



Designation: ~~F2049–03~~ Designation: F 2049 – 08

Standard Guide for Fences/Barriers for Public, Commercial, and Multi-Family Residential Use Outdoor Play Areas¹

This standard is issued under the fixed designation F 2049; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide provides the recommended minimum requirements for denoting various types of fences/barriers for the protection of children's outdoor play spaces in public, commercial, and multi-family residential use locations. This guide excludes individual single family residential use play equipment locations.

~~1.2 This guide provides for the safety of occupants in play areas or zones as it pertains to vehicular intrusion as well as other participant intrusion, and for children containment or entry/exit.~~

~~1.3~~

1.2 This guide provides for the safety of occupants in play areas or zones as it pertains to vehicular intrusion as well as other participant intrusion, and for children containment or entry/exit. This guide has the intent to also keep children inside a predetermined area in an effort to enhance supervision; to keep children from running out of the area into water and other hazards; to minimize the likelihood of facial lacerations on low gate and fence hardware; to minimize the likelihood of abduction; and to restrict access to railroads, highways, roads, and other such hazards.

1.3 This guide does not choose the product components for the fence system, the choice of which should be made by the operators of the play space and their specification writers or drafters based upon their determination of the merits of the products that could be used.

1.4 The values stated in inch-pound units are to be regarded as standard. The SI values given in parentheses are for information only.

1.5 This guide does not purport to address the aspect of safety within a play area or zone. It is the responsibility of the user of this guide to establish appropriate safety practices as related to the play area and determine the applicability of regulatory requirements prior to use.

~~1.4 This guide does not choose the product components for the fence system, the choice of which should be made by the operators of the play space and their specification writers or drafters based upon their determination of the merits of the products that could be used.~~

~~1.5 The values stated in inch-pound units are to be regarded as standard. The SI values given in parentheses are for information only.~~

2. Referenced Documents

2.1 ASTM Standards:

~~A123/A123M Specification for Zinc Hot-Dip Galvanized Coatings on Iron and Steel Products²~~

A 123/A 123M Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

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 Fencing²~~ Terminology Relating to Chain Link Fencing

F 567 Practice for Installation of Chain-Link Fence

F 626 Specification for Fence Fittings

~~F 668 Specification for Poly(Vinyl Chloride) (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric²~~

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

F 1043 Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework

F 1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

¹ This guide is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.10 on Specific Applications . Current edition approved March 10, 2003. Published April 2003. Originally approved in 2000. Last previous edition approved in 2000 as F2049-00.

Current edition approved Feb. 15, 2008. Published February 2008. Originally approved in 2000. Last previous edition approved in 2003 as F 2049 – 03.

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*, Vol 01-06, volume information, refer to the standard's Document Summary page on the ASTM website.

- ~~F1043 Specification for Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework²~~
~~1183 Specification for Aluminum Alloy Chain Link Fence Fabric~~
~~F1083 Specification for Pipe, Steel, Hot Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures²~~ 1345 Specification for
~~Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric~~
~~F1183 Specification for Aluminum Alloy Chain-Link Fence Fabric²~~
~~F1345 Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric²~~
~~F1664 Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence²~~ 1664 Specifi-
~~cation for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with~~
~~Chain-Link Fence~~
 2.2 CPSC Document:³
 Model Pool Barriers Publication
 2.3 BOCA Document:⁴
 BOCA National Building Code/1993 – 12th Edition
 2.4 Research Reports:
 Coleote, L. R. and Mitchie, J. D., *National Cooperative Highway Research Program Report #54*, “Location, Selection, and
 Maintenance of Highway Guardrails and Median Barriers,” S. W. Research Institute, San Antonio, TX.⁵
~~National Cooperative Highway Research Program Report #54~~
 2.5 Building Codes:
 Standard Building Code, 1994 Edition, 2nd printing
 Uniform Building Code, Vol. II, Section 311.2.3.5: Vehicle Barrier
 2.6 Other Documents:
 Other association standard weld wire draft specifications.

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*—type of containment that surrounds and obstructs primarily people passage to or from the play area.
 3.2.2 *barrier, n*—type of containment or deflector system that surrounds and obstructs primarily vehicle passage into a play
 area, such as bollards and posts.—type of containment or deflector system that surrounds and obstructs primarily vehicle passage
 into a play area, such as bollards and posts. Barriers must pass impact tests for the highest speed limit allowed and posted on the
 street, road, or parking lot adjacent to the outdoor play area.
 3.2.3 *continuous barrier, n*—type of traffic barrier designed to prevent vehicular intrusion into a play area and that also impedes
 pedestrian passage to and from the play space.
 3.2.4 *curb, n*—permanent, continuous structure made of concrete, asphalt, or other structural material presenting a 6 to 8 in.
 [15.24 to 20.32 cm] elevation change at the curbline.
 3.2.5 *curbline, n*—pavement elevation change defining the edge of a fire lane, vehicular travel lane, or contiguous or individual
 parking spaces with depressions meeting ADA requirements—the requirements of the Americans with Disabilities Act.
 3.2.6 *debris fence, n*—shield used to prevent flying post-crash or other debris from entering a play zone.
 3.2.7 *discrete barrier, n*—barrier designed to prevent vehicular intrusion that allows for pedestrian passage to and from the play
 space.
 3.2.8 *guardrail, n*—an example of a continuous barrier.
 3.2.9 *low-speed, n*—less than 35 mph [56.33 km/h].
 3.2.10 *play zone or area, n*—fenced-in or enclosed space or environment—environment for public, multi-family residential, or
 commercial play use containing recreation equipment intended for activities by children where entry or egress access is
 limited:intended.
 3.2.10.1 *Discussion*—This may be through its adjacent apartment or home decorative lattice work, public or commercial
 building door, or via a controlled gate. Examples include, but are not limited to, the following: fast food establishments, day-care
 centers, shopping malls, apartments, parks, and apartments:schools.
 3.2.11 *proximity, n*—within 5 ft [1 or 1.524 m] as measured by the least distance between the edge of the driving lane
 to perimeter of the play zone and its fence/barrier.
 3.2.12
 3.2.11 *structural bollards, n*—steel pipe structure filled with concrete installed in the ground with a concrete footing.
 3.2.12.1

³ Available from U.S. Consumer Product Safety Commission (CPSC), 4330 East West Hwy., Bethesda, MD 20814, <http://www.cpsc.gov>.

⁴ Available from International Code Council (ICC), 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041-3401, <http://www.intlcode.org>.

⁵ Colcote, L. R., and Mitchie, J. D., “Location, Selection, and Maintenance of Highway Guardrails and Median Barriers,” *National Cooperative Highway Research Program Report #54*, S. W. Research Institute, San Antonio, TX.

3.2.11.1 *Discussion*—A structural bollard is an example of a barrier and discrete barrier.

3.2.13 *vulnerable play zone, n*—play zone in the proximity of vehicular traffic.

3.2.14

3.2.12 *traffic, n*—movement of vehicles for purpose of driving-through or parking motions.

3.2.13 *vulnerable play zone, n*—play zone in the proximity of vehicular traffic, railroad tracks, bodies of water, streets, parking lots, roads, electrical and other utility features, and other similar life-threatening or debilitating features.

4. Site Covered

4.1 A play zone shall be protected in accordance with this guide in locations that are vulnerable to low-speed vehicular traffic, from activity and game conflicting uses, and for the control of entering or exiting the play zone or area. Protection shall be placed, as specified in Section 7, on all sides of the play zone.

5. Significance and Use

5.1 This guide sets forth minimum standard requirements for use in local codes and ordinances relating to public, multi-family, residential, and commercial outdoor play areas or zones and their environments.

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 This guide provides certain recommendations to assist those who intend to provide protection against injuries or fatalities associated with any possible vehicle passage into, or pedestrian passage to or from, a play environment by children. 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. Methods of Protection

6.1 *Discrete and Continuous Barriers*—~~These methods of protection shall be determined by the vulnerable play area or play zone requirement for protection for vehicle intrusion and adjacent traffic circumstances.~~ These methods of protection shall be determined by the vulnerable play area or play zone requirement for protection for vehicle intrusion and adjacent traffic circumstances. If a fence itself complies with the impact tests described in 7.1, then a barrier is not required.

6.1.1 *Continuous Barrier*—If a vulnerable play area has no exterior exit gate on the traffic side of the play zone, then the play area shall be protected with a continuous barrier on the traffic side as specified in the following sections. If pedestrian access through this continuous barrier is necessary, it shall meet applicable sections. Continuous barrier methods include, but are not limited to, guardrails, concrete or brick reinforced walls, and concrete jerseyJersey barriers.

6.1.2 *Discrete Barrier*—If a vulnerable play area has an exit gate on the traffic side of the play zone, then pedestrian access through a barrier is necessary and a discrete barrier should be provided on the traffic side as specified in the following sections. Discrete barrier methods include, but are not limited to, the following: structural bollards, trees, posts, and other vertical structures spaced no wider than 4 in.

6.1.3 *Fences*—All vulnerable play areas shall have fences with gates as described in the following section. This method of protection may include chain link and other materials of a minimum height of 4 ft [1.22 m] above grade.

6.1.4 *Building*—Where a building may abut or is adjacent to a play area or play zone, it may be used as part of the containment. If the building wall contains a door for ingress and egress into the play area, it shall comply with subsequent sections. If the building wall contains windows for viewing, it shall contain glazing that is unbreakable and shatter-proof.

6.2 *Buildings*—The fence shall completely surround the play zone or area environment except where a building or dwelling or portion thereof is utilized as part of the play environment enclosure. If the exterior wall or walls of that portion of the building contains doors, or other openings, it shall comply with the following provisions.

6.2.1 *Doors*—Doors in the wall of a building or dwelling that allow direct access through the wall to the play environment shall be provided with the following:

6.2.1.1 An alarm capable of detecting unauthorized entry or exit through the gate or opening into or from the play environment area when not in use and which, when activated, emits a sound of sufficient volume to be heard in the building or dwelling as a means of outdoor area security when deemed necessary. The audible warning shall commence not more than 7 s after the door, or its screen, if present, or both 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 [3.4 m] and the sounds of the alarm shall be distinctive from other sounds such as auto alarms, smoke alarms, telephones, and door bells. The alarm shall automatically reset after 2 min under all conditions.

7. Requirements

7.1 *Continuous Barrier:*

7.1.1 *Strength and Deflection Limits*— The barrier used shall be able to withstand a one-time 10 000 lb [4535.9 kg] concentrated, point-load located 2 ft [0.61 m] above ground with permanent deformation less than 0.1 in. [2.54 mm] after a single load when tested in accordance with ~~US DOT~~the U.S. Department of Transportation specifications.

7.1.2 *Maintenance*—If any permanent deformation or damage is done to a continuous barrier, the play area facility shall be closed until a new barrier has been installed.