PLAYGROUND RESILIENT SURFACING
FLEXGRASS SYNTHETIC TURF

This document provides the specifications for a Synthetic Grass Safety System composed of Non-expansive engineered silicone dioxide bead infill placed into a tufted polyethylene fiber component installed over a poured in place cushion with a 4" sub base comprised either of compacted ¾" Class 2 aggregate or concrete.

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

PART 1 – GENERAL

1.01 Work Included

Provide all labor, materials, equipment, and tools necessary for the complete installation of an attenuated synthetic grass infill system as outlined in these specifications. The system should consist of but not necessarily be limited to the following:

A. A vertical draining field base consisting of a four-inch layer of compacted ¾" Class 2 aggregate compacted to 95%.

B. A complete synthetic grass system, consisting of:

   i. Synthetic turf

   ii. Cushion layer

   iii. An infill system, consisting of a specially formulated non-expansive, coated, clean, dust free and specially sized silicon dioxide bead (Envirofill brand preferred).

C. This shall be a 100% nail free system with installation by adhesive only. An edging system consisting of minimum 2" thick by 6" wide rubber or concrete glue down strip around the perimeter and encompassing any protrusions in the turf area.

D. Quality Assurance: Manufacturer should have manufactured and installed synthetic grass surfaces for a minimum of 5 years. The installation of the synthetic grass 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 turf should be required to comply with the following:

A. The turf manufacturer must be experienced in the manufacture of a no nail synthetic grass system and provide references of five (5) specific installations in the last three (3) years.

B. The turf installer must provide competent workmen skilled in no nail synthetic grass installation. The designated supervisory personnel on the project must be competent in the installation of this material, including gluing seams and proper installation of the infill mixture.

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 (if any).

D. IPEMA Certification specific to poured in place rubber and synthetic grass safety systems.

E. Manufacturer should provide written instructions for recommended maintenance practices.

F. Manufacturer should submit samples for customer verification. Samples shall include two 6" x 6" samples of 1" cushion layer topped with synthetic turf (a 1.5" system) and attached with turf adhesive.

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

1.04 ASTM Testing Standards – FlexGround Standard meets or exceeds all required ASTM standards below.

A. ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.

B. ASTM D2859 Standard Test Method for Flammability of Finished Textile Floor Covering Materials

C. ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester

D. ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment

E. ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

F. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull Meter Method – This standard replaces ASTM D2047

G. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension

1.05 WARRANTY AND MAINTENANCE

The bidder and/or the turf manufacturer must provide the following:

A. The turf manufacturer should provide a warranty to the owner that covers defects in materials and workmanship of the turf for a period of **FIVE (5) years** from the date of Substantial Completion, and **TWO (2)** years on seams.

B. The manufacturer's warranty should specifically exclude vandalism, acts of War and acts of Nature

beyond the control of the owner of the manufacturer.

C. All turf 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.

D. All warranties are contingent upon full payment by the owner of all pertinent invoices and owner, at owner's expense, completing a full power-brooming and "top-off" of lost infill at two-year intervals from date of substantial completion.

E. The bidder should provide a maintenance program to the owner. The warranty should be subject to compliance with said maintenance program in addition to items named above.

PART 2 –FLEXGRASS MATERIAL

The synthetic turf material and resilient cushion should be in accordance with the following:

A. A poured in place system with a synthetic grass wearing layer upper membrane and an underlying impact attenuation cushion layer. The finished surface should be porous and capable of being installed at varying thickness to comply with Critical Fall Height requirements of playground equipment.

B. The cushion layer should be a mixture of black recycled rubber mixed with a 100% solids moisture cured aromatic Polyurethane binder (100 pounds of rubberized cushion layer to 12 pounds of binder) installed at the appropriate thickness. As an alternative, a 5/8” chunk rubber derived only from high quality pre-consumer recycled rubber containing EPDM is available. The cushion layer should be porous.

C. Synthetic Turf shall be:

i. A 1-1/2" monofilament polyethylene with brown thatch yarn, formulated for superior wear resistance and a secondary proprietary polyethylene thatch. Product must have built-in antimicrobial protection to inhibit the growth of bacteria, mold, mildew, and reduce odor.

ii. The system should be tufted with a minimum of 60 ounce of yarn per square yard. The system should also include a primary woven polypropylene backing and a polyurethane secondary backing. Finish coating shall be at 22 ounces per square yard.

iii. The machine gauge shall be 1/2”. Tufted pile height is 1-1/2".

iv. Total fabric weight shall be at least 88 ounces per square yard.

v. The finished product should also include perforations to ensure drainage greater than 30 inches per hour. Non-perforated systems should not be acceptable alternates for purposes of this specification.

D. The turf should be delivered in 15' wide rolls.

E. All lines, numbers and markings indicated on plans should be permanently inlaid. Painted lines should not be an acceptable alternative for purposes of this specification.

F. The fiber should be green in color to simulate natural grass as closely as possible and treated with UV inhibitor, guaranteed a minimum of eight years.

G. The infill system should be an a non-expansive engineered coated, clean, dust free and specially sized silicon dioxide beads.

H. Latex backed turf shall not be acceptable. All adhesives must also be latex free.

I. Standard of Quality should be FlexGrass Premier Turf no nail system as built by FlexGround, LLC Contact:
FlexGround | Bill Stafford | 602.954.0000

PART 3 – SITE PREPARATION AND BASE

The FLEXGRASS 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.

PART 4- EXECUTION AND INSTALLATION

The FLEXGRASS safety surfacing installer should strictly adhere to the installation procedures outlined under these sections. Any variance from these requirements should 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 moisture cured 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. Or;

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 Synthetic Turf Layer

A. The synthetic grass should be cut and laid out across the area, and utilizing standard state-of-the-art gluing procedures, each roll should be seamed to the next.

B. The edge of the synthetic turf should be glued directly with full contact to the glue down strip around the perimeter and any protrusions of the turf area.

C. This is a 100% glued installation. Sewing of seams or nailing of edges will not be permitted. A strip of seam tape should be used to seam the rolls of material. The specified glue should be a one part urethane adhesive (SeamTight) as manufactured by FlexGround, LLC. Tempe, AZ 85281.

4.04 Infill

A. The infill material shall be spread evenly, at a rate of 2 lbs per square foot with a large fertilizer type spreader. The infill will be spread in strict accordance with the turf installer's specifications.

B. Between each application of infill, the field area should be brushed with a motorized rotary nylon broom.

C. Caution: Too much fiber exposed (not enough infill) will cause the fibers to mat or crush with heavy foot traffic. This will lead to premature wearing of the fiber and will void any manufacturer's warranty. No Crumb Rubber shall be used as infill.

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 on site. General Contractor or owner shall be responsible for the security of the surfacing overnight during installation, as well as during the surfacing's curing period upon 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.

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