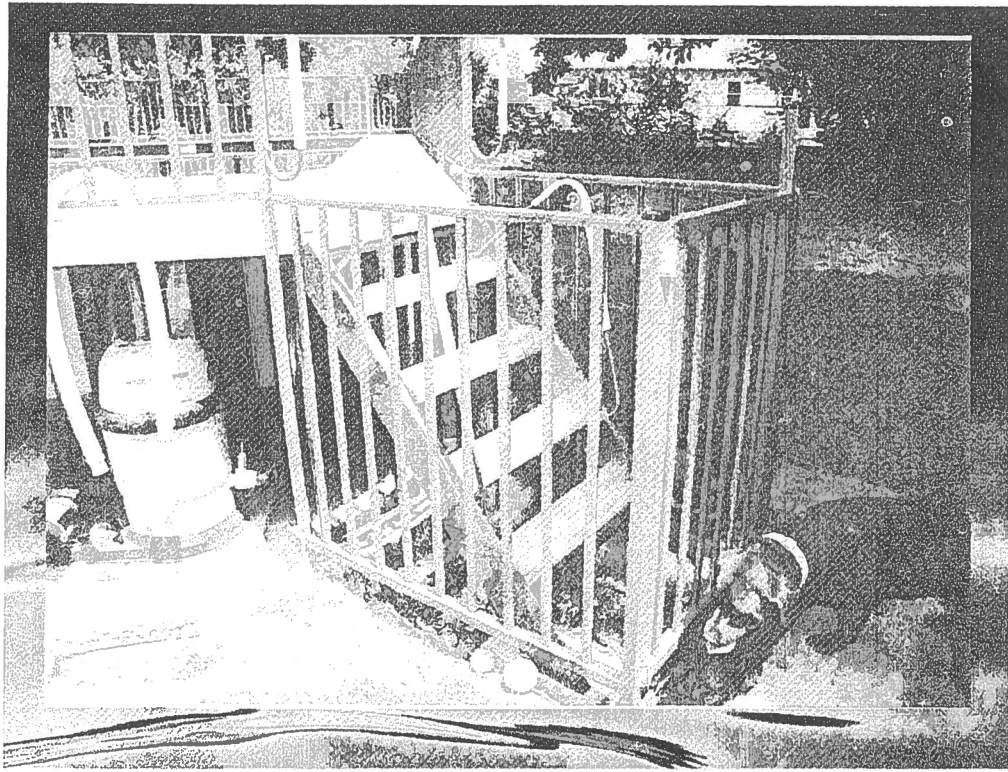
10. Above-ground structure is used as barrier or mounted on structure the ladder or steps shall be surrounded by a barrier which meets 105.2, Items 1-9



SAFETY

## Barrier Requirements





## CONCERNING ALARMS FOR SWIMMING POOLS

CONNECTICUT GENERAL STATUTE 29.265a as referenced in CONNECTICUT STATE BUILDING CODE

(a) As used in this section, "pool alarm" means a device which emits a sound of at least fifty (50) decibels when a person or an object weighing fifteen pounds or more enters the water in a swimming pool.

(b) No building permit shall be issued for the construction or substantial alteration of a swimming pool at a residence occupied by, or being built for, one or more families unless a pool alarm is installed with the swimming pool.

Date: \_\_\_\_\_

As owner of property located at \_\_\_\_\_, I agree to purchase and install a swimming pool alarm in compliance with Public Act 99-140.

Property Owner Signature: \_\_\_\_\_

Property Owner Name Printed: \_\_\_\_\_