Rhode Island Child Care Early Learning Facilities Fund *Fast Facts*

Fencing and Barriers

Purpose & Applicability

These guidelines apply to all public, commercial, and multifamily residential use outdoor plays areas such as those located at **schools, child care centers, early learning facilities**, and public parks. It is not intended to apply to single family residential use play areas. There are many critical components to outdoor playspace safety. The information presented here is limited to details on fencing and exterior barriers, including information on fencing location, materials, and installation procedures. **It is highly recommended that you provide this guide to your fence installer and require them to review it prior to submitting any bids for work around a play area**.

Governing Documents Relating to Fencing Standards for Public Play Areas

The governing document (standards) related to fencing and barriers around play areas is ***ASTM 2049 - The Standard Guide For Fences/ Barriers for Public, Commercial, and Multifamily Residential Use Outdoor Play Areas.*** The Consumer Product Safety Commission (CPSC), regulatory agencies, Early Childhood Environmental Rating Scales, and other related entities typically defer to this standard for fencing and barriers as it relates to play areas. These are also the standards generally relied upon by the insurance industry.

Why are the Standards Important?

Fences and barriers are often used to safely contain playground users, prevent children from wandering into dangerous areas, provide separation between conflicting uses, and keep areas safe from vehicular intrusion. The improper selection, placement, or erection of fencing or barrier can actually create a safety hazard for children utilizing a play area and potentially reduce the effectiveness of their intended purpose. In addition, appropriate fence height is required by licensing authorities, and many current child care and early learning rating systems evaluate the proper use of barriers and fencing in and around play areas.

Key Recommendations for Fencing *(ASTM 2049 - 7.4)*

When repairing, replacing, or installing a fence you, **and your selected contractor or designer**, should follow these key recommendations:

- All fences surrounding a playground must enclose the play space and measure a minimum of **48" high measured from the highest surrounding grade**[1] *(ASTM 2049 - 6.1.3)***.**
- Fences may be constructed of chain link, wood, vinyl, steel, aluminum, or other durable materials.
- Solid barriers, such as masonry or stone walls, are acceptable as long as they do not contain protrusions, or indentations deeper than 0.375 inches *(ASTM 2049 - 7.4.4).*
- If the fence is composed of horizontal and vertical members (such as steel picket or wood picket fencing), horizontal members should be located on the non-play side of the fence if the tops of the horizontal members are less that 45 inches apart. In addition, vertical members should not exceed 1 3/4 inches apart *(ASTM 2049 - 7.5.1)*.
- If the spacing between horizontal members is 45 inches or more, then the spacing between vertical pickets of a fence should not exceed 4" *(ASTM 2049 - 7.5.1)*.
- All fencing should be set less than 4" from the ground surface to prevent toys or children from going under the fence *(ASTM 2049 - 7.4.3)*.
- If utilizing chain link for fencing, mesh openings shall be a nominal 1 1/4 inches measured between parallel sides of the mesh and a maximum of 1 3/4 inches measured horizontally between the horizontal corners, unless privacy slats are used that are anchored at the top and bottom[2] *(ASTM 2049 - 7.5.2)*.
- Fences should be located a minimum of 72 inches away from any permanent structures, equipment, or other objects that would aid in climbing the fence *(ASTM 2049 - 8.2)*.
- If a lattice type fencing is used, the maximum opening created by diagonal members shall be a minimum of 1 3/4 inches *(ASTM 2049 - 7.5.3.1)*.
- Diagonal bracing members on fencing is prohibited because it may create a "ladder affect" for climbing *(ASTM 2049 - 7.5.3.1).*
- **There shall be no parts of a fence or gate that is a protrusion hazard less than 54 inches above grade.** This includes bolts, ties, and other hardware typically oriented to the inside of the fence area. Protrusions on the inside of the play area should be able to pass all standard compound projection gauges used for the testing of playground equipment *(ASTM 2049 - 7.7.1)*.
- If bolts and hardware on **existing fences** currently protrude into the playground, the hardware should be rotated to orient to the non-play side. Alternatively, exposed bolt ends may be cut flush with nuts, and ties bent in a manner that minimizes potential entanglement[3].
- When feasible, it is highly recommended that chain link fabric be installed toward the inside of the play area so that all ties, rails and braces are oriented to the non-play side of the fencing[3].

- When feasible, orient the smooth board side (non-brace side) of single face picket fencing to the interior of the play area to prevent climbing as well as protrusion and entanglement hazards[3].
- Building walls may be used in lieu of fencing as part of the containment system *(ASTM 2049 - 7.7.1).*

Footnotes:

1. ASTM standards indicate measuring the fence height above grade on the side of the fence that faces away from the play area. However, this proves ineffective if the intent is to prevent passage from the interior of the play area. Thus the height should be measured from the highest surrounding grade to ensure this height is not reduced when dealing with upward slopes inside or outside the play area.

2. The intent of the 1 1/4" maximum mesh size is to prevent children from obtaining a foothold and climbing over a chain link fence. This mesh size is common in residential pool applications. Many facilities currently have 2" mesh size because it is the most common and cost effective. If you are repairing a fence panel we recommend staying with the original mesh size. However, if you are replacing larger sections of fencing, renovating, or installing new play area, the 1 1/4" mesh should be utilized.

3. A high prevalence of potential impalement and entanglement hazards related to fencing that could pose a major safety risk have been observed on Rhode Island child care playgrounds. To reduce these hazards, we recommend addressing these issues whenever they are identified, or when repairing, replacing, or installing fencing. While every effort should be made to completely replace or reorient hardware, modifying hardware sometimes proves more cost effective for short term safety repairs.

Key Recommendations for Fence Gates *(ASTM 2049 - 7.6)*

When repairing, replacing, or installing fence gates you, **and your selected contractor or designer**, should follow these key recommendations:

- Double leaf gates may be provided for maintenance access, but should be locked when not in use *(ASTM 2049 - 7.6.1)***.** The gate fence requirement should meet the standards outlined above.
- Single leaf access gates shall open **outward** from the play area, shall be **self closing**, and shall have a **self latching device** *(ASTM 2049 - 7.6.2).*
- The release mechanism of the self latching gate shall be no less than 48 inches above the grade *(ASTM 2049 - 7.6.2).*
- Spacing between gates (double leaf) or posts (single leaf) should be less that 3 1/2 inches[1].

Footnotes:

1. ASTM standards do not address the spacing between gates and posts. However, wide gaps in fence gates could allow passage of children or cause potential head entrapment hazards. For this reason, we recommend that the maximum opening be less that 3 1/2" which is the width of a standard torso probe used for testing entrapments on play structures.

Key Recommendations for Vehicle Barriers *(ASTM 2049 - 7.6)*

Barriers should be used when a play area is located within 30 feet of streets or parking lots to prevent vehicles from entering a space *(ECERS)*. Barriers can either be contiguous (guardrails, wood rails, walls, jersey barriers) or discrete (concrete filled bollards, large boulders, trees, posts, etc). All barriers should meet the following key recommendations:

- Contiguous barriers shall be a minimum of 31" high and discrete barriers should be a minimum of 4' high[1].
- Contiguous barriers shall be located no less than 2' from the perimeter fencing of the play area *(ASTM 2049 - 7.1.4)*.
- Contiguous barriers shall be placed edge to edge, unless passage through is required, which shall be no more than 48" *(ASTM 2049 - 7.1.5)*.
- Discrete barriers shall be placed a maximum of 42 inches apart *(ASTM 2049 - 7.2.2).*
- Solid walls meeting impact requirements may be used as a continuous barrier if the wall is a minimum of 4 feet in height. *(ASTM 2049 - 7.8).*

Footnotes:

1. ASTM standards do not address the height of barrier rails. The recommended height of contiguous guardrails is based on US Department of Transporation recommendations related to standard highway "W" type guard rails for traffic areas. The 4' recommendation for discrete barriers allows vehicle operators the ability to view the barrier from the seated position in a typical car even in inclement conditions.

2. ASTM 2049 states "All barriers 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 the U.S. Department of Transportation specifications (ASTM 2049 - 7.1.1)." If this information is not available from the barrier manufacturer or installer, Owners/ Operators should consult with a qualified playground designer or use reasonable judgment when selecting barriers for a play area. Standard transportation guardrails, concrete filled steel bollards, large boulders greater than 8 Cubic feet, trees greater than 2" caliper, large concrete blocks, or other heavy mass components will typically be acceptable as vehicular barriers. You may also check with the Rhode Island Department of Transporation for other typical barrier examples acceptable for use along vehicular travel ways.

Selecting a Fence Contractor

Unfortunately, there is no special certification for fencing contractors who install fencing or barriers around play areas. However, when seeking out a qualified installer you should:

- Seek out referrals from people you know who have had similar installations performed around play areas, pools, or parking areas.
- Stick to specialized fence installers when possible. General contractors, landscapers, and other tradesman are typically not as fluent in the many standards and products available in the industry.
- Do a little research into how long the company has been around, number of installations, and check out some of their recent installations.

- Check out the Rhode Island Contactor's Registration and Licensing Board website at http://www.crb.state.ri.us/search.php. Registration as a licensed contractor ensures that the installer has insurance and meets minimal standards, **but does guarantee they are qualified or competent** so still do your research**.**
- Ask a local playground designer, or qualified playground professional, for a referral to a local contractor.

What to Do Once you Locate a Contractor

Once you locate one or more competent installers we recommend the following:

- **Provide the contractor with this document and ensure they understand all the specific key requirements prior to having them provide you with an estimate.**
- Review the project with them and lay out the perimeter of the fencing to ensure it does not pose any obstruction or clearance hazards with existing play equipment.
- Review all estimates and work descriptions carefully, ensuring that all key requirements outlined will be met.
- Review installation procedures and ensure all materials meet the provided standards and are installed correctly.
- Consult with a qualified designer or certified playground inspector if you are not sure about proper safety zones or other requirements involving fencing and barriers.
- **Do not pay your contractor until you, or your designer/ technical advisor, has visually inspected the fence installation to ensure that it meets all aspects of these requirements.** Failure to inspect the final product could cost you more funds in the future to correct deficiencies.

Other Resources

If you have difficulty understanding these requirements, or you need further assistance, we highly recommend speaking with a professional designer specializing in playgrounds or a certified playground safety inspector. Please contact LISC at 401-331-0131 for more information on obtaining the services of a designer or technical specialist. LISC and the RICCELFF staff cannot recommend specific contractors to undertake your project. Our goal is to educate Owner/ Operators, as well as contractors, so the installations are performed in accordance with current standards and regulations.

Referenced Documents

ASTM 2049-11 - Standard Safety Performance Specification for Fences/Barriers for Public, Commercial, and Multi-Family Residential Use Outdoor Play Areas (revised 2011).

ECERS - Playground Information to Use with the Environmental Rating Scales

CPSC (Consumer Product Safety Commission) handbook for Public Playground Safety, Publication No. 325.