

Pool Installation Guide

1. This handout is based on the **2018 International Residential Code NJ**, and the **2017 National Electric Code** for single-family dwellings. This is only a guide and cannot cover every situation that you may encounter.
2. Permits are required for both in ground and above ground pools more than 24" deep.
3. Plans are required for in-ground or semi-in-ground-pools. Plans must be submitted in order to verify compliance with Standard ISPSC-15. Plans shall bear the seal and signature of a N.J. licensed design professional.
4. A sealed survey of your property will be required, indicating the location of the pool and fence.
5. Required Permits:
 - **Building** for the pool, fence and deck (if planned).
 - **Electric** for pump motor, lights (if any) and pool bond.
 - **Plumbing** for gas piping to heater (if any) and drains which need a hydrostatic-pressure test.
6. Required Inspections:
 - **Building-** In ground: Concrete lock around pool walls, collar and Final.
Above ground: Footing (for deck footings if planned) and Final.
 - **Electric-** Rough (before any trenched wires are backfilled or any bond wires are covered) and Final.
 - **Plumbing-** Rough (for gas piping with pressure test to be inspected by plumbing inspector) and Final.

Pool Enclosure Requirements

Private swimming pools must be surrounded by a barrier, such as a fence or wall. The barrier must meet the following requirements.

1. The top of the barrier shall be at least **48 inches** above finished ground level measured on the side of the barrier, which faces away from the swimming pool. The maximum vertical clearance between finished ground level and the bottom of the barrier shall be 2 inches measured on the side of the barrier, which faces away from the swimming pool. Where the top of the pool structure is above finished ground level, such as an above-ground pool, the barrier shall be at finished ground level, such as the pool structure, or shall be mounted on top of the pool structure. Where the barrier is mounted on the pool structure, the opening between the top surface of the pool frame and the bottom of the barrier shall not allow passage of a 4-inch diameter sphere.
2. Openings in the barrier shall not allow passage of a **4-inch** diameter sphere.

3. Solid barriers shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.
4. Where the barrier 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- $\frac{1}{8}$ inches in width. Decorative cutouts shall not exceed 1- $\frac{1}{8}$ inches in width. (figure 1)

Fences with horizontal rails less than 45" apart

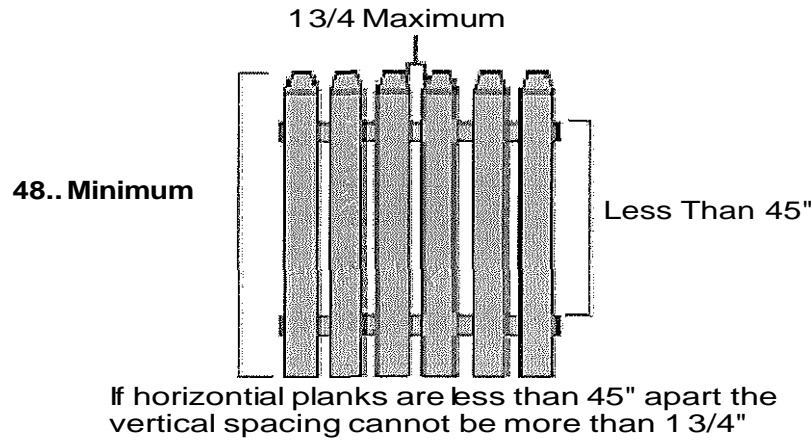
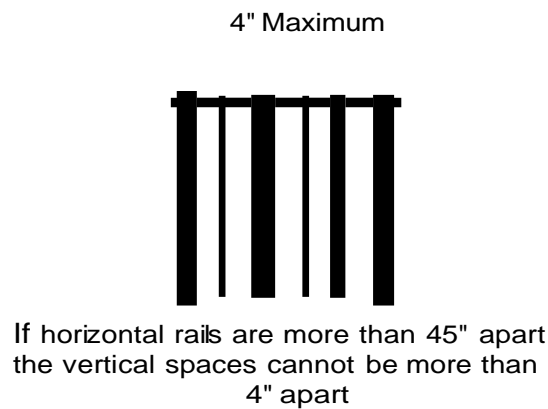


Figure 1

5. Where the barrier 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. Decorative cutouts shall not exceed 1- $\frac{1}{8}$ inches in width. (Figure 2)

Fences with horizontal rails more than 45"aparts



Spacing between vertical members shall be 3 $\frac{7}{8}$ " so as to not allow a 4" sphere to pass through it.

Figure 2

6. Maximum mesh size for chain link fences shall be a 2'-0"-inch square unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to not more than 1'-0"-inches. See sample attachment from ISPSC-15 Code.

than $1\frac{3}{4}$ inches (44 mm) to prevent a child from gaining a foothold to scale the fence [see Commentary Figure 305.2.5(2)].

Commentary Figure 305.2.6(2) shows a barrier. The fence is known to be 4 feet (1219 mm) high. It is obvious that the distance between the horizontal rails is less than 45 inches (1143 mm) and the vertical pickets spaced wider than 1.75 inches (44 mm). Thus, this fence is a violation because the horizontal members are not at least 45 inches (1143 mm) apart.

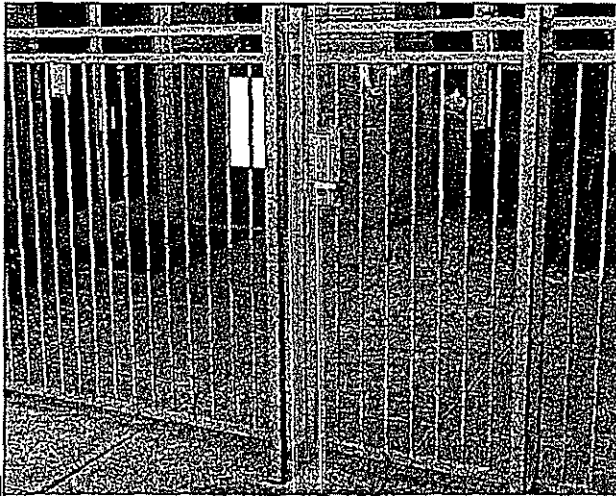


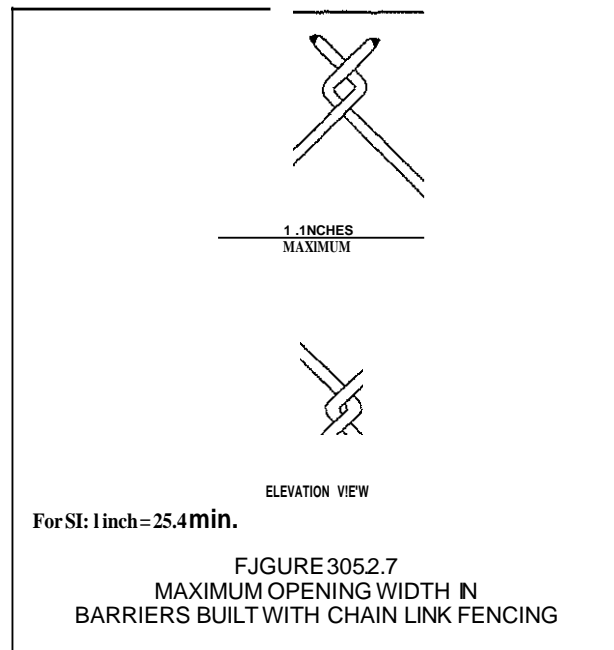
FIGURE 305.2.6(2)

VIOLATION-BARRIER (FENCE) HORIZONTAL MEMBERS TOO CLOSE

305.2.7 Chain link dimensions. The maximum opening formed by a chain link fence shall be not more than $1\frac{3}{4}$ inches (44 mm). Where the fence is provided with slats fastened at the top and bottom which reduce the openings, such openings shall be not more than $1\frac{3}{4}$ inches (44 mm).

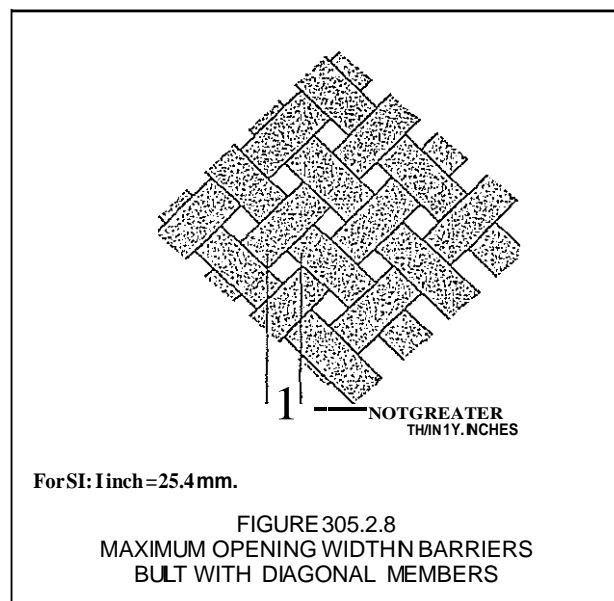
Chain link fencing has diamond-shaped or square openings. The most common sizes of chain link openings (measured between parallel sides of the opening) are 2 inches (51 mm) and $2\frac{1}{4}$ inches (57 mm). This section requires that the openings be not greater than $1\frac{3}{4}$ inches (44 mm) so that a child cannot wedge his or her foot in the opening in order to climb the fence (see Commentary Figure 305.2.7). Two-inch (51 mm) and $2\frac{1}{4}$ -inch (57 mm) chain link fence must have the openings reduced in size by the installation of slats (sometimes called privacy slats) vertically or diagonally. Where slats are used, they must be attached to the top and bottom of the fence so that they cannot be removed for gaining a hand- or foothold on the fence. The slats must be of a width that reduces the opening to less than $1\frac{3}{4}$ inches (44 mm).

Chain link fencing is also available in $1\frac{1}{4}$ -inch (32 mm) size (mesh). The resulting diagonal opening is $1\frac{3}{4}$ inches (44 mm). Therefore, slats would not be required for this size of chain link fence.

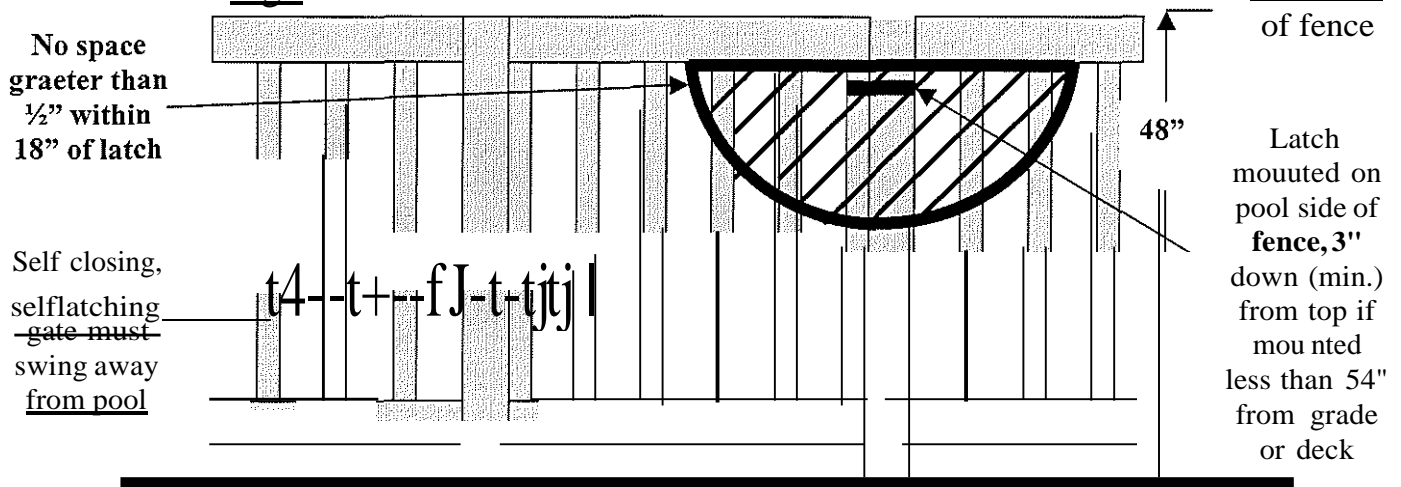


305.2.8 Diagonal members. Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not more than $1\frac{3}{4}$ inches (44 mm). The angle of diagonal members shall be not greater than 45 degrees (0.79 rad) from vertical.

Some barrier designs use diagonal members (lattice-work) as part of the barrier. Where diagonal members are installed, the angle cannot be more than 45 degrees (0.79 rad) from vertical and the opening created by the diagonal members cannot be greater than $1\frac{3}{4}$ inches (44 mm) so a child cannot wedge a foot in the opening to climb the barrier (see Commentary Figure 305.2.B).



Latch mounting position if mounted less than 54" high



If latch is mounted less than 54" from grade, it must be mounted on the pool side of the gate, a minimum of 3" down from the top of the gate and have no space greater than 1/2" within 18" of the latch

Figure 4

Requirements for gates leading to pool

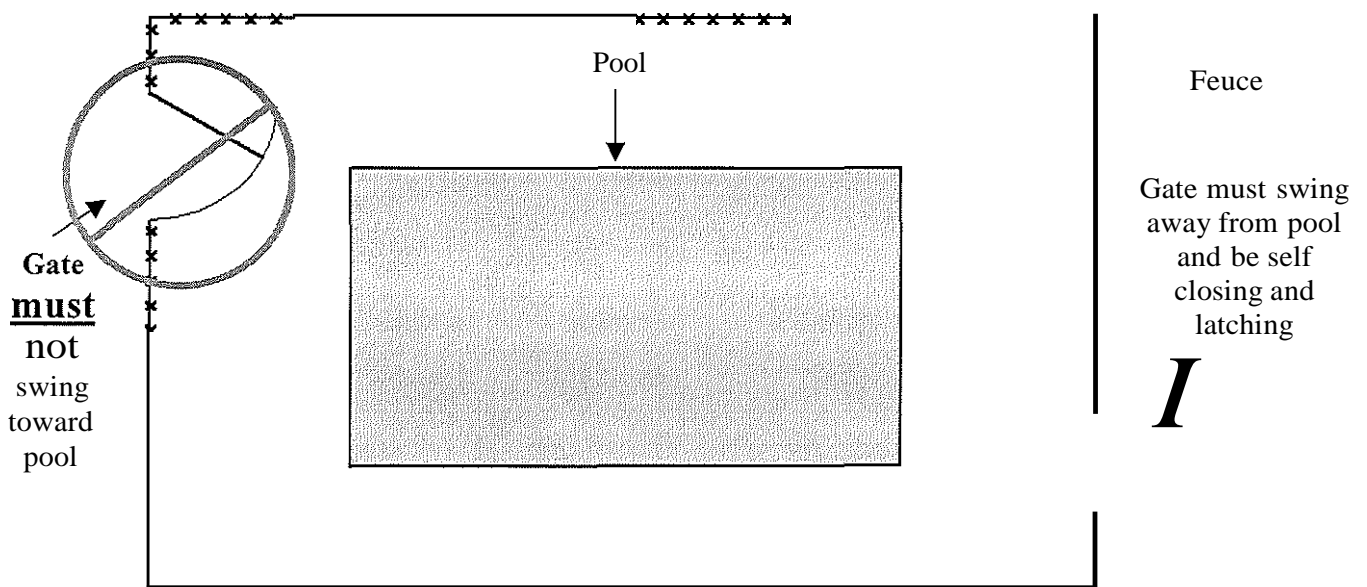


Figure 5

7. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a fixed or removable ladder or steps, the ladder or steps shall be surrounded by a barrier, which meets the

release. The inside (backside of the gate) release mechanism must be protected against tampering from the outside of the gate by providing a solid panel or mesh with openings of not greater than 1/2 inch (12.7 mm). The panel or small opening mesh must extend not less than 18 inches (457 mm) in all directions of the inside latch-release mechanism [see Commentary Figure 305.3.3(1)].

This section reflects the "traditional approach" for latch-release mechanisms on pedestrian access gates to pool and spa areas. Although suitable for most residential (as defined by this code) pool and spa access gates, this approach might not coordinate with designs for accessibility and controlled access needs in a public environment. For example, a latch-release on the inside (backside) of the gate or at a 54-inch height above the walking surface on either side of a gate is out of the reach range for persons seated in a wheelchair. Key card or key entry might also be necessary to control when the pool or spa can be used and who can use the pool or spa [see Commentary Figure 305.3.3(2)]. Therefore, the designer of the barrier system and pedestrian access gate for a public environment will need to assess each gate arrangement against all code requirements

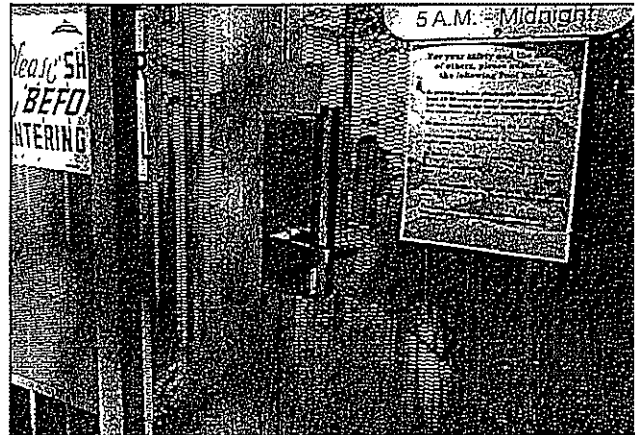
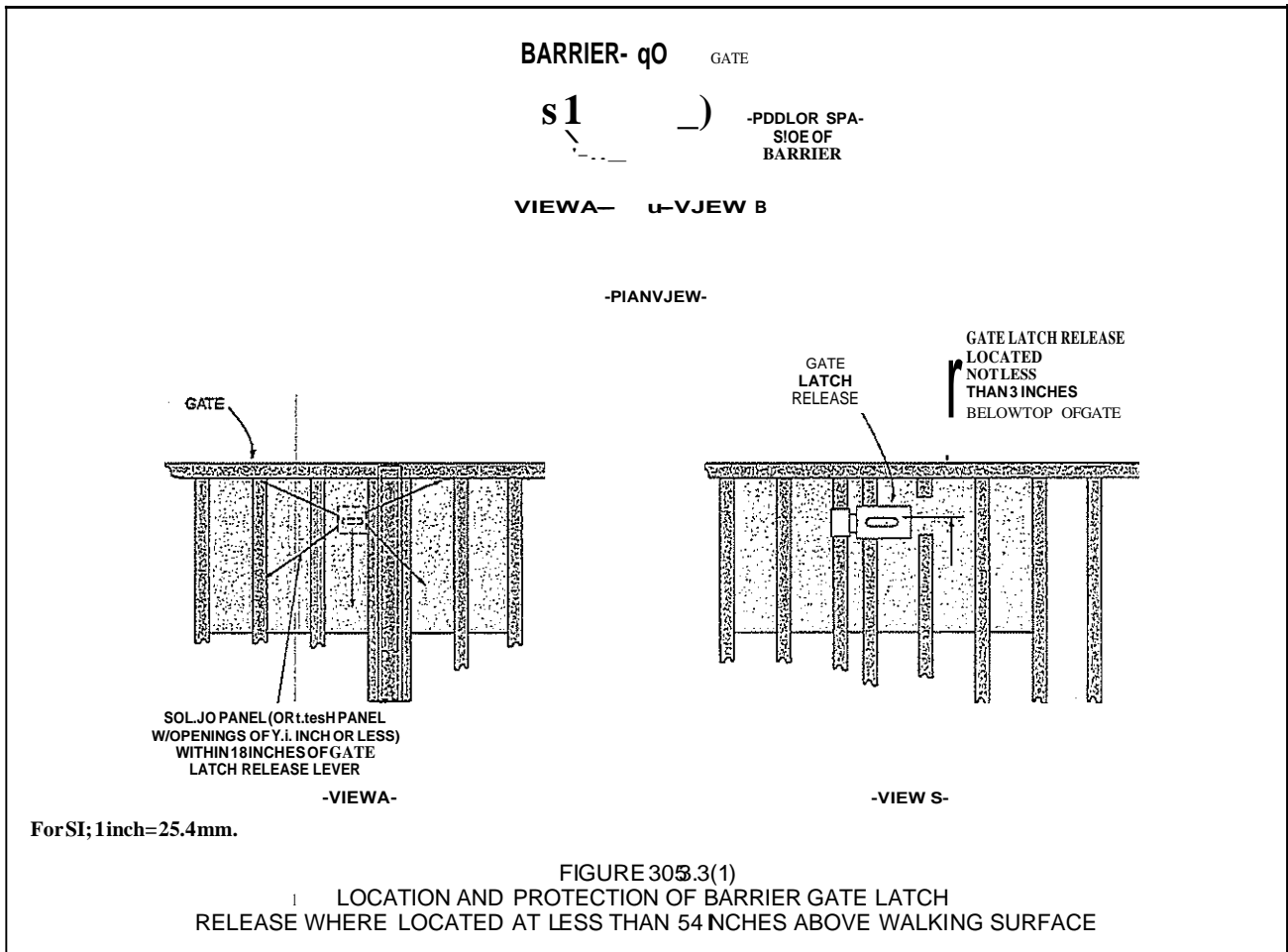


FIGURE 305.3.3(2)
KEY CARD ENTRY ON GATE TO POOL AND SPA AREA MIGHT REQUIRE ALTERNATIVE METHOD APPROVAL

and the needs of the client in order to propose an alternative method to the code official for compliance to this section (see Section 104.11).



requirements of items I through 6. A removable ladder shall not constitute J!!! acceptable alternative to enclosure requirements. (Figure 7, 8 and 9)

Ladder Enclosure

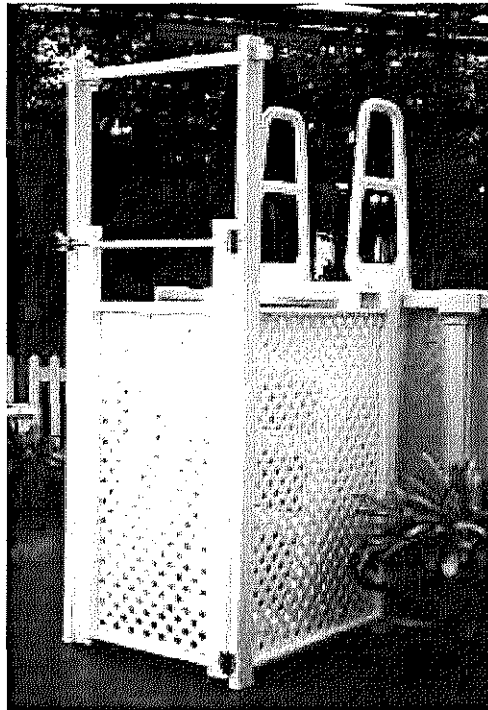


Figure 7

Maximum Space Between Top Mounted Barrier and Pool Wall

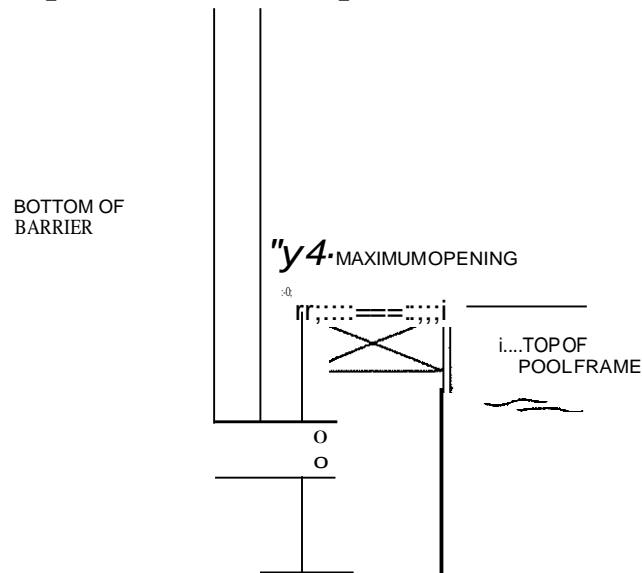


Figure 8

Pool with top mounted barrier and stair gate

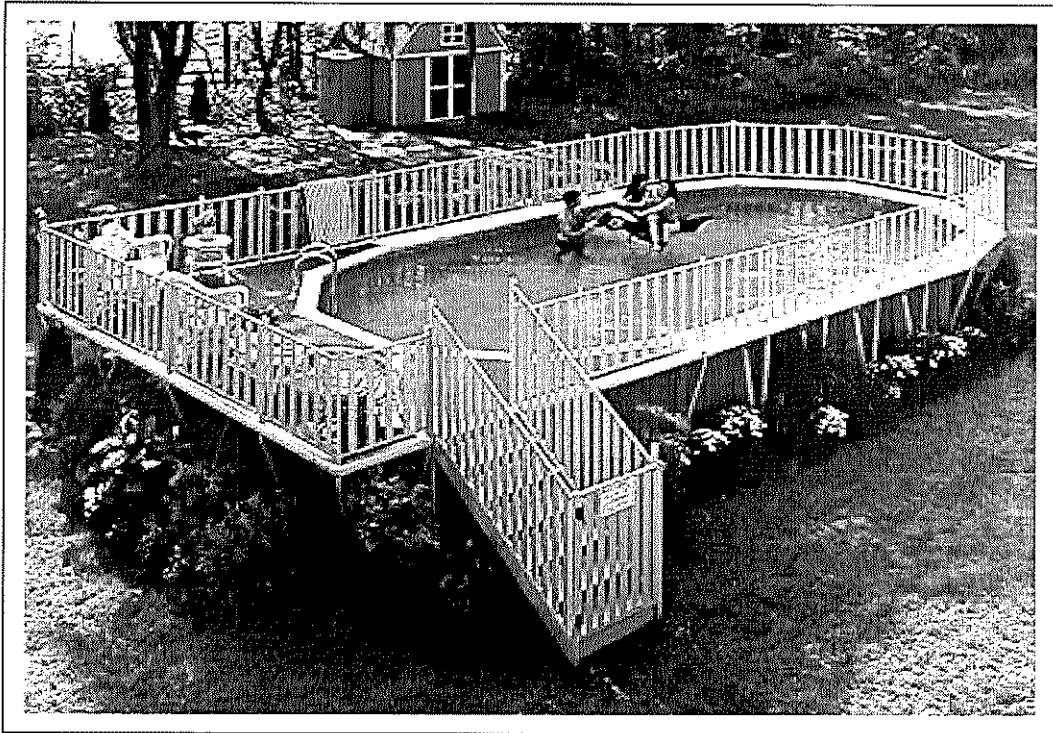
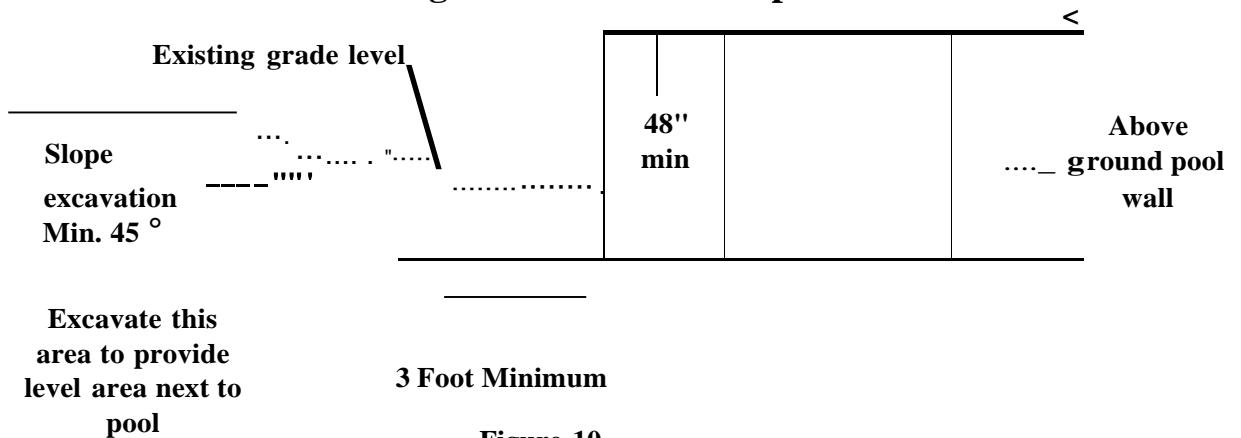


Figure 9

8. Where an above-ground pool on a sloped site that will make a portion of the top of the pool structure to be less than 48" to grade, a minimum of 3-foot level surface around the portion of the pool structure that is less than 48" to grade should be provided. The level surface should be measured away from the pool wall to the excavation edge and should be tapered away from the pool at a minimum of 45-degree angle for a distance of one half the level surface. (Figure 10)

Pool wall acting as barrier on a sloped site



9. For above ground pools, the pool wall may act as the barrier as long as the walls are at least 48" high on the outside of the pool and there is no backfill placed against the pool that would reduce the height of the wall to less than 48".

Decks for Above Ground Pools

If a deck is to be constructed around an above ground pool and there is not another barrier that meets the requirements of items 1 through 8 above, the following must be met:

1. The pool wall must be 48" above grade.
2. Stairs to deck are to have barriers on both sides.
3. There is a gate at the bottom of the stairs that meets the requirements of a barrier above. (Figure 11)

Barriers around Stairs

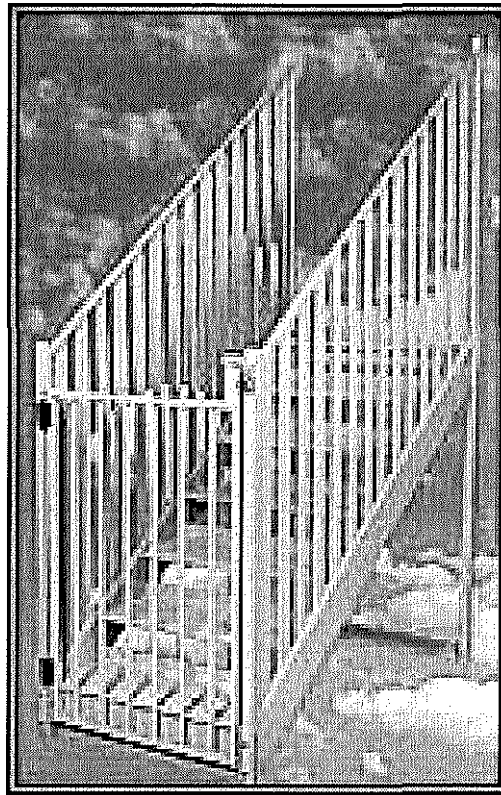


Figure 11

The following applies to all decks around pools whether they are being used as a barrier or not:

4. Footings are required for decks, minimum 30 inches deep.
5. Stairs must be 36" wide, steps are to have a maximum rise of 8 1/2" and a minimum run of 9". (Figure 12)

Stair Dimensions Requirements

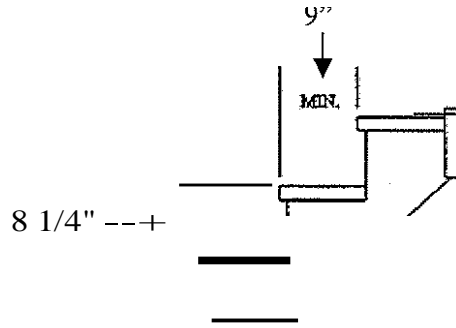
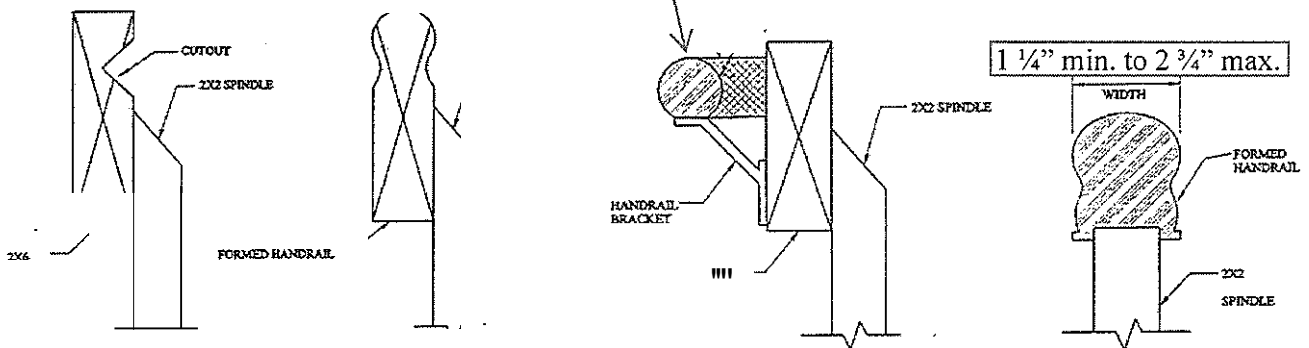


Figure12

7. Stairs must be equal in rise and tread depth to within 3/16".
8. A graspable handrail must be provided on all stairs. The handrail must be mounted 34" to 38" above the stair nosing. (Figure 13)

Example of Graspable Handrails

Handrail with circular 1 1/2" min. to 2 5/8" max. diameter.



Handrails on stairs must be easy graspable. Note: A 2x4 or 2x6 mounted on top of the guard is not considered graspable

Figure13

9. A railing is required around any deck more than 30" above grade. The railing must be 36" high, have balusters no more than 4" apart. (Figure 14)

Deck Railing Requirements

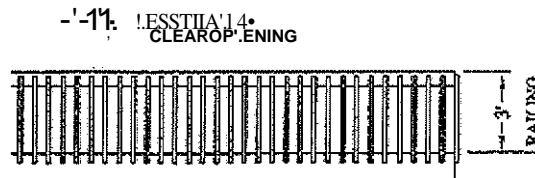


Figure 14