

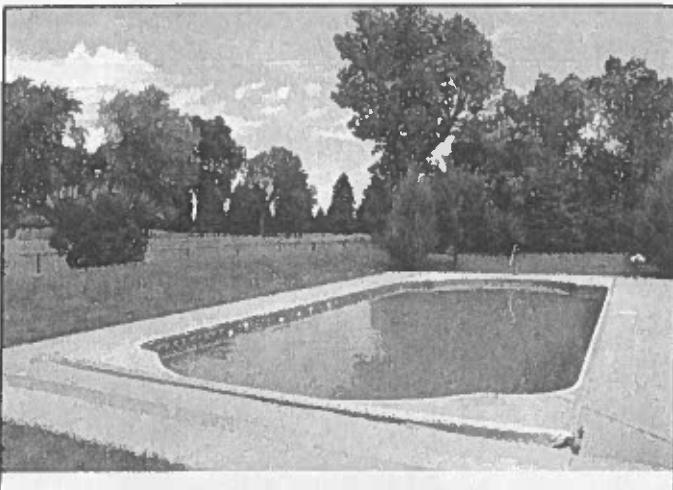
SECTION 305 BARRIER REQUIREMENTS

305.1 General. The provisions of this section shall apply to the design of barriers for restricting entry into areas having pools and spas. Where spas or hot tubs are equipped with a lockable *safety cover* complying with ASTM F1346 and swimming pools are equipped with a powered *safety cover* that complies with ASTM F1346, the areas where those spas, hot tubs or pools are located shall not be required to comply with Sections 305.2 through 305.7.

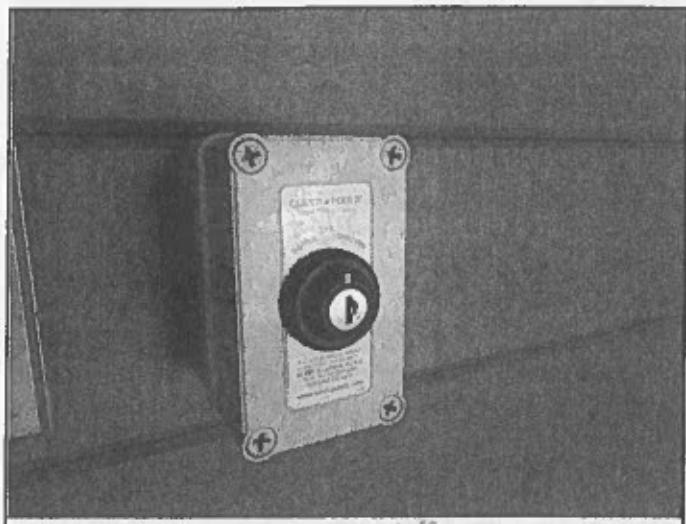
- ❖ Barriers around pools and spas significantly restrict unauthorized access to such pools and spas. The perimeter barrier design requirements in this section are especially focused on preventing children from having access to an area where the potential for drowning or near drowning is very high. Once children are inside the barrier perimeter, only constant adult supervision of those children can prevent drowning or near drowning. Thus, when adults choose to leave the pool and spa area, common sense dictates that all children should also leave the area and be taken outside of the perimeter barrier. Therefore, a thorough inspection of perimeter barriers is necessary, as they are the only required line of defense against drowning or near drowning of children when adults are not present.

Where spas and hot tubs are provided with lockable covers complying with ASTM F1346 and pools are provided with power safety covers complying with ASTM F1346, barriers are not required. Commentary Figures 305.1(1) and 305.1(2) show powered safety covers on residential and public swimming pools, respectively. When covers are retracted on pools or removed from spas, only constant adult supervision of a pool and spa can prevent children from drowning or near drowning. Thus, when adults choose to leave the pool or spa area, common sense dictates that children are removed from the pool or spa and the cover installed immediately. Therefore, a thorough inspection of covers, cover latching systems and cover deployment systems (and their operation) is necessary, as these covers are the only required line of defense against drowning or near drowning of children when adults are not present. Although the code is silent about the controls for electric-powered safety covers for pools, it is a reasonable assumption that care would be taken to keep the operating controls secured so only those persons responsible enough not to trap users in the pool would be operating the cover [see Commentary Figure 301.1(3)].

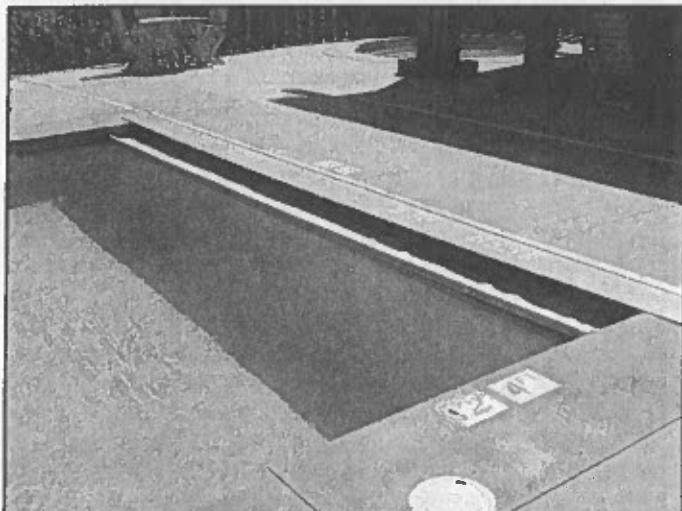
Note that a nonpowered pool cover (i.e., one that is manually installed) does not provide relief of the barrier requirement [see Commentary Figure 305.1(4)]. Even though a manual pool cover might comply with the requirements of ASTM F1346, installation of manually installed covers is time consuming and could be somewhat complicated such that they would not be used every time the pool was not in use.



**Commentary Figure 305.1(1)
ON-DECK-TYPE POWERED
SAFETY COVER FOR RESIDENTIAL POOL**



**Commentary Figure 305.1(3)
KEY SWITCH FOR POWERED
POOL COVER OPERATION**



**Commentary Figure 305.1(2)
INTEGRAL-TYPE POWERED
SAFETY COVER FOR PUBLIC POOL**



**Commentary Figure 305.1(4)
NONPOWERED MESH COVER DOES NOT ALLOW
FOR ABSENCE OF BARRIER AROUND POOL**

305.1.1 Construction fencing required. The construction sites for in-ground swimming pools and spas shall be provided with construction fencing to surround the site from the time that any excavation occurs up to the time that the permanent barrier is completed. The fencing shall be not less than 4 feet (1219 mm) in height.

❖ Construction of any type of inground pool or spa begins with the excavation of a hole in the earth. A hole in the ground that is not being attended to by construction workers is a hazard for two reasons: (1) the potential for a cave-in, and (2) the potential for drowning should water accumulate. A pool or spa can be under construction for several weeks or more, during which much of that time, workers are not around to safeguard against unauthorized persons from coming near the excavation. Pools and spas having been fully constructed and in operation have received final inspection without any barrier in place because the

pool builder's contract did not include the permanent barrier. This section requires a temporary barrier be provided from the time the hole is excavated until the permanent barrier is fully in place.

The specifics about what type of barrier is acceptable are left up to the contractor, with oversight by the code official. It is not the intent of this section to require a temporary barrier to be constructed in the same way as the code's requirements for a permanent barrier. The code official and contractor need to work together to provide an appropriate construction barrier for each particular job.

305.2 Outdoor swimming pools and spas. Outdoor pools and spas and indoor swimming pools shall be surrounded by a barrier that complies with Sections 305.2.1 through 305.7.

❖ Sections 305.2 through 305.7 cover the requirements for barriers.

305.2.1 Barrier height and clearances. Barrier heights and clearances shall be in accordance with all of the following:

1. The top of the barrier shall be not less than 48 inches (1219 mm) above grade where measured on the side of the barrier that faces away from the pool or spa. Such height shall exist around the entire perimeter of the barrier and for a distance of 3 feet (914 mm) measured horizontally from the outside of the required barrier.
2. The vertical clearance between grade and the bottom of the barrier shall not exceed 2 inches (51 mm) for grade surfaces that are not solid, such as grass or gravel, where measured on the side of the barrier that faces away from the pool or spa.
3. The vertical clearance between a surface below the barrier to a solid surface, such as concrete, and the bottom of the required barrier shall not exceed 4 inches (102 mm) where measured on the side of the required barrier that faces away from the pool or spa.
4. Where the top of the pool or spa structure is above grade, the barrier shall be installed on grade or shall be mounted on top of the pool or spa structure. Where the barrier is mounted on the top of the pool or spa, the vertical clearance between the top of the pool or spa and the bottom of the barrier shall not exceed 4 inches (102 mm).

❖ The barrier height of 48 inches (1219 mm) ensures that smaller children cannot simply hop the fence to gain access to the pool or spa. Those persons who are capable of climbing over a 48-inch-high (1219 mm) barrier are probably of sufficient maturity to avoid the pool if they cannot swim or are uncomfortable with the idea of entering the water of a spa. The height is measured on the outside of the barrier from the highest elevation of grade or concrete slab for a distance of 3 feet (914 mm) away from the outside of the barrier [see Commentary Figure 305.2.1(1)]. This requirement coordinates with Section 305.2.9, which requires a clear zone of 36 inches (914 mm) around the outside of the barrier.

Barriers that are not close to the ground could be bypassed by a child maneuvering under the barrier. Where over grass or gravel, the bottom of the barrier must be within 2 inches (51 mm) of the ground surface from which the grass grows from or onto which the gravel is placed. It is unlikely that a child would be able to dig out more than 2 inches (51 mm) of settled, naturally compacted earth in order to make an opening large enough to gain access to the pool or spa. If the bottom of the barrier is over concrete, the bottom must be within 4 inches (102 mm) of the concrete surface to prevent a child from maneuvering through the opening to gain access to the pool or spa [see Commentary Figures 305.2.1(2) and (3)].

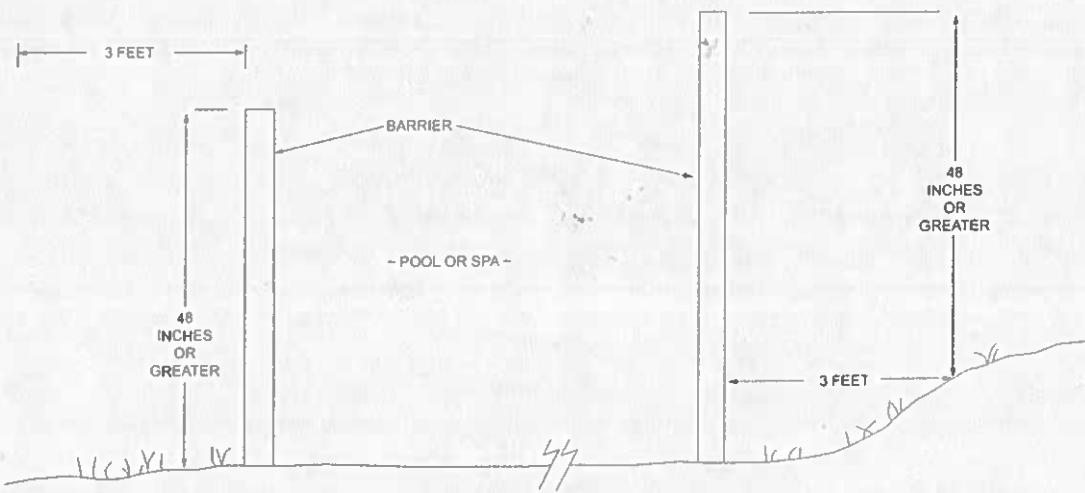
The top of a pool or spa could be above grade. The barrier for this arrangement could be installed at grade or the barrier could be installed on top of the pool or spa [see Commentary Figure 305.2.1(4)]. Where mounted on top of the pool or spa, the vertical clearance from the top of the pool or spa to the underside of the barrier cannot exceed 4 inches (102 mm) [see Commentary Figure 305.2.1(5)] to prevent a child from maneuvering through the opening to gain access to the pool or spa.

305.2.2 Openings. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.

❖ The 4-inch (102 mm) opening is narrow enough to prevent passage of a small child through the barrier (see Commentary Figure 305.2.2).

305.2.3 Solid barrier surfaces. Solid barriers that do not have openings shall not contain indentations or protrusions that form handholds and footholds, except for normal construction tolerances and tooled masonry joints.

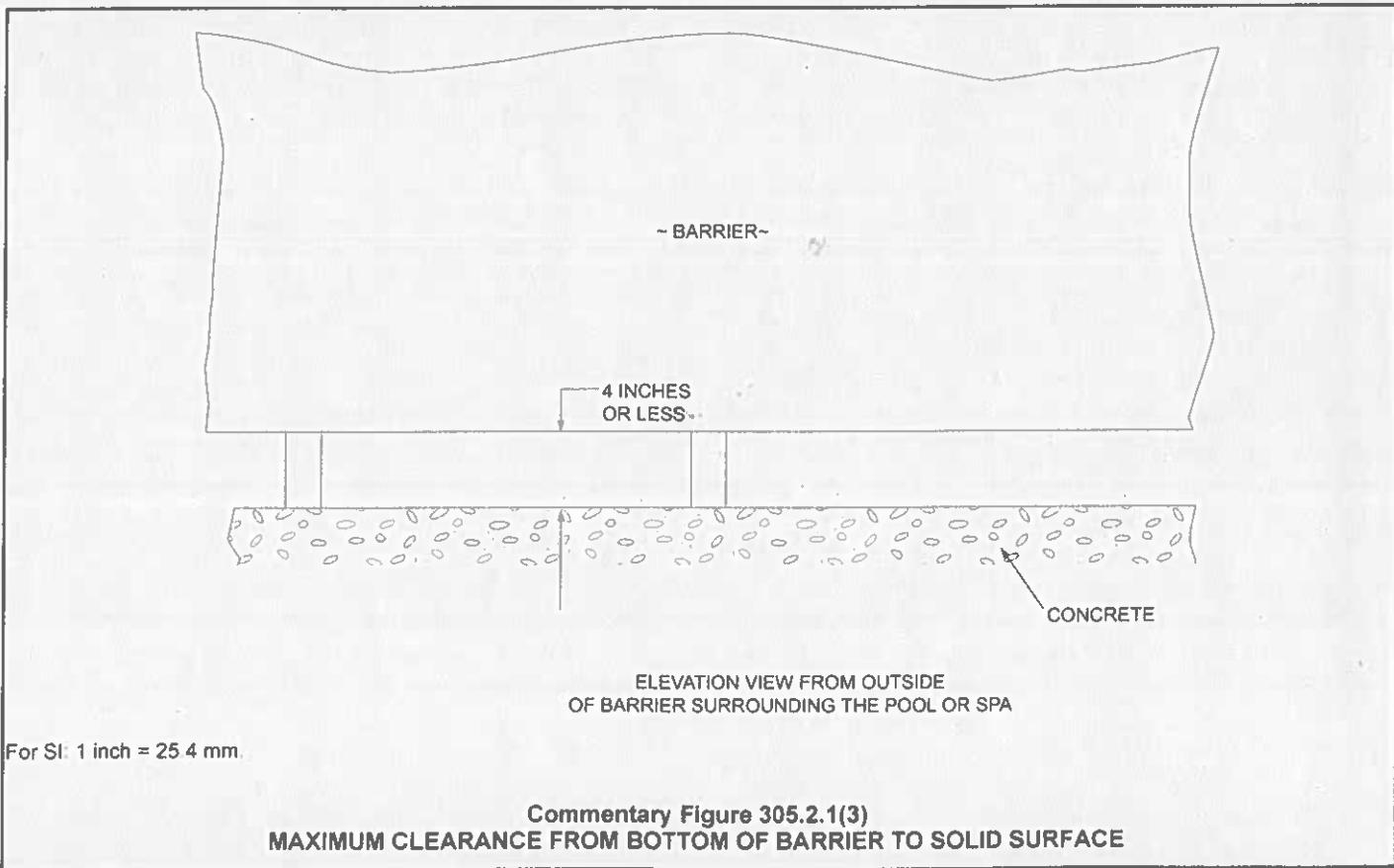
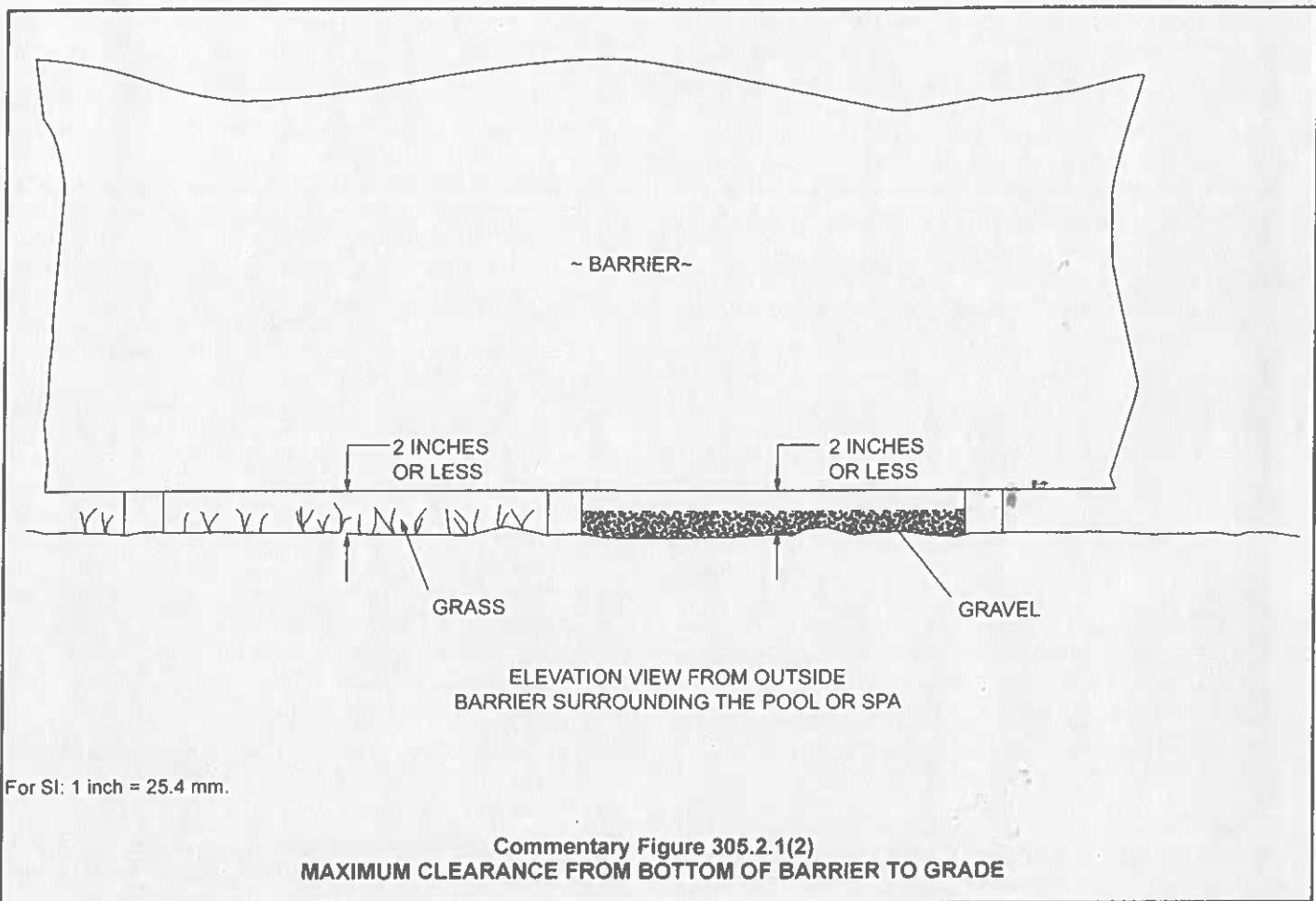
❖ An important characteristic of a barrier is that the exterior vertical face not offer any protrusions or indentations such that a toehold or handhold could assist in the climbing of the barrier.

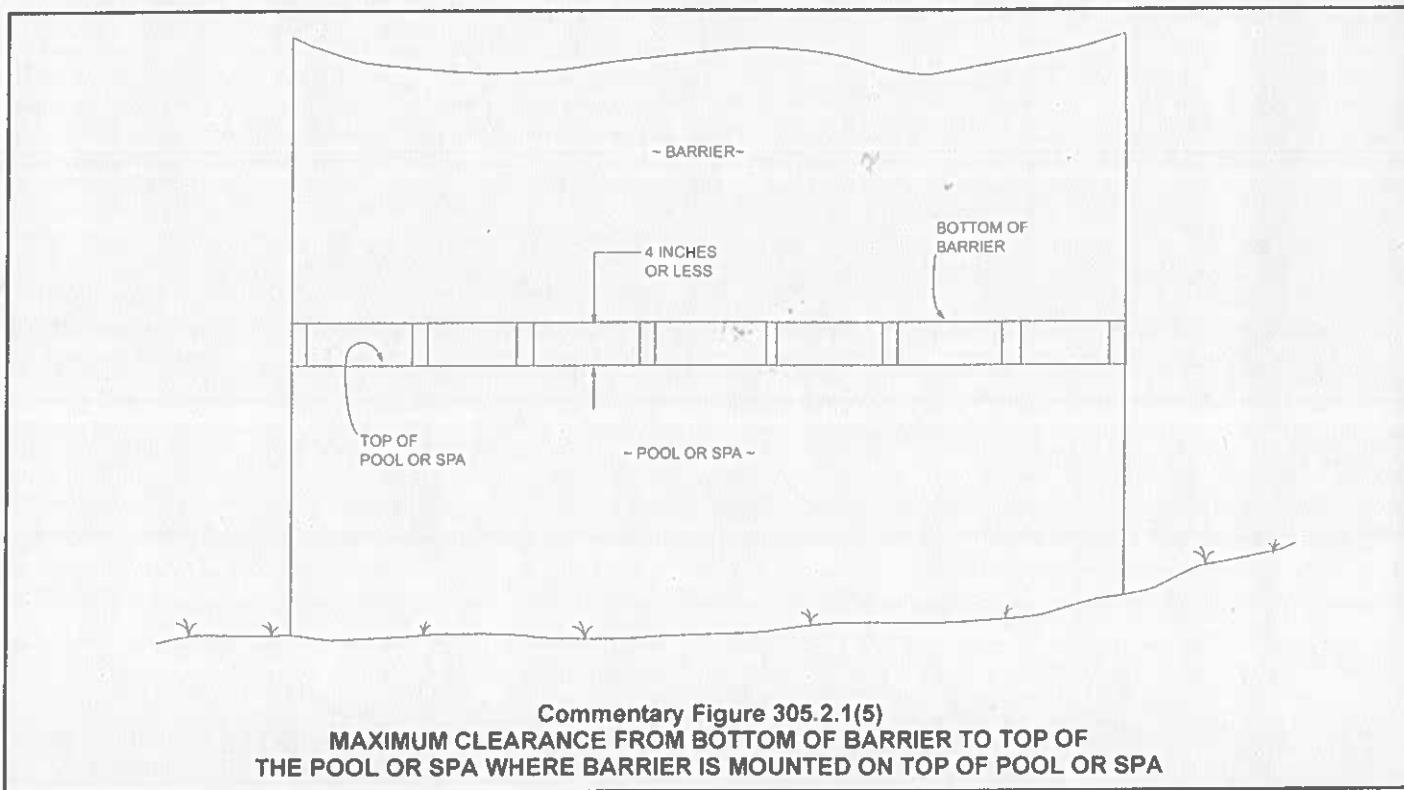
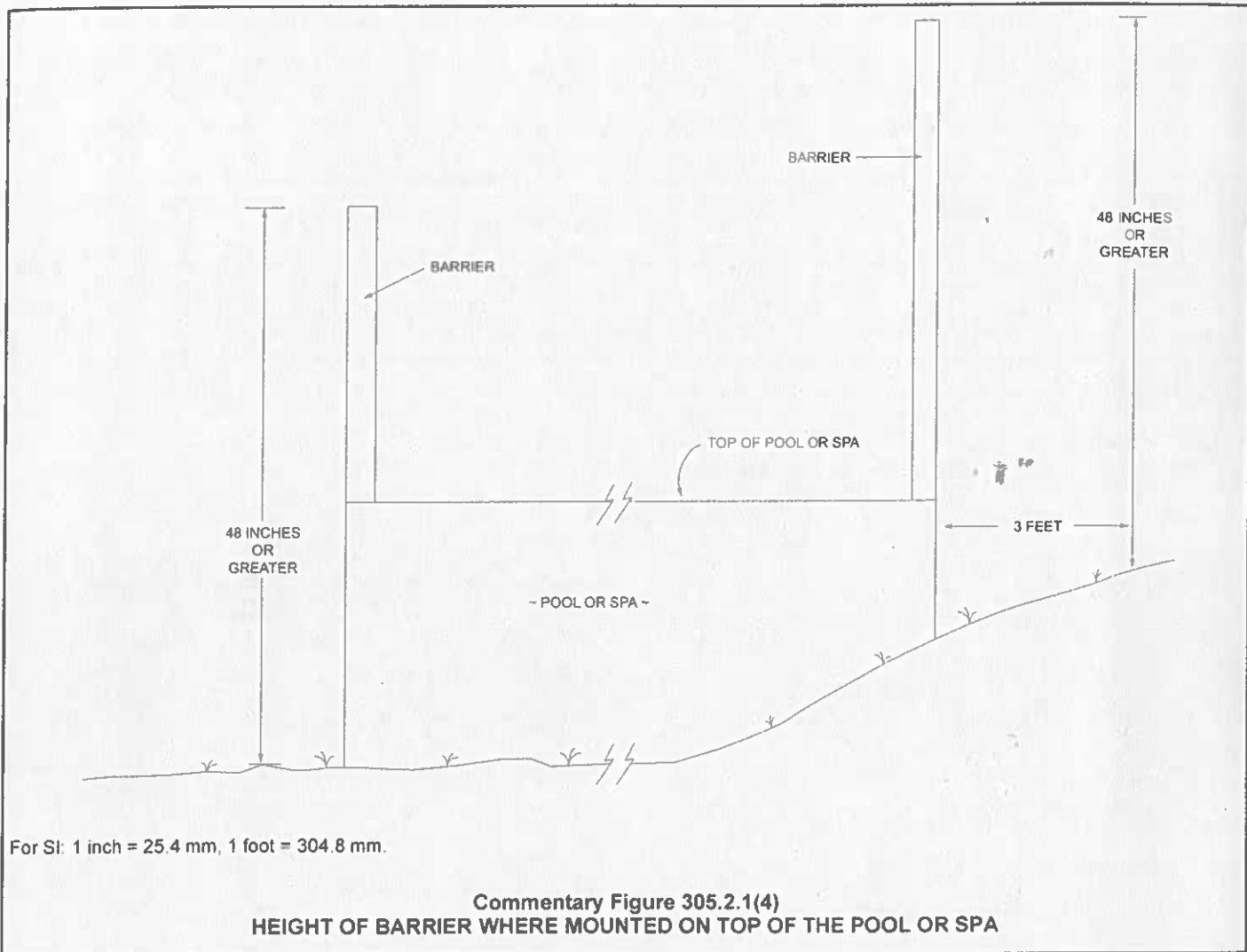


For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

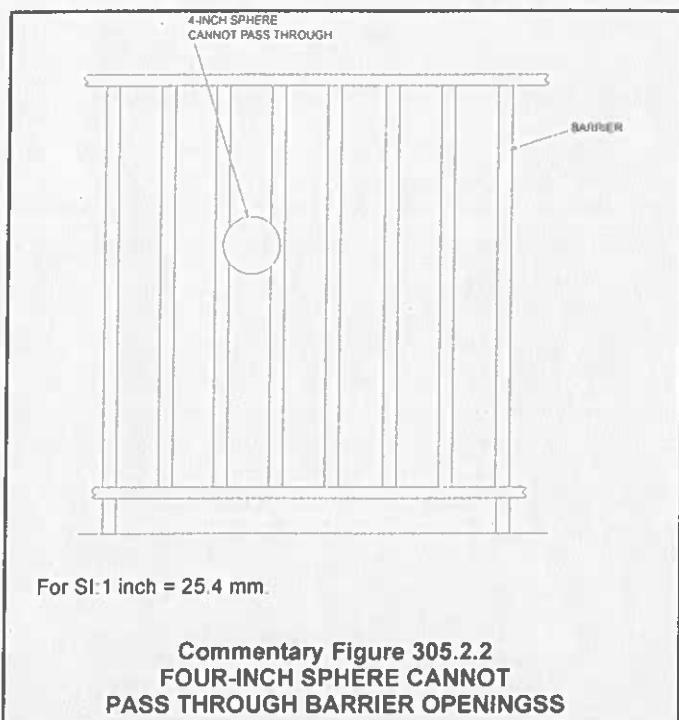
Commentary Figure 305.2.1(1)
HEIGHT OF BARRIER ABOVE GRADE

GENERAL COMPLIANCE





GENERAL COMPLIANCE



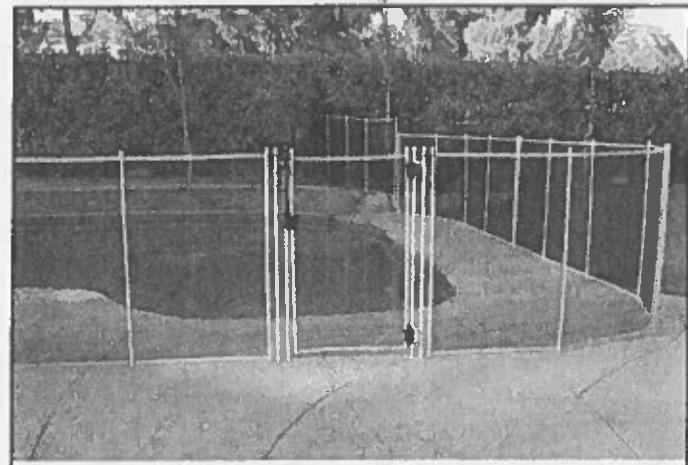
305.2.4 Mesh fence as a barrier. Mesh fences, other than chain link fences in accordance with Section 305.2.7, shall be installed in accordance with the manufacturer's instructions and shall comply with the following:

1. The bottom of the mesh fence shall be not more than 1 inch (25 mm) above the deck or installed surface or grade.
2. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall not permit the fence to be lifted more than 4 inches (102 mm) from grade or decking.
3. The fence shall be designed and constructed so that it does not allow passage of a 4-inch (102 mm) sphere under any mesh panel. The maximum vertical clearance from the bottom of the mesh fence and the solid surface shall be not greater than 4 inches (102 mm) from grade or decking.
4. An attachment device shall attach each barrier section at a height not lower than 45 inches (1143 mm) above grade. Common attachment devices include, but are not limited to, devices that provide the security equal to or greater than that of a hook-and-eye-type latch incorporating a spring-actuated retaining lever such as a safety gate hook.
5. Where a hinged gate is used with a mesh fence, the gate shall comply with Section 305.3.
6. Patio deck sleeves such as vertical post receptacles that are placed inside the patio surface shall be of a nonconductive material.
7. Mesh fences shall not be installed on top of onground residential pools.

❖ Mesh fences provide a removable barrier for a pool or spa. For example, consider a pool with a permanent barrier on three sides and the fourth side is bounded by a building. During times when the pool is not in use, a mesh barrier could be erected between the pool and

the building so that the space between the building and the mesh fence could be used without concern that the pool could be easily accessed by children. The bottom of the mesh barrier (fence) must not be able to be lifted more than 4 inches (102 mm) above the pool deck so that a child cannot crawl under the barrier. The attachment devices between mesh barrier sections and the posts must be not less than 45 inches (1142 mm) above the deck so that they are out of reach of small children. The attachment devices must offer the same difficulty to disengage as a spring-loaded hook and eye latch. Gates with mesh fences must comply with gate requirements in Section 305.3.

Mesh fences must not be used on top of onground residential pools because mesh fencing cannot resist the forces of an adult falling against it. An adult could topple off the deck of an above-ground pool and onto the ground below (see Commentary Figure 305.2.4).



**Commentary Figure 305.2.4
MESH FENCE AS A STRUCTURE-
TO-POOL BARRIER**

305.2.4.1 Setback for mesh fences. The inside of a mesh fence shall be not closer than 20 inches (508 mm) to the nearest edge of the water of a pool or spa.

❖ A removable mesh fence offers an equivalent protection against unauthorized entry of child to that of other types of required barriers. They are most commonly installed very near the perimeter of the body of water with the receptacles (for the fence posts), permanently installed in a concrete or other solid-surface deck. Because there is a possibility that moveable pool deck furniture could be located or pushed to the outside of the mesh fence, such furniture could offer readily enable a child climbing over the top of the mesh fence. This section requires the fence to be set back from the water's edge so that a child who is successful in climbing over the mesh fence, will fall onto the hard deck and not directly into the water. A hard landing would hopefully cause the child to call out for help or at the very least, momentarily dissuade them from continuing towards the water.

In prior editions of the code, this section was located such that it was applicable to all types of barriers, not just removable mesh fences. This section's new location narrows the requirement to only mesh fences and not other types of fences such as chain link fence.

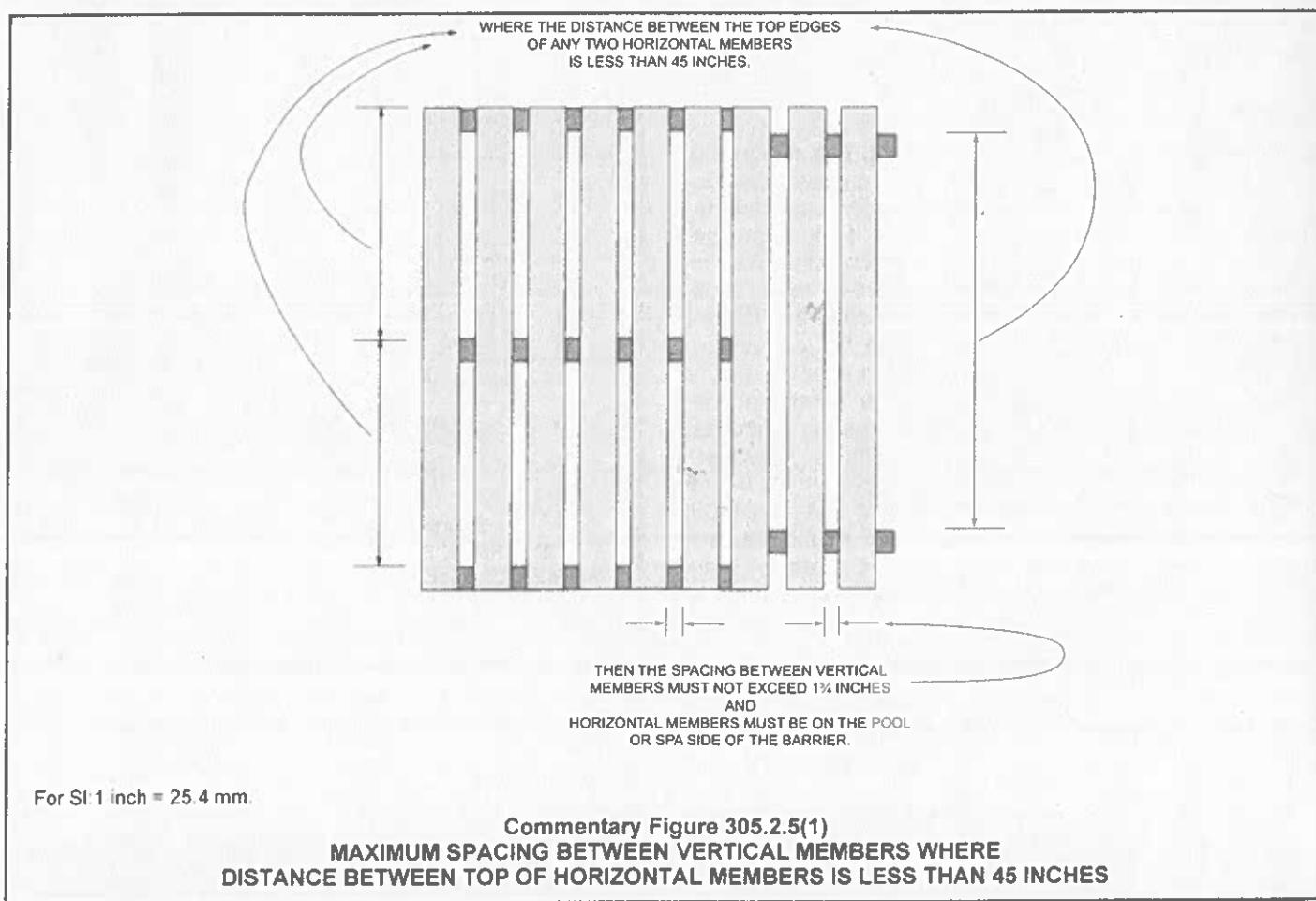
305.2.5 Closely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the pool or spa side of the fence. Spacing between vertical members shall not exceed $1\frac{3}{4}$ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed $1\frac{3}{4}$ inches (44 mm) in width.

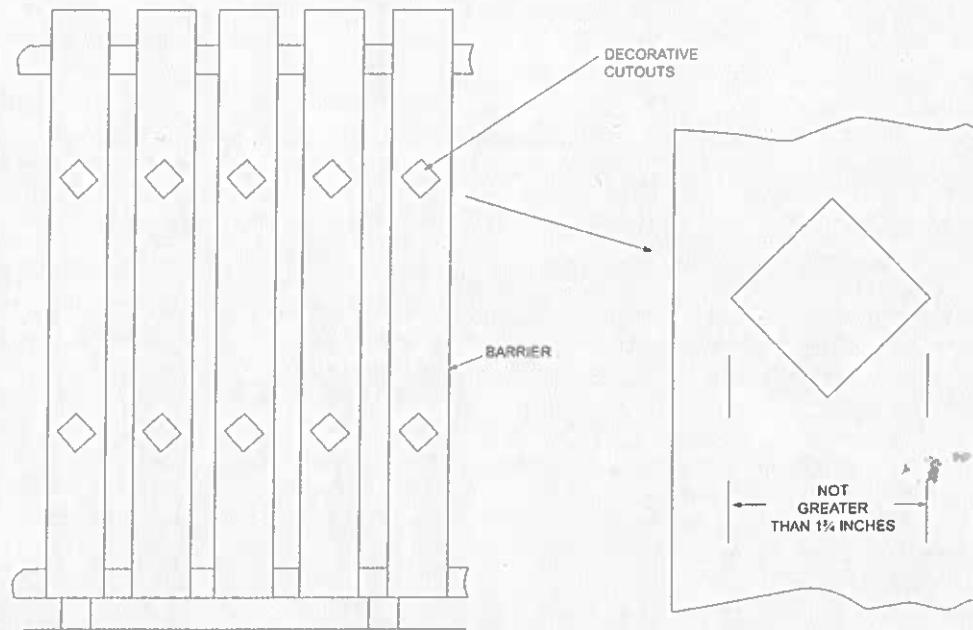
❖ Conventional fencing that is not chain link fence is typically constructed with horizontal rails attached to vertical posts. Vertical pickets are fastened to the horizontal rails to complete the barrier. If the distance between the top surface of the horizontal rails is less than 45 inches (1143 mm), such spacing could allow a child to climb up and over the barrier. Therefore, these closely spaced rails must be located on the pool or spa side of the barrier so that a child on the outside of the barrier cannot climb over it. Where closely spaced rails exist and are exposed between vertical members on the exterior of the fence, the gap between vertical pickets must not be more than $1\frac{3}{4}$ inches (44 mm) wide so that a child cannot wedge his or her foot in the gap and gain a handhold on the top closely spaced horizontal member in order to scale the fence [see Commentary Figure 305.2.5(1)]. Any decorative cutouts in the pickets must not have an opening greater than $1\frac{3}{4}$ inches (44 mm) for the same reason [see Commentary Figure 305.2.5(2)].

There are welded metal wire mesh products and flexible "on a roll" plastic fence products that "technically

comply" with the dimensional requirements of this section. However, this section was written with typical wood or rigid vinyl fence construction in mind. Consider a wood fence with 4-inch by 4-inch vertical posts with two 2-inch by 4-inch horizontal rails (one near the top, one near the bottom of the fence) with $\frac{3}{4}$ -inch-thick vertical pickets (4 to 6 inches wide) horizontally spaced apart not more than about the thickness of 2-inch (nominal) material. Such construction has "thickness of its vertical members," making it difficult to climb. For example, reaching between the pickets to grab onto a 2-inch by 4-inch horizontal rail will be difficult. Similarly, wedging the toe of a shoe between the (thick) pickets to get a toe-hold onto the horizontal rail will be difficult. And generally, such a fence would not be constructed with many closely spaced horizontal rails as it would be too costly and structurally unnecessary.

Do these metal or plastic mesh products with horizontal "members" every 4 inches or closer (but with the width between vertical "members" less than $1\frac{3}{4}$ inches) offer an equivalent resistance to climbing by children? Does such a product offer a similar rigidity and ruggedness to a fence constructed of wood members given that the code does not specify a distance between vertical posts? There are situations where, for public safety, a code official might have to make a decision about items that are not specifically covered by the code. Section 102.8 provides support to the code official in these instances.





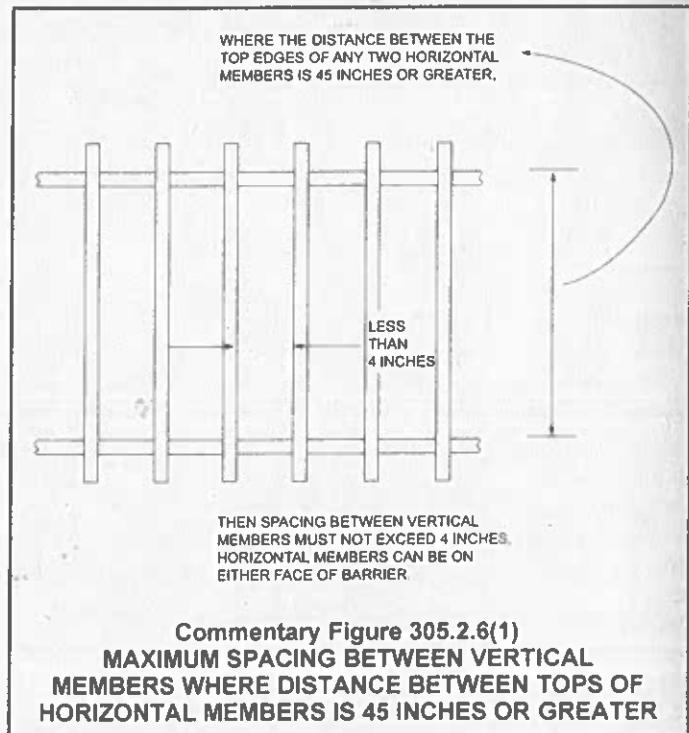
For SI: 1 inch = 25.4 mm.

Commentary Figure 305.2.5(2)
MAXIMUM OPENING WIDTH OF DECORATIVE CUTOUTS IN BARRIER MATERIALS

305.2.6 Widely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, the interior width of the cutouts shall not exceed $1\frac{1}{4}$ inches (44 mm).

❖ Conventional fencing that is not chain link fencing is typically constructed with horizontal rails attached to vertical posts. Vertical pickets are fastened to the horizontal rails to complete the barrier. If the distance between the top surface of the horizontal rails is greater than or equal to 45 inches (1143 mm), such spacing poses a climbing difficulty for children. Therefore, these widely spaced rails could be located on either side of the fence. Because there is not a reachable horizontal top member to gain a handhold, the vertical pickets could be spaced as far as 4 inches apart [see Commentary Figure 305.2.6(1)]. However, note that Section 305.2.2 requires that openings in the barrier must not allow the passage of a 4-inch (102 mm) sphere. Any decorative cutouts in the pickets must not have an opening that is greater than $1\frac{1}{4}$ inches (44 mm) to prevent a child from gaining a foothold to scale the fence [see Commentary Figure 305.2.5(2)].

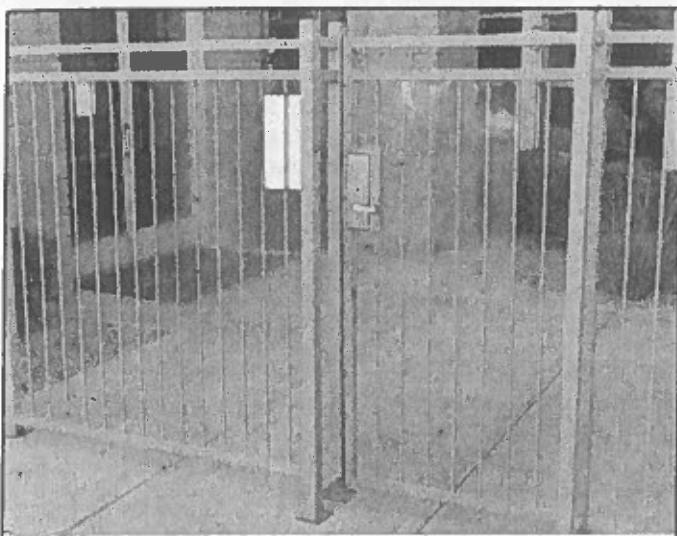
Commentary Figure 305.2.6(2) shows a barrier. The fence is known to be 4 feet (1219 mm) high. It is obvious that the distance between the horizontal rails is less than 45 inches (1143 mm) and the vertical pickets spaced wider than 1.75 inches (44 mm). Thus, this fence is a violation because the horizontal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



Commentary Figure 305.2.6(1)
MAXIMUM SPACING BETWEEN VERTICAL MEMBERS WHERE DISTANCE BETWEEN TOPS OF HORIZONTAL MEMBERS IS 45 INCHES OR GREATER

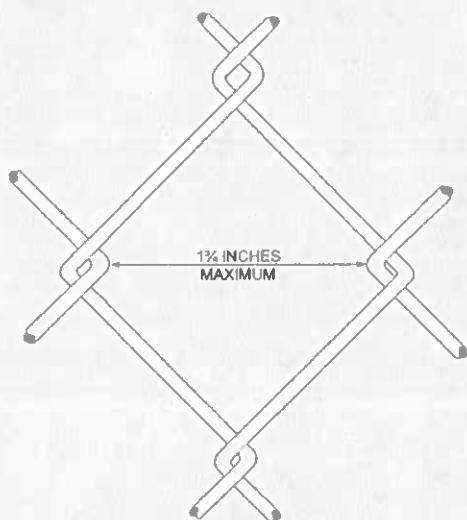
305.2.7 Chain link dimensions. The maximum opening formed by a chain link fence shall be not more than $1\frac{1}{4}$ inches (44 mm). Where the fence is provided with slats fastened at the top and bottom that reduce the openings, such openings shall be not greater than $1\frac{1}{4}$ inches (44 mm).

❖ Chain link fencing has diamond-shaped or square openings. The most common sizes of chain link openings (measured between parallel sides of the opening)



Commentary Figure 305.2.6(2)
BARRIER (FENCE) HORIZONTAL
MEMBERS TOO CLOSE

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. 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 openings to less than $1\frac{3}{4}$ inches (44 mm).



ELEVATION VIEW

For SI: 1 inch = 25.4 mm.

Commentary Figure 305.2.7
MAXIMUM OPENING WIDTH IN
BARRIERS BUILT WITH CHAIN LINK FENCING

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.

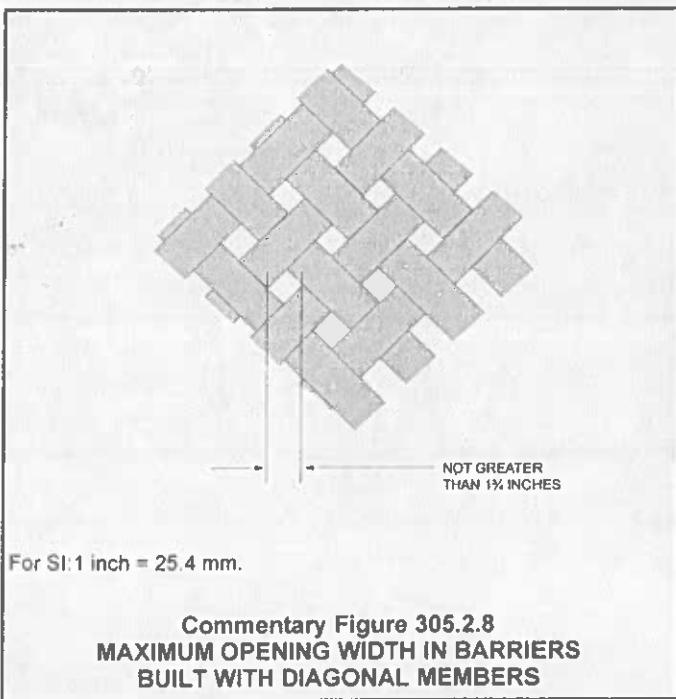
305.2.8 Diagonal members. Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not greater than $1\frac{3}{4}$ inches (44 mm). The angle of diagonal members shall be not greater than 45 degrees (0.79 rad) from vertical.

❖ 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 305.2.8).

305.2.9 Clear zone. Where equipment, including pool equipment such as pumps, filters and heaters, is on the same lot as a pool or spa and such equipment is located outside of the barrier protecting the pool or spa, such equipment shall be located not less than 36 inches (914 mm) from the outside of the barrier.

❖ A barrier of any height is not much of a deterrent to gaining access to the pool or spa if there is pool or spa equipment that is within 3 feet (914 mm) of the outside of the barrier. These items could be used to enable a child in climbing over the barrier. Most older onground pool installations are prime examples of where pool equipment is located very close to the outside wall of the pool (where the pool wall itself serves as the barrier to the pool.) Pumps, filters and other associated pool equipment can offer convenient "stepping stones" for aiding a child to gain access to the top of the pool wall (that serves as the barrier.)

The clear zone requirement applies to all pool and spa types that are required to have a barrier (and where the exceptions in Section 305.1 are not utilized.) However, as indicated by the words "on the same lot,"



For SI: 1 inch = 25.4 mm.

Commentary Figure 305.2.8
MAXIMUM OPENING WIDTH IN BARRIERS
BUILT WITH DIAGONAL MEMBERS

GENERAL COMPLIANCE

the clear zone requirement does not extend beyond the owner's lot line on the lot where the pool or spa is located. For example, pool equipment for neighbor's pool could be within that 36 inch clear zone and this section would not be violated. The owner has no control over the location of anything, including pool equipment, that their neighbor might place on their lot.

Contrary to prior editions of the code, this section only applies to the location of "equipment, including pool equipment such as pumps filters and heaters" and not to any other item such as trees, bushes, dog houses, firewood racks, children's play structures, trash can cubbies, flower planters, buildings, lawn equipment sheds, and stairways. These items do not fall in the category of equipment. Even though those items could offer a way to climb over a barrier, it is not within the scope of the ISPSC to control the location of those items. This section does not regulate the location of a pool or spa on the owner's lot.

305.3 Doors and gates. Doors and gates in barriers shall comply with the requirements of Sections 305.3.1 through 305.3.3 and shall be equipped to accommodate a locking device. Pedestrian access doors and gates shall open outward away from the pool or spa, shall be self-closing and shall have a self-latching device.

❖ There can be two types of doors and gates in a barrier: service access doors or gates, which are required by Section 305.3.1 to be secured by a lock, and pedestrian doors or gates for "normal" user access to the pool or spa. This section requires that pedestrian doors and gates open outward, self-close and self-latch so that the barrier is continuous all around the pool or spa after a user passes through the door or gate. The code is not specific as to the conditions whereby the door or gate must be self-closing and self-latching. Wind, degree of opening and instability of the barrier, door or gate could affect the closing and latching of the door or gate. The code official will have to use their best judgment concerning this section. Commentary Figure 305.3 shows a pedestrian access gate that swings in the wrong direction.



Commentary Figure 305.3
VIOLATION-WRONG SWING DIRECTION ON
PEDESTRIAN ACCESS GATE

Some code officials might consider an outdoor public pool and spa area a location where "means of egress," as defined by the IBC, applies. Section 1010 of the IBC pertaining to doors and gates has requirements for self-closing and self-latching doors (of which the IBC considers gates as doors). See Section 305.8.

305.3.1 Utility or service doors and gates. Doors and gates not intended for pedestrian use, such as utility or service doors and gates, shall remain locked when not in use.

❖ Doors and gates that are not pedestrian doors and gates must be locked after use as they are not required to be self-closing or self-latching.

305.3.2 Double or multiple doors and gates. Double doors and gates or multiple doors and gates shall have not fewer than one leaf secured in place and the adjacent leaf shall be secured with a self-latching device.

❖ In some cases, doors and gates could be installed with several movable (swinging) sections. One swinging section must be provided with a self-latching device. The other portions of the door or gate must be secured so that they are normally stationary. For example, the normally stationary side of the gate might be prevented from swinging by a sliding rod mounted on the gate that can penetrate into a hole in the deck or walkway. The latch on the other gate panel must be of the self-latching type.

305.3.3 Latch release. For doors and gates in barriers, the door and gate latch release mechanisms shall be in accordance with the following:

1. Where door and gate latch release mechanisms are accessed from the outside of the barrier and are not of the self-locking type, such mechanism shall be located above the finished floor or ground surface in accordance with the following:

- 1.1. At public pools and spas, not less than 52 inches (1219 mm) and not greater than 54 inches (1372 mm).
- 1.2. At residential pools and spas, not less than 54 inches (1372 mm).

2. Where door and gate latch release mechanisms are of the self-locking type such as where the lock is operated by means of a key, an electronic opener or the entry of a combination into an integral combination lock, the lock operation control and the latch release mechanism shall be located above the finished floor or ground surface in accordance with the following:

- 2.1. At public pools and spas, not less than 34 inches and not greater than 48 inches (1219 mm).
- 2.2. At residential pools and spas, at not greater than 54 inches (1372 mm).

3. At private pools, where the only latch release mechanism of a self-latching device for a gate is located on the pool and spa side of the barrier, the release mechanism shall be located at a point that is at least 3 inches (76 mm) below the top of the gate.

❖ This section requires that the door or gate latch-release mechanism comply with certain features depending on the type of latch release mechanism and the type of pool or spa that the barrier is protecting.

Item 1 covers the simplest latch mechanism: the nonself-locking latch where the latch release is located at a high elevation on the outside of the barrier. A variety of release mechanisms could be used depending on the application. The type shown in the figure requires that a finger grip at the top be lifted slightly in order to release the latch mechanism. Other latch release types could include doorknobs, levers, pull chains/ropes and buttons. Mounting at required elevation is the only criteria for the latch release. The configuration of the release (except for installations required to be Accessible) is immaterial. In other words, although a lever, bar or ring could possibly be operated by use of a "stick," children of the ages intended to be blocked from unauthorized entry typically do not possess sufficient cognitive and motor skills to operate these elevated latch releases. The release mechanism or latch mechanism could include a key lock to prevent entry into the pool or spa area during times that the pool or spa is not available to users. Note that the code does not require this type (elevated) of latch release to be lockable from either side, although an owner/operator may choose to lock the door or gate by any means when the pool or spa is not to be used by anyone.

For residential pools and spas, the elevated location of the release mechanism must be not less than 54 inches above the finished floor or ground surface. In other words, the designer could detail the dimension at 55 inches to allow for 1 inch. For public pools and spas, the slightly lower dimension range (52 to 54 inches) is to accommodate the maximum reach range (54 inches) for a user seated in a wheelchair. The code-indicated range allows for construction tolerances. In other words, the designer could detail the dimension at 53 inches and have 1 inch tolerance for inspection purposes.

Item 2 covers self-locking latches requiring a key, an electronic opener or a combination to release the latch on a door or gate. The simplest form is the key-type (mechanical) of the configuration commonly used for entry door locksets for hotel/motel room doors. Rotation of an inserted key is used to temporarily engage the exterior handle for turning, subsequently releasing the latch of the door or gate. The lockset must be configured so that the lockset is always self-locking and will not have a device (such as an interior thumb turn) to enable setting the lockset in an unlocked condition. However, the code does not limit this type to only those that have a door handle. A self-locking latch bolt could have a deadbolt face where the inserted key is turned to release the latch bolt. A separate fixed handle pull is often provided to enable pulling the door or gate open after the latch is released. In either type, the key position is automatically returned to the locked position before the key can be removed.

Electronic lock types (e.g., key card access) include those where the card is inserted into the handle set on the door or gate, or those where the card sensor pad is separate from the door or gate. Latch releases in combination lock types (e.g. pushing a sequence of buttons (could be mechanical or electronic [see Commentary Figure 305.3.3(1)]).

For public pools and spas, the latch release by a key, an electronic opener or a combination lock must be located not less than 34 inches and not greater than 48 inches above the finished floor or grade. This coincides with the IBC requirements for standard height for door and gate handles. For residential pools and spas, such latch releases can be at any height provided that it is not greater than 54 inches (1372 mm) above the finished floor or grade.

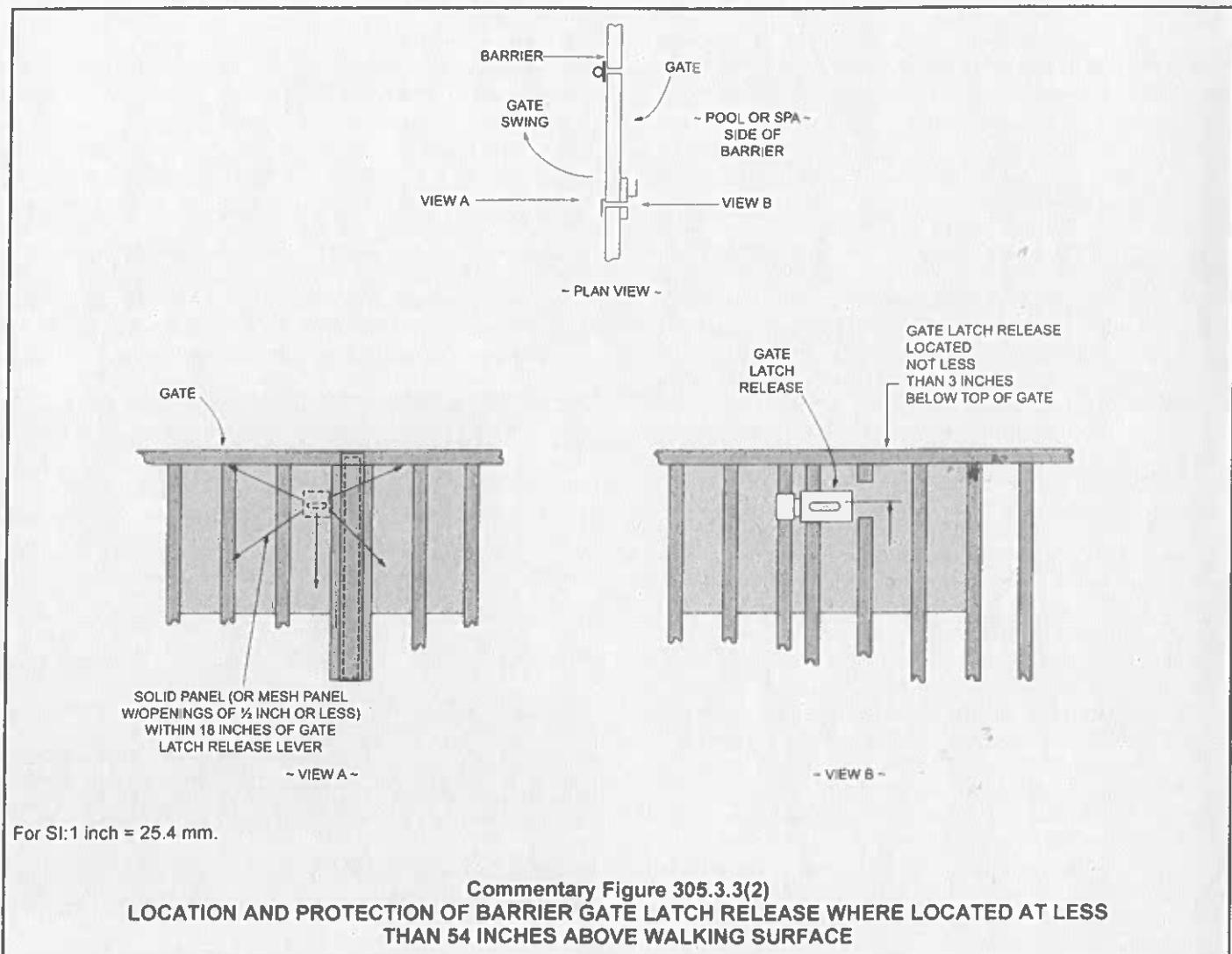
Item 3 covers latch release mechanisms located only on the inside of gates of a private pool. Although the code does not define a private pool, the assumption is that this is intended to mean a residential pool [see Commentary Figure 305.3.3(2)].



Commentary Figure 305.3.3(1)
KEY CARD ENTRY ON GATE TO POOL AND SPA AREA
MIGHT REQUIRE ALTERNATIVE APPROVAL

305.3.4 Barriers adjacent to latch release mechanisms. Where a latch release mechanism is located on the inside of a barrier, openings in the door, gate and barrier within 18 inches (457 mm) of the latch shall not be greater than $\frac{1}{2}$ inch (12.7 mm) in any dimension.

❖ Latch release mechanisms that are located on the inside of a door or gate or barrier must be protected against tampering by children on the outside of the gate. Where the door or gate and barrier are not solid, either a solid panel or mesh with openings of not greater than $\frac{1}{2}$ inch (12.7 mm) must be provided to guard against tampering from outside the barrier. The panel or small opening mesh must extend not less than 18 inches in any direction from the latch release but not beyond the required height of the barrier [see Commentary Figure 305.3.3(2)].



305.4 Structure wall as a barrier. Where a wall of a dwelling or structure serves as part of the barrier and where doors, gates or windows provide direct access to the pool or spa through that wall, one of the following shall be required:

1. Operable windows having a sill height of less than 48 inches (1219 mm) above the indoor finished floor, doors and gates shall have an alarm that produces an audible warning when the window, door or their screens are opened. The alarm shall be *listed* and labeled as a water hazard entrance alarm in accordance with UL 2017.
2. In dwellings not required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located at not less than 54 inches (1372 mm) above the finished floor.
3. In dwellings that are required to be Accessible units, Type A units or Type B units, the operable parts of the alarm deactivation switches shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1219 mm) above the finished floor.
4. In structures other than dwellings, the operable parts of the alarm deactivation switches shall be located not greater than 54 inches (1372 mm) and not less than 48 inches (1220 mm) above the finished floor.

5. A *safety cover* that is *listed* and *labeled* in accordance with ASTM F1346 is installed for the pools and spas.
6. An *approved* means of protection, such as self-closing doors with self-latching devices, is provided. Such means of protection shall provide a degree of protection that is not less than the protection afforded by Item 1 or 2.

❖ A building wall can serve as part of the barrier. Where that building wall has openings such as doors, gates or operable windows, those openings present possible access points to the pool or spa by a child. If the wall has only operable windows and those window sill heights are 48 inches (1219 mm) or more above the inside floor of the structure, then the wall provides a level of protection similar to a 48-inch-high (1219 mm) barrier. Although furniture could be placed against that wall that could aid in a child gaining access to the window, the code official can only be concerned about the height of the window above what is considered to be a permanent and "normal" walking surface. The code official doesn't have any control over the placement of furniture in a building. Walking surfaces would include, for example, permanent stairs and landings intersecting walls having operable windows. However, a kitchen countertop with windows just above the coun-

tertop would not be considered a "normal" walking surface even though a child might use kitchen drawers to climb to the countertop to access the window.

Item 1 addresses the condition where the operable windowsill heights are lower than 48 inches (1219 mm) above the floor. Screen or window alarms listed and labeled to UL 2017 must be installed; or Item 5 is an option. [see Commentary Figure 305.4(1)].

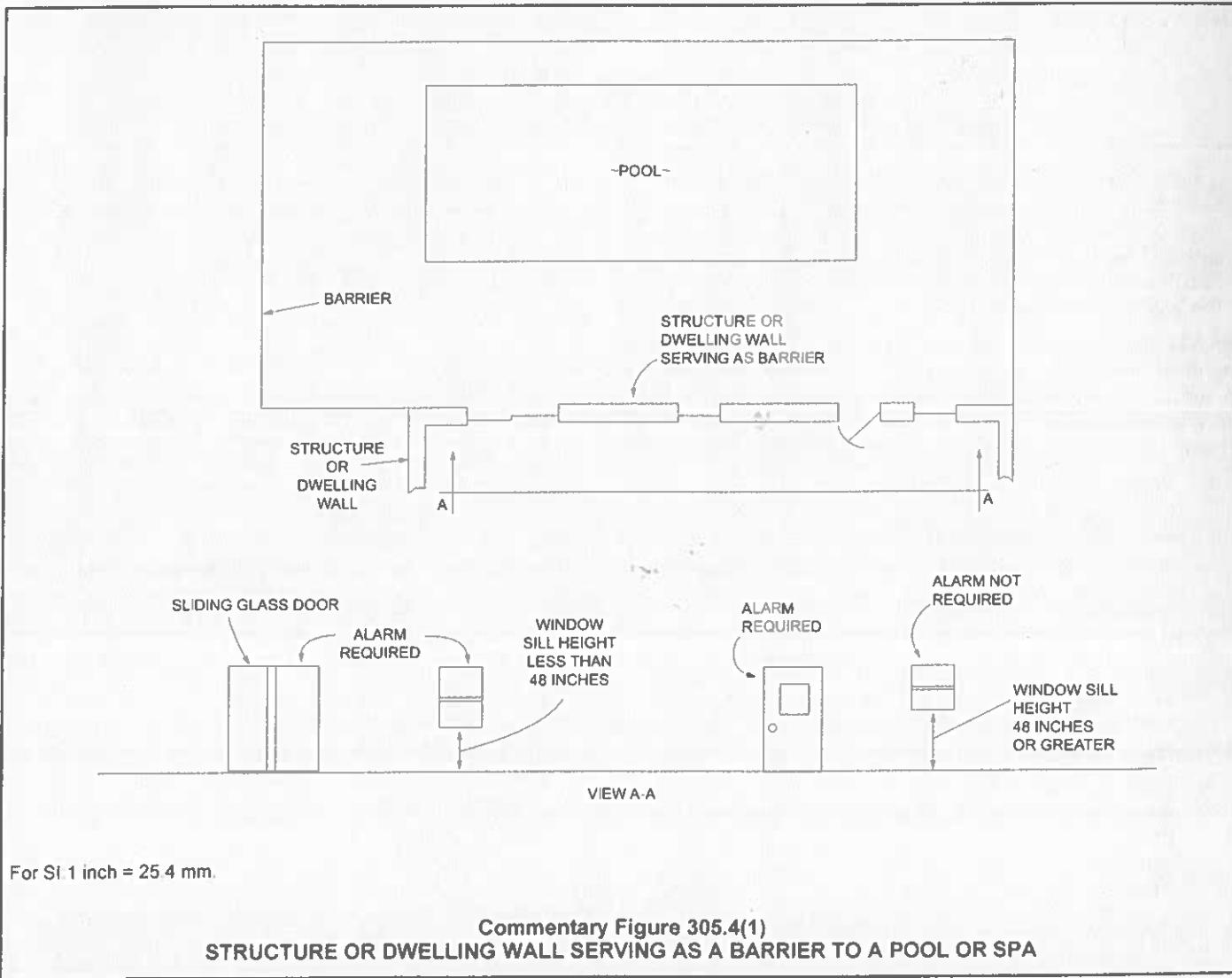
Item 2 addresses the condition where there is a door or gate in the wall. A door alarm listed and labeled to UL 2017 must be installed; or a safety cover listed and labeled to ASTM F1346 must be provided for the pool or spa.

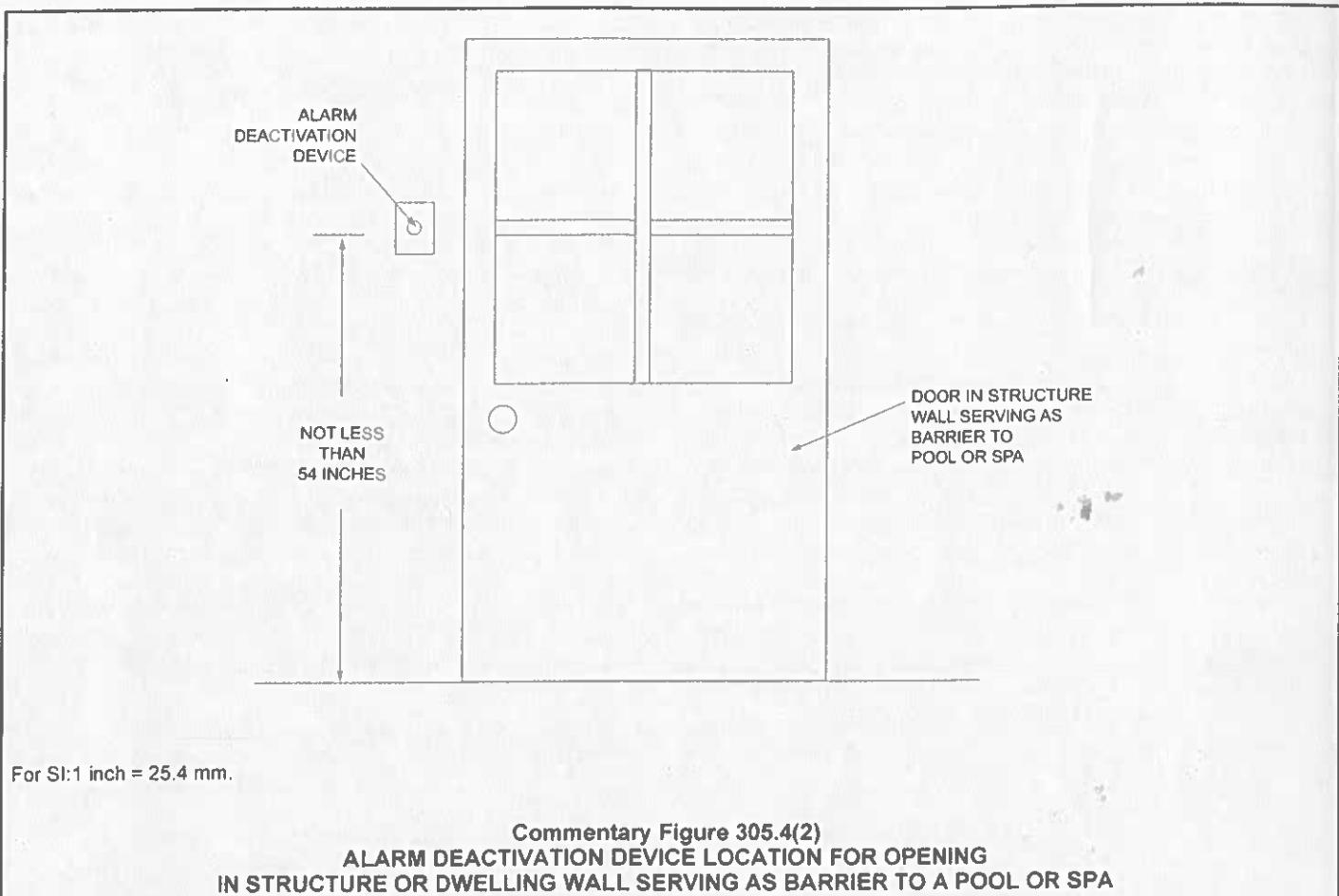
Where a door, gate or window alarm is installed in a dwelling wall and the unit is an Accessible unit, item 3 specifies that the deactivation switches must be not less than 48 inches (1219 mm) and not greater 54 inches (1372 mm) above the floor [see Commentary Figure 305.4(2)]. This upper height corresponds to the same height required for latch-release mechanisms for gates in Section 305.3.3.

Where a door, gate or window alarm is installed in a structure wall, item 4 specifies that the deactivation switches must be not less than 48 inches (1219 mm) and not greater 54 inches (1372 mm) above the floor [see Commentary Figure 305.4(2)]. This upper height

corresponds to the same height required for latch-release mechanisms for gates in Section 305.3.3.

Note that Item 5 does not specify that pools are required to have a powered safety cover in compliance with ASTM F1346. A manual safety cover is the minimum requirement for this item. This is in contrast to Section 305.1, which does not require a barrier where specific powered safety covers are used. If there is a barrier around the pool (perhaps a structure forms part of that barrier) or the pool has a powered safety cover, then the public at large has restricted access to the pool. Requiring a safety cover (manual type as a minimum) for relief of the alarm requirement for doors and windows for a structure serving as part of the barrier is more for the safety of the children in the structure. It is then a personal decision by the occupant as to whether they will install the safety cover to protect their children. The code intends that the means for safety be provided to the occupant—the code official cannot make the occupant use those means. Commentary Figure 305.1(4) shows a manual installed safety cover (however, it is unknown whether what is shown meets ASTM F1346). Note the barrier (fence) in the background on the left of the photo.





Item 6 allows for the code official to evaluate other means of protection against unauthorized entry to the pool or spa. For example a door would not need an alarm if the door was self closing and self latching and has the latch release at the same required height as the alarm deactivation switch height.

305.5 Onground residential pool structure as a barrier. An onground *residential* pool wall structure or a barrier mounted on top of an onground *residential* pool wall structure shall serve as a barrier where all of the following conditions are present:

1. Where only the pool wall serves as the barrier, the bottom of the wall is on grade, the top of the wall is not less than 48 inches (1219 mm) above grade for the entire perimeter of the pool, the wall complies with the requirements of Section 305.2 and the pool manufacturer allows the wall to serve as a barrier.
2. Where a barrier is mounted on top of the pool wall, the top of the barrier is not less than 48 inches (1219 mm) above grade for the entire perimeter of the pool, and the wall and the barrier on top of the wall comply with the requirements of Section 305.2.
3. Ladders or steps used as means of access to the pool are capable of being secured, locked or removed to prevent access except where the ladder or steps are surrounded by a barrier that meets the requirements of Section 305.

4. Openings created by the securing, locking or removal of ladders and steps do not allow the passage of a 4-inch (102 mm) diameter sphere.

5. Barriers that are mounted on top of onground *residential* pool walls are installed in accordance with the pool manufacturer's instructions.

❖ Onground pools that have the top of the structure at 48 inches (1219 mm) or more above grade around the entire perimeter can serve as their own barrier from entry to the vessel. In order to serve as the barrier, all the requirements of Section 305.2 must be met; for example, a clear zone of 36 inches (914 mm) around the vessel and the outside of the pool wall cannot be climbable by children. Because the pool is above ground, a stairway or ladder is needed to access the vessel. Such ladders or stairways must be either removable or locked in some manner so that children cannot access the vessel. Any resulting opening from the removal or securing of a stairway must not leave openings where a 4-inch sphere (102 mm) will pass through. Barriers for stairways are provided by the manufacturer of the stairway, so the installation of such barriers must be in accordance with the manufacturer's instructions.

305.6 Natural barriers. In the case where the pool or spa area abuts the edge of a lake or other natural body of water, public access is not permitted or allowed along the shoreline, and required barriers extend to and beyond the water's edge not

less than 18 inches (457mm), a barrier is not required between the natural body of water shoreline and the pool or spa.

- ❖ Although natural bodies of water are not a barrier, they can restrict access to pools and spas by a child simply because he or she would have to navigate through not less than 18 inches (457mm) depth of the natural body of water before reaching the pool or spa. If the child is successful, there is a low probability that he or she will have difficulty in the pool and spa water.

305.7 Natural Topography. Natural topography that prevents direct access to the pool or spa shall include but not be limited to mountains and natural rock formations. A natural barrier *approved* by the governing body shall be acceptable provided that the degree of protection is not less than the protection afforded by the requirements of Sections 305.2 through 305.5.

- ❖ Natural topography could present significant difficulty for children to access the pool and spa. For example, a pool or spa area that is adjacent to a steep and rocky hillside might be too treacherous for anyone to traverse, let alone a child. However, the code official must approve such arrangements to allow elimination of a barrier or portion thereof.

305.8 Means of egress. Outdoor public pools provided with barriers shall have means of egress as required by Chapter 10 of the International Building Code.

- ❖ There are many outdoor public pools that are used for large gatherings, such as weddings and other celebrations. They are deemed to be assembly areas and as such, the exit gates must be fitted with panic hardware.