



Designation: F 1908 – 06

Standard Guide for Fences for Residential Outdoor Swimming Pools, Hot Tubs, and Spas¹

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1. Scope

1.1 This guide provides recommended minimum requirements for various types of fences for residential outdoor swimming pools, hot tubs, and spas.

1.2 The values stated in inch-pound units are to be regarded as standard. The values stated in brackets are for information only.

2. Referenced Documents

2.1 *ASTM Standards*:²

A 392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric

A 491 Specification for Aluminum-Coated Steel Chain-Link Fence Fabric

F 552 Terminology Relating to Chain Link Fencing

F 668 Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric

F 1183 Specification for Aluminum Alloy Chain Link Fence Fabric

F 1345 Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric

2.2 *CPSC Document*:³
CPSC Staff Recommendations, Barriers for Residential Swimming Pools, Spas, and Hot Tubs (March 1992)

2.3 *NSPI Document*:⁴
ANSI/NSPI-8 1996 Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs

2.4 *BOCA Document*:⁵
The BOCA National Building Code/1996—13th Edition

2.5 *SBCCI Document*:⁶

1993 SBCCI Bluebook, Standard Swimming Pool Code

2.6 *ANSI Standards*:⁷

Z535.4 Product Safety Signs and Labels

3. Terminology

3.1 See Terminology F 552 for definitions of terms relating to chain link fencing.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *fence, n*—a type of barrier that surrounds and obstructs access to the pool, tub, or spa.

3.2.2 *grade, n*—the finished elevation at any specified point of the ground or pavement outside the pool area.

3.2.3 *hot tub, n*—See *spa*.

3.2.4 *outdoor, adj*—located outside of a completely enclosed building or other structure.

3.2.5 *residential, adj*—situated on the premises of a detached one- or two-family dwelling or a one-family town house not more than three stories in height.

3.2.6 *spa (nonportable), n*—a permanent structure containing water over 24 in. [610 mm] deep, in which the water-heating and water-circulating equipment are not an integral part of the product, intended for recreational bathing.⁶

3.2.7 *spa (portable), n*—a nonpermanent structure containing water over 24 in. [610 mm] deep, in which all controls, water-heating, and water-circulating equipment are an integral part of the product, intended for recreational bathing.

3.2.8 *swimming pool, n*—an in-ground, on-ground, or above-ground structure of a permanent, semi-permanent, or portable fabrication containing water over 24 in. [610 mm] deep and designed and constructed in accordance with local codes, used for bathing, swimming, diving, racing, or other activity.

4. Summary of Practice

4.1 This guide is based in part upon recommendations of the United States Consumer Product Safety Commission (CPSC), the American Association of Pediatrics, the National Center for

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from U.S. Consumer Product Safety Commission (CPSC), 4330 East-West Hwy., Bethesda, MD 20814.

⁴ Available from National Spa and Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314.

⁵ Available from Building Officials and Code Administrators International Inc., 4051 W. Flossmoor Rd., Country Club Hills, IL 60478-5795.

⁶ Available from Southern Building Code Congress International, 900 Montclair Rd., Birmingham, AL 35213-1206.

⁷ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

Injury Prevention, and the American Medical Association. It also incorporates certain provisions of the National Spa and Pool Institute (NSPI) Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs.

5. Significance and Use

5.1 This guide sets forth minimum standard requirements for use in local codes and ordinances relating to residential outdoor swimming pools, hot tubs, and spas.

5.2 This guide does not have the effect of law, nor is it intended to supersede local codes and ordinances of a more restrictive nature.

5.3 Studies, as listed in Annex A1, have been referenced as the bases for certain recommendations in this guide and will assist those who intend to provide protection against drownings and near-drownings by restricting access to children under the age of five years in residential swimming pools, spas, and hot tubs. This would include, but not be limited to, state and local governments, model code organizations, building code groups, and consumers. It is understood that the format will vary depending upon the specific use and local conditions.

6. Requirements

6.1 *Height*—The top of the fence shall be a minimum of 48 in. [1219 mm] above grade measured on the side of the fence that faces away from the swimming pool. If the fence is mounted on top of an above ground pool, the top of the fence shall be a minimum of 36 in. [914 mm] above the top of the pool structure, provided the top of the pool structure is a minimum of 48 in. [1219 mm] above grade (see 3.2.2 for definition of *grade* specific to this guide).

6.2 *Visibility*—The fence on top of an above ground pool shall be so designed and constructed that it has at least a 65 % open area to allow visibility from a designated supervising area outside the pool area to inside the pool area.

6.3 *Ground Clearance*—The maximum vertical clearance between grade and the bottom of the fence shall be 4 in. [102 mm] measured on the side of the fence that faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above ground pool, the fence may be at ground level or mounted on top of the pool structure. Where the fence is mounted on top of the pool structure, the space between the top of the pool structure and the bottom of the fence shall be no greater than 4 in. [102 mm] in any direction.

6.4 *Solid Barriers* that do not have openings, such as masonry or stone walls, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints. Such indentations shall not be deeper than 0.375 in. [10 mm].

6.5 *Horizontal and Vertical Members*—Where the fence is composed of horizontal and vertical members and if the distance between the tops of the horizontal members is less than 45 in. [1143 mm], the horizontal members shall not extend more than 0.375 in. [10 mm] outside of the enclosure, and the spacing between the vertical members shall not exceed 1 3/4 in. [44 mm] (see Fig. 1). If the distance between the tops of at least two consecutive horizontal members is 45 in. [1143 mm] or more, the spacing between the vertical members shall not

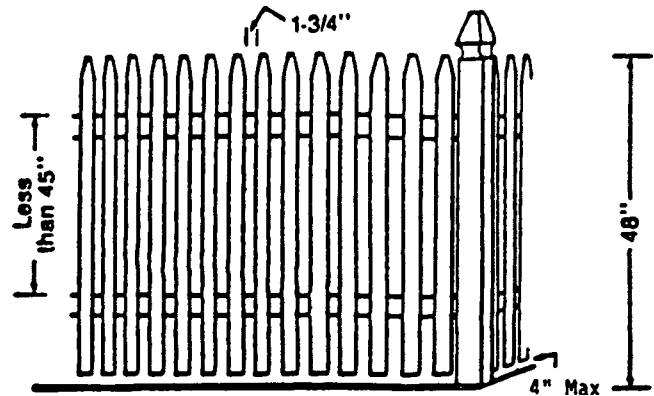


FIG. 1 If Horizontal Members are Less Than 45 in. Apart, Vertical Spacing Shall Not Exceed 1-3/4 in.

exceed 4 in. [102 mm] (see Fig. 2). Where there are decorative cutouts, the spacing within the cutouts shall not exceed 1 3/4 in. [44 mm].

6.6 *Chain Link Fences*—Mesh opening for chain link fences shall be a nominal 1 1/4 in. [32 mm] measured between the parallel sides of the mesh, and a maximum of 1 3/4 in. [44 mm] measured horizontally between the corners of the installed mesh, as illustrated in Fig. 3 (see Note 1), unless the fence is provided with privacy slats (see Note 2) fastened at the top or the bottom, in which case no opening in the mesh shall exceed 1 3/4 in. [44 mm].

NOTE 1—If the tolerance of ± 1/8 in. [3.2 mm] indicated in Specifications A 392, A 491, F 668, F 1183, and F 1345 is rigidly applied to an ordered nominal mesh size of 1 1/4 in. [32 mm] measured between the parallel sides of the mesh, the result could be a dimension exceeding the specified maximum of 1 3/4 in. [44 mm] measured horizontally between the corners of the installed mesh. The degree of tension applied to the fabric during installation could also affect this horizontal dimension. In all cases, the horizontal opening between the corners of the fabric mesh after tensioning shall not exceed 1 3/4 in. [44 mm].

NOTE 2—*Caution Regarding Privacy Slats*—Privacy slats where used shall not violate the requirements of 6.2 regarding visibility.

6.7 Diagonal Members:

6.7.1 Where the fence is composed of diagonal members, such as in a lattice fence, any opening created by the diagonal members located less than 48 in. [1219 mm] above grade shall be a maximum of 1 3/4 in. [44 mm] measured in its largest direction.

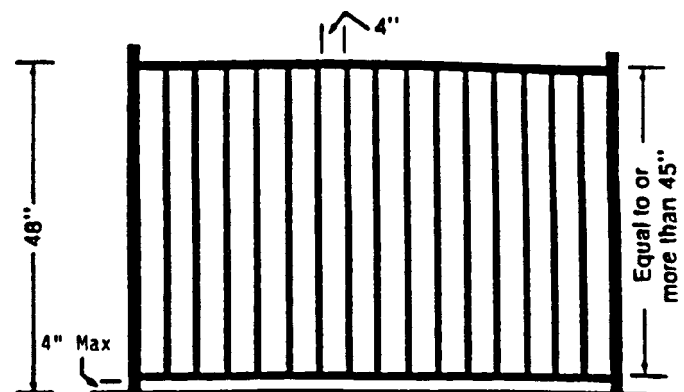


FIG. 2 If Horizontal Members are Equal to or More Than 45 in. Apart, Vertical Spacing Shall Not Exceed 4 in.

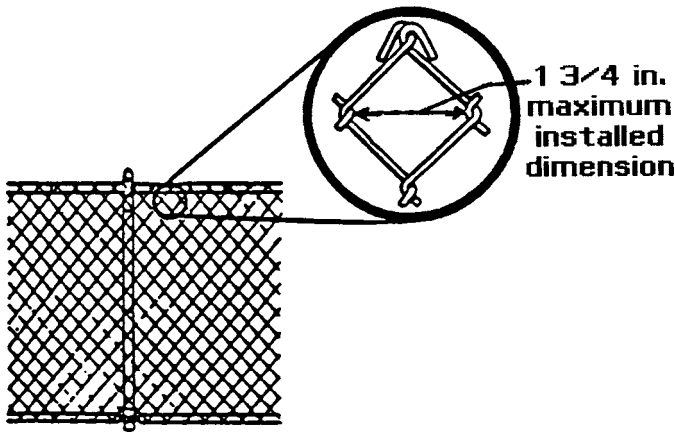


FIG. 3 Nominal 1-1/4 in. Square Chain Link Mesh

6.7.2 Diagonal bracing members extending from one side to the opposite side creating a ladder effect on all styles of fences and gates are not permitted where spacing of vertical members in any area between posts exceeds 1 3/4 in. [44 mm].

6.8 Access Gates:

6.8.1 *Double Leaf* access gates shall comply with the requirements of 6.1-6.6 and shall be equipped with a padlock or other key-operated locking device that must be locked when the gate is not in use.

6.8.2 *Single Leaf* access gates shall open outward away from the pool, shall be self-closing, and shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 in. [1372 mm] above grade, the release mechanism shall be located on the pool side of the gate a minimum of 3 in. [76 mm] below the top of the gate and the gate and fence shall have no opening greater than 1/2 in. [13 mm] within 18 in. [457 mm] of the release mechanism when the gate is in the fully closed position (see Fig. 4).

6.9 Buildings—The fence shall completely surround the pool structure when practical. Where a building or dwelling or portion thereof must be utilized as part of the pool enclosure,

and if the exterior wall or walls of that portion of the building contains doors, windows, or other openings, it shall comply with the following provisions:

6.9.1 *Doors*—Doors in the wall of a building or dwelling that allow direct access through the wall to the pool shall be provided with one of the following:

6.9.1.1 An alarm capable of detecting unauthorized entry through the door into the pool area and which, when activated, emits a sound of sufficient volume to be heard in the building or dwelling. The audible warning shall commence not more than 7 s after the door and/or its screen, if present, are opened and shall sound continuously for a minimum of 30 s. The alarm shall have a minimum sound pressure rating of 85 dB at 10 ft and the sound of the alarm shall be distinctive from other household sounds such as smoke alarms, telephones, and door bells. The alarm shall automatically reset under all conditions. The alarm shall be equipped with manual means such as touch pads or switches to temporarily deactivate the alarm for a single opening from either direction. Such deactivation shall last for no more than 15 s. The deactivation touch pads or switches shall be located at least 54 in. [1372 mm] above the threshold of the door; or

6.9.1.2 A self-latching device on a self-closing door that is either:

- (1) At least 54 in. [1372 mm] above floor level, or
- (2) At any convenient height if the device uses a key, electronic opener, or integral combination lock, so long as it does not negate the function of the door.

6.9.2 *Windows*—Windows in the wall of a building or dwelling that allow direct access through the wall to the pool and are located 48 in. [1219 mm] or higher above floor level, and where there is no foothold in the building or dwelling wall, shall be exempt and considered equivalent protection to the fence. Windows in the wall of a building or dwelling that allow direct access through the wall to the pool and where the lowest opening is at a height of less than 48 in. [102 mm] above floor level, shall comply with one of the following requirements:

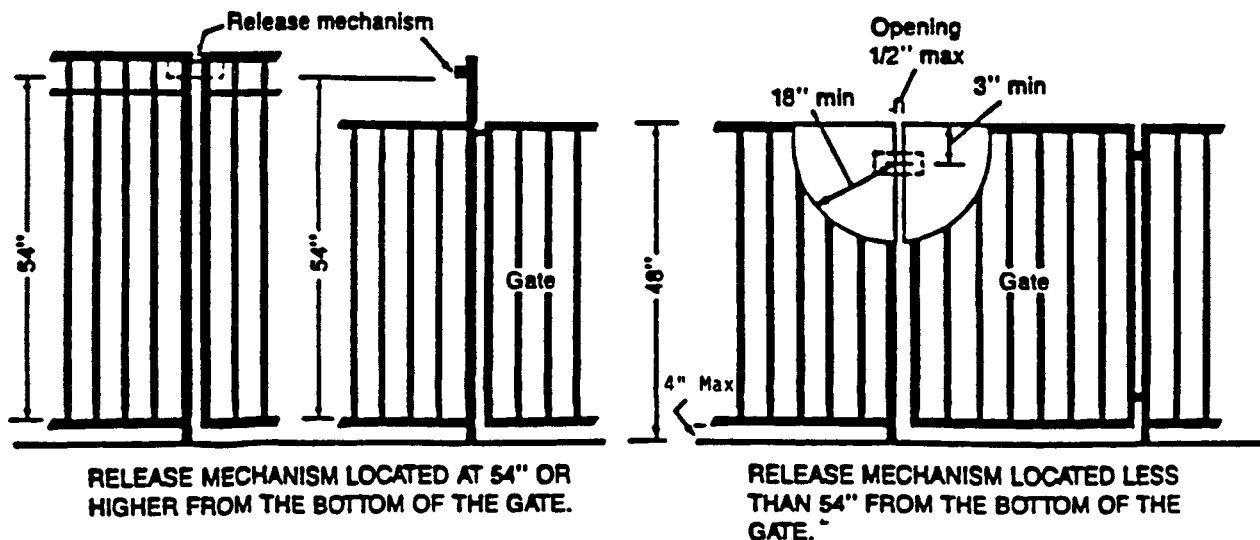


FIG. 4 Latch Release Mechanism