



Problems & Solutions for Accessible Playground Surfacing

Providing accessibility in a playground presents challenges for designers, manufacturers and owners from the perspective of providing challenging equipment and surfaces that are both traversable and protect the child from injury.

The Canadian government in “A Profile of Disability in Canada, 2001” states that “persons with disabilities are those who report difficulties with daily living activities, or who indicated that a physical, mental condition or health problem reduce the kind or amount of activities they could do”.

The US Justice Department defines a disability with respect to an individual as any individual meeting any of the three following tests;

- A physical or mental impairment that substantially limits one or more of the major life activities of such an individual,
- A record of such and impairment, or
- Being regarded as having such an impairment.

The World Health Organization has established an action plan for 2006-2011 that states its vision as “all persons with disabilities, live in dignity, with equal rights and opportunities”. This is truly a tall order, but with some thought do-able.

Various organizations have documentation related to minimum performance to provide accessibility. The United States Access Board has published guidelines to provide accessible facilities of various types including playgrounds. In Canada the anticipated revision of the CSA Z614 Standard on Children’s Playspace and Equipment is expected to have specific guidance with regard to accessibility in playgrounds. One of the major differences of the US requirement and the CSA requirement will be the precondition that the play structure meets the technical requirements of the CSA Z614, whereas compliance with ASTM F1487 is not a requirement of the ADA/ABA Accessibility

[See page 2](#)

ASTM F2479-07 **Standard Guide for the Specification, Purchase, Installation and Maintenance of Poured-In-Place Playground Surfacing**

One of the surfaces with the most promise and more problems has been the poured in place surfaces that have been provided in playgrounds. Lack of knowledge on the part of the owner/operator usually puts them in a position of owning a playground surface that is physically failing or worse yet, presents a hazard through the loss of impact attenuation.

The ASTM Sub-Committee on playground surfaces (F08.63) has been working over the past 4 years to develop a standard guide document to assist the stakeholders in the playground to better understand and presumably own a poured in place surface that meets all of their expectations and protects the children playing in the playground.

[See page 4](#)

Inside this issue:

Accessible Playgrounds 1-4 & Surfacing Issues

EVERPLAY introduces 4 SMARTER Surfaces

Website and contact 4

ASTM F2479-07
Standard Guide for Poured-in place



From page 1

Guidelines. Meeting performance requirements of either of these documents on an ongoing basis is the challenge for the owner/operator.

The easy part of the accessible playground is the play structure itself. Being made of rigid materials, the manufacturer of the play equipment is able to ensure compliance with dimensions, slope and stepwise changes and these should remain stable for the functional life of the playground. It is the responsibility of the owner/operator to ensure that there is an appropriate number of play components and more so that they provide play value and not just lip service to accessibility. Looking for as much integration as possible will go a long way to ensuring the dignity of both the participant with the disability and their able-bodied friends and acquaintances. Consultation with community groups will be of great assistance to the owner/operator.

The greatest challenge for the owner/operator of the playground will be providing an accessible route. An accessible route in the playground has very specific requirements in the ADA for the following;

- The impact attenuation must meet the requirements of ASTM F1292
- The firmness and stability of the surface must meet the requirements of ASTM F1951
- The surface shall be slip resistant
- There shall be no horizontal gaps greater than 13mm ($\frac{1}{2}$ "
- The maximum vertical change of level is 6.4mm ($\frac{1}{4}$ "
- The maximum change of level shall be no greater than 13mm ($\frac{1}{2}$ " provided the second 6.5mm ($\frac{1}{4}$ " is bevelled on a 1:2 slope
- The width must be 1525mm (60") wide with specific exceptions
- The turning space shall have a slope no greater than 1:48 in any direction
- The running slope shall not exceed 1:20
- The cross slope shall not exceed 1:48 for the entire 1525mm (60")
- Shall have no objects within 2035mm (80") above the surface

The transfer platform of the transfer system must be between 11-18" (280-455mm) above the surface.

The CSA B651 standard for Accessible design for the

built environment differs from the ADA in that the Accessible Route

- Must be a minimum clear width of 920mm with exceptions
- Cross slope shall be no greater than 1:50 (2%)
A change in vertical level of 0-6mm can be vertical, while changes in vertical level between 7-13mm must have a continuous slope not greater than 1:2 and any changes in vertical level greater than 13mm shall have a continuous slope not greater than 1:12.

The public review document for the proposed revision of the CSA Z614 conforms in many respects, but differs dramatically from the ADA guidelines and CSA B651 with respect to the omission of horizontal gaps requirement. In addition it provides for an almost untraversable allowable vertical change in level of 12.7mm and the maximum allowable to be 35mm provided the upper 24.3mm has a slope not exceeding 1:2. This should resolve to a maximum of 25mm. Since there is a requirement to comply with the technical requirements of the Z614 Standard the height above the surface for a slide platform as to whether it is greater or less than 1200mm (4') will be important in determining the need for a no-encroachment zone and the height above the surface for the slide exit. This is especially critical if the slide is the accessible play component.

So how does an owner/operator comply with all of these requirements, provide an active, inclusive and challenging playspace and meet the capital and maintenance budgets, let alone actually performing the work of keeping the surface compliant? It's not all that difficult, but it will take some planning and effort at the time of design and installation. It will also include a review of the surfacing options.

What follows is a series of considerations that should assist in providing an appropriate surface for the accessible route and the areas of the playground where compliance is required.

Evaluation of surfaces;

1. Concrete or asphalt although firm, stable and slip resistant will not protect the child from the impact of a fall. Some playgrounds have an asphalt or concrete walk up to the transfer system and within the 1800mm (6') of the play structure, creating a life-threatening circumstance and non-compliance to ASTM F1292
2. Loose fill surfaces such as sand, pea gravel, rubber



crumb, rubber chips or shredded rubber will not provide functional firmness or stability. They will also not likely be slip resistant.

3. Loose fill surfaces such as engineered wood fibre can provide the firmness and stability for accessibility; but may not be able to meet the requirements for running and cross slope for the accessible route or the turning radius. There may also be the problem of the changes in vertical level at the playground edge. Depending upon the installation and maintenance of the surface there may also be problems associated with the height that the surface must be from the exit height of a slide or the platform of a transfer system.

4. Unitary systems such as mats and tiles can be used to provide a firm, stable and slip resistant surface. Care must be taken to ensure that the transition to the external walkway is supported to prevent non-compliance for the vertical level. Additionally a system of ensuring no horizontal gaps greater than 12.7mm (½") must be provided at the entrance walk and between the individual tiles. The problem that might be the downfall of these systems over time is compliance with the ability to attenuate impact and meet the requirements of ASTM F1292.

5. Unitary systems such as poured in place rubber can provide a firm, stable and slip resistant surface. Unless the edge to the external walkway is supported, the vertical level of this area could become non-compliant. In addition gaps greater than the allowable can occur at the junction to the entrance walk or where different colours are used. Another major problem with this type of surface is that they may lose their ability to attenuate impact over time and therefore become non-compliant to ASTM F1292. To help stakeholders better understand some of the problems and solutions related to poured in place surfaces, ASTM has recently published a new Guide Standard for this type of surfacing as ASTM F2479-07.

In larger playgrounds there may be combinations of surface types utilized to meet budget requirements for the play-space. Care must be taken where loose fill and unitary sur-



faces are used to ensure that the vertical level change from one type to the other is maintained to prevent a hazard of "falling off the side".

The achievement of an accessible route should be a normal consideration, especially with the vision of living in dignity; however some jurisdictions such as the United States have through the Americans with Disabilities Act mandated legislation that requires universal compliance through a complaint driven system. In Canada various provinces and municipalities have provided certain mandates and it would be up to the individual to determine the mandates in their area. For many years the Canadian experience has been that when an accessible or integrated playground is provided, it works to meet the needs of the user.

Given the above, the owner/operator and their consultants have two choices. Installing a loose fill system with the ongoing maintenance of surfacing materials to meet all of the compliance issues or utilize a unitary product as a minimum in the accessible route and maintain the junction between the unitary and loose fill systems.

Other than the obvious benefits of using a unitary surface for the entire playground there are options for loose fill with unitary surfacing that will meet the requirements of the relevant laws and standards and still have a "within" budget playground.

Large rubber mats of a minimum of 900 x 1800mm (3' x 6') or 1200 x 1200mm (4' x 4') can be used with a physical threshold or lip at the junction of the external walkway and the playground to ensure continue vertical level compliance. This mat system can be "floated" on top of an ASTM F1292 compliant loose fill surface to provide the accessible route to the transfer system, slide exits and swings. Systems such as shiplapping the edges or other bonding and integrated systems can be use to ensure the elimination of horizontal gaps from forming. Tiles are often difficult to install as a meandering walk as they are difficult to transition to surrounding loose fill surfaces without a severe drop off. As a result the "floating" of the mats is a maintainable concept.

Poured-in-place and other hybrid unitary sheet based surfaces can be installed as an accessible walk through a loose fill surface. There will be the need to provide for the minimum of 1525mm (60") width



with a less than 2% cross-slope and the edges should gently transition into the loose fill material of either side for a minimum of 300-500mm (12-20") at a slope no greater than 8% before dropping off to the depth of the loose fill material at a slope no greater than 60 degrees. Care must be taken to provide a physical threshold or lip at the entrance and exit of the accessible route to ensure no change in vertical level. Additionally it must be remember that the sub-base for a poured-in-place surface is generally compacted gravel and as a result this installation must conform to these requirements at final grade minus the thickness of the surface. Care must be taken to ensure that the gravel will not settle over time. This can be achieved through the installation and compacting of the gravel in layers not exceeding 150mm (6") in depth. Special care must be given to ensure full compaction at the junction of all hard curbs and walks to ensure a flush surface over time.

Essentially the provision of an accessible route is not difficult if you take the above into consideration, ensure the installation is compliant and warranties are in place for the surfaces, for materials and workmanship for a minimum of 5 years to ensure continued compliance to the legislation and standards.

A further consideration is the use of the surface, its texture and slopes in areas other than the accessible route as an accessible play component. This is a topic for another day. Stay tuned.



**ASTM F2479-07
Guide for Poured-In-Place Surfacing**

From page 1 As of January 2007 ASTM has approved the Standard Guide for the Specification, Purchase, Installation and Maintenance of Poured-In-Place Playground Surfacing as F2479-07 and it will be available for purchase from ASTM (www.ASTM.org) approximately the end of February.

It is the hope that some of the problems experienced in the past will be resolved through the publishing of F2479-07.

Now that this Guide has been approved the sub-committee is working on a performance standard with specific tests and minimum performances for poured in place surfaces.



18 Automatic Rd.,
Unit 12,
Brampton, Ontario
L6S 5N5

Phone: 416-410-3056
Fax: 905-494-1136
Email: rolf@everplay.com
henry@everplay.com

**State of the Art is not a limit,
but a Point of Departure**



**EVERPLAY Introduces the SMARTE play
surfacing system to CANADA**

Have you ever wanted a playground surface that can do the following?

- Be installed with local labour under expert supervision
- Meets the requirements of the CSA Z614 and ASTM F1292 at 4M (13')
- Meets the requirements of the ADA and anticipated the rotational penetrometer test for accessibility
- Long-term compliance with Standards, providing lower cost per square foot per years of service than most poured in place
- Water Permeable and easy to maintain
- Vandalism damage easy to repair with locally trained staff
- Is easy on the capital budget

The SMARTE system is unique for the above features and provides exception properties as a playground surface. In addition the ease of installation and maintenance will have you converting more of your playground surfaces to SMARTE.