Section 32 18 16.13
PLAYGROUND PROTECTIVE SURFACING
FLEXGROUND XTREME PLAY SAFETY SURFACING

MANUFACTURERS SPECIFICATIONS

This document provides the specifications for a poured in place safety surfacing system composed of a non- porous wearing layer upper membrane and an underlying impact attenuation cushion layer.

There are variations in the final specifications as required by the Client.

PART 1 - GENERAL

1.01 WORK INCLUDED

Provide all labor, materials, and tools necessary for the complete installation of a poured in place safety surfacing system as outlined in these specifications. The system should consist of, but not necessarily be limited to, the following:

A. Section includes: Resilient playground surfacing poured in place system.
B. Related work: Playground equipment and resilient playground surfacing subbase.
C. Quality Assurance: Manufacturer should have manufactured and installed playground poured in place safety surfaces for a minimum of 5 years and meet current ASTM F-1292 Test Criteria. The installation of the poured in place product should be completed by FLEXGROUND. Manufacturer's detailed installation procedures should be submitted to the Architect and made part of the Bid Specifications.

1.02 SUBMITTALS

Prospective manufacturers and/or installers of the poured in place safety surfacing system should be required to comply with the following:

A. The manufacturer must be experienced in the manufacturing of a poured in place safety surfacing system and provide references of five (5) specific installations in the last three (3) years.
B. The installer must provide competent workmen skilled in this specific type of poured in place safety surfacing system installation. The designated supervisory personnel on the project must be competent in the installation of this material, including mixing of the materials, and spreading and compacting the materials correctly.
C. Installation should be in accordance with ASTM F1292 for Impact Attenuation of surface system under and around playground equipment. The poured in place system to be installed in compliance with the Critical Fall Height as determined by the Playground Equipment.
D. IPEMA Certification specific to poured in place safety surfacing.
E. IPEMA certification specific to ½” layer of TPV -1-4mm over cushion layer with a grout sealer, rendering it nonporous.
F. Manufacturer should provide written instructions for recommended maintenance practices.
G. Manufacturer should submit color samples for customer verification.

H. Performance Requirements: Provide products that have been manufactured, fabricated and installed to meet or exceed the criteria and methodology identified in PARTS 2, 3 and 4 below.

I. Quality Assurance:
   a. Test reports: upon request, provide the test reports from recognized, qualified, independent third-party testing laboratories. Self-testing of products is not acceptable. Testing reports for porous poured in place safety surfaces shall not be acceptable.
   b. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

PART 2 - PRODUCTS

2.01 DEFINITIONS

A. Critical Fall Height: A critical fall height (CFH) is the maximum height of fall from play equipment to the ground. It is important to note that safety surfaces do not prevent injury but aim to lessen the severity of any injury that may occur on falls from height.

B. Fall Height: Fall height is a measurement defined as the vertical distance between a designated play surface and the protective surfacing beneath it.

C. TPV: Rosehill TPV® proprietary formula, consisting of a vulcanized (fully cross-linked) premium colored rubber granule.

D. SBR: Styrene-butadiene or styrene-butadiene rubber (SBR) describe families of synthetic rubbers derived from styrene and butadiene.

E. Chunk Rubber: 5/8" granules: This rubber is pre-consumer, post-industrial, reclaimed rubber, granulated through a 5/8" screen and contains less than 2% dust.

F. SBR: homogeneous rubber pellets derived from rubber powder reclaimed from end of use tires. Genan Pellets 3.8/35.

2.02 WARRANTY AND MAINTENANCE

The bidder and/or poured in place safety surfacing manufacturer must provide the following:

A. The poured in place safety surfacing manufacturer should provide a warranty to the owner that covers defects in materials and workmanship of the rubber for a period of TEN (10) years from the date of Substantial Completion, if entire pad is done with Xtreme, provided that a FlexCoat Color Seal is applied, at owner's expense, at the end of the 2nd, 4th & 8th year after initial installation. Warranty period shall match poured in place system if Xtreme is not used for entire pad (i.e. 5 year warranty if used intermittently on an EnduraFlex pad or EPDM-based UltraFlex pad and 7 year warranty if used on a TPV-based UltraFlex pad).

B. The manufacturer's warranty should include general wear and tear. The warranty should specifically exclude vandalism, high heel punctures, acts of war or acts of nature beyond the control of the owner or the manufacturer.

C. The bidder should provide a warranty to the owner that covers defects in the installation workmanship, and further warrants the installation was done in accordance with the manufacturer's recommendations.

D. All poured in place warranties should be limited to repair or replacement of the affected areas and should include all necessary materials, labor, transportation costs, etc. to complete said

repairs. All warranties are contingent on the full payment by the owner of all pertinent invoices and adherence to any required maintenance procedures.

E. The owner also agrees to do routine maintenance as outlined in the FLEXGROUND Maintenance manual.
F. The installer should clean the jobsite of excess materials and if necessary backfill any excavation around the perimeter with earth or appropriate fill material.
G. The manufacturer should instruct the owner's personnel on proper maintenance and repair of the XTREME SURFACING safety surface.

2.03 XTREME MATERIAL

The XTREME poured in place safety surfacing system should be in accordance with the following:

A. A dual durometer poured in place system with a grouted and sealed wearing layer upper membrane and an underlying impact attenuation cushion layer. The finished surface should be non-porous and capable of being installed at varying thickness to comply with the Critical Fall Height requirements of the playground equipment.
B. FLEXGROUND primer is a 100% solids urethane primer/sealer. It is designed with low viscosity and penetrating abilities making this an ideal priming urethane.
C. The cushion layer, if required, should be a mixture of black recycled SBR rubber buffings mixed with a 100% solids moisture cured MDI Polyurethane binder (100 pounds of SBR rubber buffings to 12 pounds of binder) installed at the appropriate thickness. As an upgrade, a 5/8" chunk rubber derived only from high quality pre-consumer recycled rubber containing EPDM is available. The cushion layer should be porous. Binder to rubber mix ratios are general guidelines based on manufacturer recommendations and standard industry practices Due to the variability in product type, product size, and environmental conditions such as temperature fluctuations during installation, it is acknowledged that adjustments may be necessary to ensure optimal performance and safety.
D. The XTREME SURFACING wearing surface should be manufactured from TPV virgin colored rubber granules mixed with an aromatic or aliphatic urethane binder (110 pounds of TPV to 22 pounds of binder).
E. FLEXGROUT should be a thixotropic thermoplastic paste applied at 1 gallon per 35 square feet over wear course layer rendering it nonporous.
F. FLEXGROUT thermoplastic composite grout was tested by QAI Laboratories for the following:
    a. ATSM D 2047-11 Coefficient of Friction: Polish Flooring Surface. (Test Report #QI1411123-4) FlexGrout has been tested and certified at a friction of .588 dry standard, and .817 wet standard.
    b. ATSM D4 12-06ae2 ThermoPlastic Elastomers – Tension. (Test Report #QI1305148-2) FlexGrout has been tested and certified at Peak Tensile Strength of 163psi; chlorine soaked at 133psi; and a Tensile Elongation at Break of 132.2%; chlorine soaked at 112.2%.
    c. ATSM D624-00 Tear Strength. (Test report #QI1305148-2) FlexGrout has been tested and certified with a median Maximum Tear Strength of 75.74lbs; chlorine soaked at 70.03lbs.
G. A water-based composite color seal should be applied at a 200 sq. ft. per gallon and spread

evenly to cover the entire surface.

H. The system color should be selected from Manufacturer's Color Chart by owner prior to bid.

PART 3 – SITE SEPARATION AND BASE

The XTREME SURFACING site preparation and base should be in accordance with the following:

A. The sub-base will have a slope of 2%.
B. The base aggregate should consist of a minimum of four inches (4") of ¾" Class 2 aggregate compacted to 95%. Finish slope of porous aggregate should be 2% from the centerline of the area to the perimeter, and the grade should not vary more than a quarter inch (¼") in ten feet (10').
C. The sub-base should be installed in two inch (2") lifts to appropriate thickness.
D. The sub-base should be compacted using vibrating tamper, to approximately 95% Proctor density.
E. The sub-base should no longer have any vegetation.
F. Subgrade prior to aggregate installation: Sublevel grade is to be compacted prior to the ABC aggregate installation. Particular attention should be paid to areas of disturbed earth such as where footers for playground equipment enter the ground. Concrete used to fill said areas/footers should be poured to the top of sublevel surface.
G. The sub-base installer and architect will accept the aggregate base in writing prior to the installation of the poured in place system.
H. Any alterations must be agreed between all parties.
I. Hard Base Construction: For concrete surfaces, shot blast, acid etch or power scarify as required to obtain optimal bond of the Cushion Layer to the concrete. Remove sufficient material to provide a sound surface, free of glaze, efflorescence, or form release agents. Remove grease, oil, and other penetrating contaminants.
J. For concrete or asphalt surface that is not enclosed (i.e. a curb to curb pour), the concrete shall have keyway cuts 1.5" wide by 1.5" deep so that the system can be bull nosed down into the notch area.

Note: Any modifications to the recommended subgrade installation procedures must be approved in writing by all involved parties—including manufacturer representative, the playground owner, site contractor, and architect. Failure to obtain written approval from all parties prior to implementing changes will result in the warranty being voided.

PART 4 – EXECUTION AND INSTALLATION

The poured in place safety surfacing installer shall strictly adhere to the installation procedures outlined under these sections. Any variance from these requirements shall be accepted in writing by the manufacturer's onsite representative and submitted to the architect/owner, verifying that the changes do not in any way affect the warranty.

4.01 PRIMER

A. A urethane primer should be applied to concrete, asphalt or wood surfaces at a rate of 200-250 square feet per gallon. The entire area does not need to be primed at once, instead, prime about 700 square feet at a time in immediate advance of rubber installation. This procedure should be continued until all areas are complete.
B. The urethane primer should be applied to any playground equipment that will be surrounded by the poured in place safety surfacing system.

4.02 CUSHION LAYER

A. The components of the poured in place safety surfacing should be mixed on site in a mixer to ensure a comprehensive mix according to manufacturer's instructions.
B. The cushion layer comprised of SBR buffings shall be mixed with the aromatic or aliphatic moisture cure polyurethane binder at a rate of 12% of the total weight of the material thoroughly so that the binder is evenly dispersed into the rubber base.
C. The cushion layer comprised of non-tire derived SBR & EPDM Chunk Rubber shall be mixed with the appropriate amount of urethane so that the binder is evenly dispersed into the rubber base.
D. The cushion layer mix should then be spread and troweled to the desired depth and allow to cure for 24 hours.

4.03 WEAR COURSE LAYER

A. The wear course layer should be mixed with 1-4mm TPV granules and urethane binder at a rate of 20% of the total weight of the materials so the granules are covered thoroughly and evenly. Application in cooler temperatures require a minimum ambient temperature to be 40 degrees F. or above and rising during install, and no more than a 35-degree temperature change from daytime to nighttime.
B. The wear course layer mix should be spread and troweled to a depth of a half inch (½").
C. Where seams are required due to color change, a step configuration with a 4" overlap will be constructed to maintain wear surface integrity.
D. The finished texture shall be slip-resistant, smooth, and even.
E. The poured in place surface should be allowed to cure for 24-72 hours or until dry to the touch.

4.04 GROUT SEALER

A. The wear course layer should be sealed with a thermoplastic composite grout. FLEXGROUT should be spread with a trowel at a rate of 1 gallon per 30 square feet. Pressure should be applied to the trowel with enough force to push the grout into the wear course layer, rendering it impermeable. The finished texture should be slip-resistant and even.
B. The poured in place surface should be allowed to cure for 24-72 hours or until dry to the touch.

4.05 FLEXCOAT COLOR SEAL

A. The color seal should consist of a water-based composite liquid. Color seal should be rolled (or can be sprayed) to completely cover entire surface. The color seal should be allowed to cure for 24-72 hours or until dry to touch.

Approved product: Grout and Color Seal by FLEXGROUND
Contact: Bill Stafford, bill@flexground.com

PART 5 – SITE (GENERAL)

A. Trailer/ Large truck access will be necessary for the installation. In the case that access for trailer/truck is not available the owner or general contractor will be responsible for transporting material to the job site.
B. Crew is responsible for protecting the surface only while present on site. General Contractor or owner shall be responsible for the security of the surfacing overnight during installation, as well as during the product's cure period after completion of the install.
C. Crew will leave site clean and shall remove all trash and debris.
D. Owner/General contractor shall provide a dumpster for all waste and trash