

SMARTER – Specification

DESCRIPTION

SMARTER is a composite surface system consisting of a layered system of bagged rubber, loose rubber and a bonded sheet material that is fastened at the edges. The typical bonded sheet is made of PVC, available in roll format. The unique, patented, system is designed to meet and exceed the impact attenuation requirements of ASTM F1292 at heights in excess of 4.25 meters (14'). This system can also be used as an accessible route to meet the requirements of the Americans with Disabilities Act and the Annex H of the CSA Z614-07 for firmness, stability and changes in vertical level.

For the purpose of architectural specifications, the installed **SMARTER** must meet the performance criteria of Gmax less than 150 and HIC less than 800 when tested according to ASTM F1292-09. Testing will occur with 10 to 53 days of the completion of the installation using a Triax2000 and must confirm that the Gmax is less than 150 and the HIC is less than 800 from the tops of barriers, guardrails, swings and climbers.

TYPICAL USE

The SMARTER is used as an outdoor play surface that is durable, impact attenuating and water permeable. The SMARTER can be used for the entire playground surface or as an accessible route connecting ground level play components through other loose fill surfaces.

COLOURS

The standard colours for the PVC sheet matting is grey or beige
Upgraded colours are green, blue and yellow.
Note all colours will fade through exposure to UV light.

SURFACE PREPARATION

The SMARTER system can be installed on a compacted angular granular base (3/4" crushed stone with fines), asphalt or concrete bases. The sub-base and base must be smooth to a tolerance of 12mm over 3 meters (1/2" over 10'). The base can be sloped, but must conform to the running and cross slope requirements of the ADAAG (latest version) or the CSA Z614-07 (Annex H). Any change in grade of the base will be reflected through to the final surface. For a compacted granular base a geotextile is laid on the sub-base prior to the granular material and again prior to the installation of the SMARTER.

The edge for the playground will be either a curb that is prepared to facilitate the fastening of the PVC sheet or turned down well below the surface if the junction is to loose fill materials or grass.

The SMARTER is always installed after the play structures.

CONSTRAINTS

SMARTE is normally installed in a temperature above 5⁰C (41⁰F). There can be a slight drizzle or light rain during the installation of the bags and loose rubber, while the installation of the top sheet shall be performed only when there is no rain or pending rain within 1 hour of the installation. Mats need to be dry for adhesives to properly set.

INSTALLATION PROCEDURE

1.0 Base Preparation

1.1 Granular Base

1.1.1 The sub-base must have not any voids and be compacted to 95% SPD and graded to the mirror the contours of the final surface.

1.1.2 A geotextile, Terrafix 200R or equal is placed over the prepared sub-base.

1.1.3 Granular base will consist of a split compactable granular (3/4" crushed stone with fines) material. The granular base will be a minimum of 80mm (3") and compacted to 95% Proctor density. Local conditions will dictate if additional granular is required.

Note: the granular base installation shall be inspected and confirmed for meeting the requirements of this specification.

1.1.4 A geotextile, Terrafix 200R or equal, will be installed over the compacted granular base.

1.2 Concrete or Asphalt Base

1.2.1 The concrete or asphalt must be smooth and the grade is the mirror the slopes or the final surface. There shall be drainage provided to meet local requirements.

2.0 Curb edge preparation

2.1 Where a hard surfaced curb, timber or concrete, are provided, there must be a termination to fasten the PVC mat

2.1.1 A notch can be formed or cut out with a dimension of 10mm x 25mm (3/8" x 1") in the top edge of the curb or a wooden nailer can be attached to the inside of the curb to create this lip and attachment point.

3.0 Thickness of SMARTE

3.1 The thickness of the SMARTE is consistently determined by the 80mm (3") thickness of the bag, the 25mm (1") loose rubber and 10mm (3/8") PVC sheet. This surface is designed to provide a Gmax <150 and HIC less than 800 from the top of barriers, guardrails, swings and climbers up to 4.25 meters (14').

4.0 Installation

4.1 Full Playground installation

4.1.1 The SMARTE bags are placed beside each other allowing for some looseness and not bunching of the bags. The bags are placed uniformly in a brick style pattern.

4.1.2 The SMARTE bags are placed as close as possible to fixed objects, however any open space left between posts and bag edges will be filled with loose rubber chunks.

4.1.3 Loose rubber chunks 10-12mm (3/8-1/2") are placed into all voids between bags and to a thickness of 25mm (1")

4.1.4 The surface of loose rubber over the bags is compacted with a vibrator plate compactor. There will need to be a hard surface (such as plywood or heavy cardboard) placed between the loose rubber and the compactor to facilitate this operation.

Note: Once the compaction is complete, care must be taken to not disturb the smooth rubber. This can be done by placing cardboard on the rubber to facilitate traversing the surface during the installation of the PVC sheet.

4.1.5 The PVC sheet is unrolled in the shortest direction of the playground as the rolls are approximately 9 meters (30') to reduce the number of head seams.

4.1.6 The PVC sheets are laid parallel to each other, allowing for a slight overlap at the seam.

4.1.7 A PVC screen seam-tape is placed under the seam for the entire length of the seam.

4.1.8 The SureBond adhesive is applied in an S-pattern and the side of the first roll is lowered into the seam-tape.

4.1.9 Pro-Fix 240 adhesive is applied to the vertical edge of the PVC sheet and the sheet edges are held together while the Pro-Fix accelerator is sprayed over the area. Release the seam once the adhesive is cured in 6 to 15 seconds.

4.1.10 Where seams are created for the cutting in for vertical structural elements, the same seaming technique as in 4.6 to 4.9 are used.

4.2 Accessible Route through Loose Fill

4.2.1 The sub-grade and granular base are raised to accommodate the depth of loose-fill material in the playground.

4.2.2 The accessible route will be a minimum of 1524mm (5') wide with a maximum cross-slope of 1:48 and maximum running slope of 1:16.

4.2.3 Outside the accessible route the sub-grade and granular base shall slope down at a maximum of 1:2.5.

4.2.4 The SMARTE bags, loose rubber and PVC sheet are applied following the established grade as per sections 4.1.1 to 4.1.9

5.0 Edge Termination

5.1 Hard Curb

- 5.1.1 SureBond adhesive is placed into the notch that is created by being integral or created by a nailer.
- 5.1.2 Place the PVC mat into the notch with the adhesive. A mechanical fastener, nail or screw can be used to fasten the PVC mat down to facilitate the adhesion.

5.2 Turf Junction

- 5.2.1 The PVC mat is extended beyond the end of the SMARTE bags by a minimum of 300mm (12")
- 5.2.2 A trench is dug down at the edge of the SMARTE bag to a minimum depth of 200mm (8")
- 5.2.3 The PVC sheet is laid into the trench and the trench is backfilled and compacted.
- 5.2.4 The turf edge to the SMARTE is restored.

5.3 Accessible Route

- 5.3.1 The PVC sheet shall extend a minimum of 300mm (12") beyond the end of the SMARTE bags
- 5.3.2 A trench is dug down at the edge of the SMARTE bag to a minimum depth of 200mm (8")
- 5.3.3 The PVC sheet is laid into the trench and the trench is backfilled and compacted.
- 5.3.4 The loose fill playground material is stalled to upper level of the accessible route.

Warranty – 5 Year

Each **SMARTE** authorized installer warrants that the **SMARTE** installed surface conforms to the methods and standards of **Parity Inc.** This warranty is in lieu of any other warranties expressed or implied, including, but not limited to any implied warranty of merchantability or fitness for a particular use. To maintain the warranty in effect, the **SMARTE** maintenance procedures must be adhered to. Note that fading and wear of the surface are considered normal wear and tear. Not included is vandalism or other wilful acts.

The sole and exclusive remedy of the buyer against the **SMARTE** authorized installer shall be for the replacement of the defective area for a period of five years from the time of installation. No other remedy, including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental, or consequential loss, shall be available to the buyer or owner.

Compliance to the requirements of Parity Inc. will allow for the maintained **SMARTE** surface to remain resilient and perform within the requirements of the ASTM F1292-04 for the warranty period when field tested with a Triax2000 instrument from the same drop heights and at the same locations tested at the time of the initial **SMARTE** installation. The results of the drop tests at time of installation must provide a G-max less than 150 and HIC less than 800 for the noted drop heights when field tested with a Triax2000 instrument. The performance of the maintained surface will be such as not to exceed a Gmax of 200 or HIC of 1000 from the original drop heights during the warranty period. For this warranty to be in effect, a plan outlining the locations, drop height and results must be forwarded to **Parity Inc.** within 60 days of the initial **SMARTE** installation.

Revised 2/10