



Pro-Techs Surfacing, LLC

1. Product Name

Perma-Turf 55oz. 2-Layer Synthetic Turf Playground System with either Brock Shock Pad or SBR Unitary Base.

2. Manufacturer

Pro-Techs Surfacing LLC
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3. Product Description

BASIC USE:

The Perma-Turf 55oz. 2-Layer Synthetic Grass Playground Surfacing is designed for playgrounds, recreational, and fitness areas, etc. This 2-layer product is specifically designed to be used as an impact attenuating safety surface in and around playgrounds. The synthetic turf layer can also be installed directly on to a stone base when impact attenuation is not required.

This document provides the specifications for a Synthetic Grass Playground Safety Surface System composed of a tufted polyethylene grass fiber component with a polyethylene and polyester thatch layer, installed over a bacteria and fungi resistant expanded polypropylene panels with interlocking edges, or 100% post-consumer recycled, 3/8" shredded, SBR (styrene butadiene rubber) and high-grade single component aromatic polyurethane binder, and stone base drainage system. There are variations in the final specifications as required by the Designer/Owner/Operator.

WORK INCLUDED:

Provide all labor, materials, equipment, and tools necessary for the complete installation of a synthetic grass playground safety surface system as outlined in these specifications. The vertical draining impact attenuating layer shall be suitable to meet safety standards for the critical fall height of the intended equipment, or as specified by the Designer/Owner/Operator. The stone base, composite nailer board, and drainage system may be provided separately by the owner or an approved contractor. The system shall at a minimum consist of, but not necessarily be limited to:

COMPOSITION & MATERIALS:

A complete synthetic grass system, consisting of a synthetic grass with a pile height of 1 1/4 inches long, 100% monofilament polyethylene fibers and polyethylene/polyester thatch layer, tufted on a 3/8" tufting machine with a minimum face weight of 55 ounces of yarn per square yard. The fibers shall include inert polyethylene fibers that are microbial resistant, and anti-glare



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properties to reduce heat. Synthetic turf products utilizing nylon blades or nylon thatch layers will not be acceptable. The system should be infilled with between 1.5 to 2.0 pounds per square foot of rounded silica sand or as specified by the Designer/Owner/Operator. Systems utilizing granular rubber products made of recycled tires infilled in the grass blades will not be acceptable. The system shall include a single, dimensionally stable, two-component primary backing of 9oz and have a minimum of 18 ounces of Ultra-Flo secondary polyurethane backing per square yard. The finished product shall also include perforations in a 2” by 2” pattern to ensure excellent surface drainage.

SYNTHETIC TURF MATERIALS:

Approved synthetic turf products are:

Perma-Turf Playground Safety Surface

Manufactured by Pro-Techs Surfacing LLC, Copley, OH 44321

Contact: (330)576-6058

The Perma-Turf 2-Layer Synthetic Turf System consists of:

1. Perma-Turf 55

- Face Weight: 55 oz.
- Pile Height: 1.25”
- Roll Width: 15’ (180”)
- Yarn Color: Two-tone green with green/tan thatch, contact manufacturer for availability of other colors.
- Yarn type: 8090 denier two-tone Polyethylene blades with a texturized polyester thatch layer.
- Construction Details: Type - Tufted | Gauge: 3/8”.
- Primary backing: single layer K-29 / 5 pic 9.1 oz/sy.
- Secondary backing: min. 18 oz. Polyurethane with Ultra-Flo technology.
- Perforations: Yes, 2x2 inches on center.
- Infill requirements: Yes, 1.5lbs to 2lbs/sf of specified infill by Designer/Owner/Operator
- Warranty: 10 years manufacturer’s warranty

2. Perma-Turf Playground Padding (manufactured by Brock) or Perma-Turf Unitary Base as manufactured by Pro-Techs Surfacing. The Perma-Turf Unitary Base surfacing layer consists of 100% post-consumer recycled, 3/8” shredded, SBR (styrene butadiene rubber) and high-grade single component aromatic polyurethane binder.

PRODUCT DIMENSIONS:

The height of the playground equipment determines the required Perma-Turf surfacing system thickness or can be specified by the Designer/Owner/Operator. The Perma-Turf Playground Padding and/or Unitary Base surfacing system thicknesses may vary throughout a playground site. The minimum Perma-Turf Playground surfacing system thicknesses are determined by the Critical Fall Height requirements through ASTM-F1292 Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment. All ASTM test results are available upon request.



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THICKNESSES AVAILABLE WITH UNITARY BASE:

- 2.5” – up to 6ft. Fall Height
- 3.5” – up to 8ft. Fall Height
- 4.5” – up to 11ft. Fall Height
- 5.5” - up to 12ft. Fall Height

THICKNESSES AVAILABLE WITH BROCK BASE

- 1.5” - up to 5ft. Fall Height (25mm pad)
- 2.5” - up to 8ft. Fall Height (50mm pad)
- 3.5” – up to 12ft. Fall Height (75mm pad)

Or approved equivalent upon approval from the principal architect.

The synthetic turf material shall be in accordance with the following:

A) The long fiber shall be a minimum 8,090 denier, minimum 117-micron thickness 100% polyethylene, inert fiber, measuring not less than 1-1/8 inches high and not more than 1 3/8 inches high. The thatch fiber shall be a minimum 5,045 denier, minimum 114-micron thickness, 100% polyethylene fiber. These material specifications will be confirmed by providing the following independent lab testing:

ASTM D1907-01 – Standard Test Method for Linear Density of Yarn by the Skein Method

B) The inert polyethylene fibers in the yarn are designed to keep the surface more sanitary for children. The anti-glare technology in the yarn is designed to keep the turf cooler to the touch. Any synthetic turf without these properties built into the yarn will not be acceptable.

C) The Perma-Turf 55 fiber shall be a two-tone grass blade, green in color with a tan/green thatch fiber to simulate natural grass as closely as possible, guaranteed for a minimum of ten years.

D) The tufted fiber weight (aka face weight) shall not be less than 55 ounces per square yard. The fiber shall be tufted on a 3/8" tufting machine. The low friction non-abrasive fiber shall be 100% monofilament polyethylene, treated with a UV inhibitor. These material specifications will be confirmed by independent lab testing:

ASTM D5848-10e1 Standard Test Method for Mass Per Unit Area of Pile Yarn Floorcoverings

E) The primary backing shall consist of a two-part polypropylene primary backing of a minimum of 9 oz/sy. The secondary backing shall consist of an application of a minimum of 18 ounces of coating per square yard heat activated to permanently lock fiber tufts in place. The total backing weight shall not be less than 26 ounces. The synthetic grass system shall be perforated at a minimum of 2” by 2” on center to provide for excellent drainage. Non-perforated systems shall



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not be acceptable alternates for purposes of this specification. The turf shall have a minimum drainage rate of 215 inches per hour. These material specifications will be confirmed by independent lab testing:

ASTM F1551 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials

- F) The carpet rolls shall be of sufficient length to go from side to side of the play area. Full head seams will not be acceptable unless as required to cut around equipment posts.
- G) The shock attenuation pad shall be a food-grade expanded polypropylene without PFAS. The pad should allow for vertical and horizontal drainage. The pad should come with a 10-year manufacturer's warranty.
- H) The alternate Unitary Base rubber shock attenuation layer of rubber should be either EPDM, SBR or a combination mixed with aromatic polyurethane binder.
- I) The non-rubber infill shall be between 1.5 to 2.0 pounds per square foot of rounded silica sand or as specified by the Designer/Owner/Operator. No other infills will be accepted without prior written approval by the architect and/or owner.

4. Technical Data

APPLICABLE STANDARDS:

American Society for Testing and Materials (ASTM) International

- ASTM F1292-22 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment
- ASTM D1907-07 Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method
- ASTM F1951-14 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment
- ASTM D7138-16 Standard Test Method for Determining Melting Temperature of Synthetic Fibers(Fiber ID)
- ASTM D1577-07 Standard Test Method for Liner Density of Textile Fibers, Option B (short method)
- ASTM D3218-07 Standard Specification of Polyolefin Monofilaments (Ribbon Thickness & Width)
- ASTM F2765 Standard Specification for Total Lead Content in Synthetic Turf Fibers
- ASTM D5848-10e1 Standard Test Method for Mass Per Unit Area of Pile Yarn Floorcoverings
- ASTM D5823-19 Standard Test Method for Tuft Height of Pile Yarn Floorcoverings
- ASTM D5793-18 Standard Test Method for Binding Sites Per Unit Length or Width of Pile Yarn Floorcoverings
- ASTM D1335-17e1 Standard Test Method for Tuft Bind Strength of Pile Yarn Floorcoverings



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- ASTM D5034-09 Standard Test Method for Breaking Strength and Elongation of Textile Fabrics
- ASTM D2859-16 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
- ASTM F1015-03 Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
- ASTM F1551 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playground Surfaces and Materials: Suffix DIN 18-035, Part6: Water Permeability of Synthetic Turf Systems and Permeable Bases

PHYSICAL/CHEMICAL PROPERTIES:

- Impact Attenuation (ASTM F1292)
 - Gmax (Peak) < 200
 - HIC (Head Injury Criteria) < 1000
- Accessibility (ASTM 1951)
 - Straight Baseline Propulsion – 12.59 lbs. Work/ft-Force
 - Turning Baseline Propulsion – 7.13 lbs. Work/ft-Force
- Fiber ID; Melt Point (ASTM D7138-16)
 - Monofilament – Polyethylene 119°C (246°F)
 - Thatch - Polyethylene 120°C (248°F)
- Yarn Denier – Estimated by Short Method (ASTM D1907-01) Skein Method (Denier)
 - Monofilament – 8,090
 - Thatch – 5,045
- Average Yarn Filament Width (ASTM D3218-07)
 - Monofilament – 0.0498in or 1,265 microns
 - Thatch – 0.0252in or 640 microns
- Average Yarn Filament Thickness (ASTM D3218-07)
 - Monofilament – 0.0046in or 117 microns
 - Thatch – 0.0045in or 114 microns
- Total Lead Content digested by 3052 (ASTM F2765 / EPA 3052 / 6010)
 - Monofilament and Thatch – 1.0mg/KG
- Mass Per Unit (ASTM D5848-10e1)
 - Total Product Weight – 80.67 oz/yd²
 - Pile Yarn Weight – 52.34 oz/yd²
 - Primary Backing Weight – 8.00 oz/yd²
 - Secondary Backing Weight – 20.33 oz/yd²
- Tuft Height of Pile (ASTM D5823-19)
 - Average Pile Height – 1.25”
- Binding Sites Per Unit Length or Width (ASTM D5793-18)
 - Stitch Count – 4 Stitches per inch
 - Gauge – 3/8in Gauge
- Tuft Bind Strength (ASTM D1335-17e1)
 - Average Tuft Bind Strength – 3.3 lbs/force
- Breaking Strength and Elongation (ASTM D5034-09)
 - Average Grab Tear-Length, MD – 335 lbs/force



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- Average Grab Tear-Width, CMD – 394 lbs/force
- Ignition Characteristics (ASTM D2859-16)
 - Pill Flammability – 8 of 8 Pass
 - Pill Flammability – Meets 16CFR 1630 (FF1-70)
- Relative Abrasiveness (ASTM F1015-03)
 - Abrasive Index – 21
- Water Permeability (ASTM F1551)
 - Drainage Capacity – 215.0 inches/hr
- Perma-Turf Unitary Base buffing required mix proportions by weight
 - 16% polyurethane per 100lbs EPDM/SBR Rubber

ENVIRONMENTAL CONSIDERATIONS:

The Perma-Turf Playground Surfacing system employing the Perma-Turf Unitary Base makes extensive use of recycled tire rubber as a major component.

5. Installation

PREPARATORY WORK:

Synthetic Turf, Infill, and EPDM/SBR Unitary rubber materials should be protected from exposure to harmful environmental conditions, including moisture. Installation of Perma-Turf surfacing system should only take place when:

- There is a minimum ambient temperature of 40 degrees F and maximum ambient temperature of 95 degrees F
- Rain is not imminent
- The relative humidity is less than 35%.

Unitary rubber base layer may be installed in a light rain. Do not install Synthetic Turf or Infill in any type of moisture or precipitation. Pro-Techs Surfacing, LLC (PTS) may, at its sole discretion, choose to commence an installation under less optimal conditions. This decision is solely at the discretion of Pro-Techs Surfacing and will not affect the standard product warranty. An executed Hold Harmless will be required for installation against PTS advice.

Substrate must be in accordance with Pro-Techs Surfacing, LLC’s stone base specifications before Perma-Turf 2-Layer Synthetic Turf Playground Surfacing can be installed. The turf installer must accept the stone base substrate prior to the installation of the synthetic turf system. Subbase for systems using Playground Pad or no impact attenuation layer require a layer of fines to ensure planarity of pad.

Additional exhibits for compacted aggregate subbase are available upon request.

Extreme care should be taken to avoid disturbing the substrate in regard to planarity.

NOTE: Proper drainage is crucial to the longevity of the Perma-Turf Playground Surfacing. Inadequate drainage will cause premature breakdown of the product in affected areas and



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deteriorate impact attenuation properties of the system potentially voiding warranty coverage in whole or in part.

Asphalt Substrate

New asphalt substrates must be allowed to cure for a minimum of 30 days before Perma-Turf Playground Surfacing can be applied. The top course of asphalt must be road grade material and of sound integrity. System thickness(es) may need adjustment when installed over asphalt.

Concrete Substrate

New concrete substrates must cure for a minimum of 10 days before Perma-Turf Playground Surfacing can be applied. Concrete substrate required for Mounds receiving surfacing system. System thickness(es) may need adjustment when installed over concrete.

Surfacing installation cannot proceed until all applicable site work, including substrate preparation, fencing, playground equipment installation, and other relevant work, has been completed and approved by a Pro-Techs Surfacing, LLC representative. Pro-Techs works closely with the contractor to ensure the site is prepared and the installation is on schedule.

The turf 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 representative, and submitted to the architect/owner, verifying that the changes do not in any way affect the warranty.

INSTRUCTIONS FOR IMPACT ATTENUATION LAYER:

Unitary Base rubber installation

Installer shall affix composite nailer boards with minimum dimension of 1" by 2" to be affixed to concrete substrates at minus 1/2" from top of adjacent curb/sidewalk using corrosion resistant bolts drilled into concrete. Nailer boards to be made of 100% PVC to be moisture, insect, and rot resistant.

Rubber base layer should be poured to touch the primed equipment poles with no gaps between the posts and the rubber. Using a bristle brush, apply ample urethane primer to all curbing and or vertical substrates which the SBR Rubber Buffering surfacing system will contact. Be sure to apply primer immediately before placement of SBR Rubber Buffering surfacing system and no sooner.

Using screed sticks and gauge poles, install the SBR Rubber Buffering surfacing system to 1/8" – 1/4" higher than required thickness. Using pool trowels, pull the SBR Rubber Buffering surfacing system together using consistent pressure throughout. Repeat the process until all areas, including use zones, comply with the architectural plans and specification requirements. Allow SBR Rubber Buffering surfacing system to cure for sufficient time (24 hours) so that indentations are not left in the SBR Rubber Buffering surfacing system. Installation crew must verify that the Buffering layer has cured sufficiently before applying the Synthetic Turf. In the case of a rolled



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edge, a 50/50 combination of cap and buff is used for the final 10 inches of edge using 16% base binder ratio.

Brock Shock Pad installation

Installer shall affix composite nailer boards with minimum dimension of 1” by 2” to be affixed to concrete substrates at minus ½” from top of adjacent curb/sidewalk using corrosion resistant bolts drilled into concrete. Nailer boards to be made of 100% PVC to be moisture, insect, and rot resistant.

Requisite compliant subbase materials shall be installed within perimeter of nailer boards set at minus the thickness of the Brock pad from top of nailer board. Overlapping edge pad sheets will be installed, being cut around poles with offsetting of center seam over the runs of pad across the installation area. Standard duct tape or equivalent to be used to maintain placement of consecutive pads and prevent separation. Gaps of more than ½” between the pads and substrates or poles must be filled with rubber base material and left to cure before installing turf.

INSTRUCTIONS FOR TURF LAYER:

Turf

This is a 100% glued installation. Sewing of seams will not be permitted. The seaming tape and glue shall be intended for installation of outdoor synthetic turf surfaces. The adhesive must be a polyurethane-based adhesive, latex-based adhesives are not acceptable. Turf should be rolled out to acclimate before manipulation. Once turf has acclimated to the pad temperature, the turf edges should be rolled over and the selvedge cut off between the third and fourth seams and discarded. All cuts on the rolls should be at right angles unless dictated by pole placement. All turf is laid out on pad before seaming is started on one side and working towards the other side, starting with seams under equipment and working way out. Gaps between turf pieces should be no more than 1/8”, and stretching and additional cuts should be done to achieve this spacing. State-of-the-art seaming is used for all seaming, with glue applied to seam tape evenly to one inch from both sides using glue box unless seam is less than 10 linear feet to prevent glue from skinning and not adhering to the turf. PL caulking is used around the poles in combination with the turf tape. Sandbags are used to compress seams for adhesion purposes.

Infill

Infill can be rounded Silica play sand, T-Cool, Hydro-chill, Envirfill or some combination of these. Power broom the turf to open the yarns to allow for the infill to sink into the thatch layer. Infill is spread using a straight fertilizer spreader at a rate of 20 to 25 sq ft per bag. Turf is power broomed again after the infill has been fully installed. No infill should be showing above turf.

6. Application Types



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New Construction:

In most cases a 4-6” base of 3/8” chips compacted in 2” lifts will be sufficient for good drainage and providing a good foundation for the shock attenuation layer. The subbase layer should be compacted to 95% pursuant to Pro-Techs subbase guidelines.

Resurfacing (Existing Poured Rubber to be Reused):

In cases where an existing poured rubber surface can be repaired and reused as a shock attenuation layer, savings of 25-40% can be achieved for the owner. The process is to conduct a preliminary test for fall height, to repair as needed, then cover with synthetic turf.

7. Maintenance/Cleaning – Outdoor & Indoor Applications

As a precautionary maintenance measure, only diluted Dawn Dishwashing liquid, diluted Simple Green, or Simple Green dPro 3 PLUS (disinfectant at the recommended dilution rate of 2oz per 1gal), should be used to clean Perma-Turf Playground Surfacing and similar rubber safety surfaces.

There are several types of general maintenance the owner/operator should be familiar with including:

1. Sweeping - This is done with a handheld power broom or a turf vacuum. The goal of sweeping is to remove or pick up the debris, leaves and sticks on the turf surface.
2. Seam Repair – Seams may separate for many reasons. The maintenance of seam repair is on an as needed basis. Contact Pro-Techs with any concerns regarding seam repair under the warranty.
3. Adding Infill – Done on an as needed basis. It is common for the silica or infill to migrate from the turf area on users’ shoes, compacts or washes out during heavy rain. For the standard playground installation, this may be needed often or only in select locations where water or foot traffic may require more infill over time.

The Owner/Operator should design their maintenance program and keep record of the scheduled routine maintenance which is based upon level of use and size and age of users, environmental factors including proximity to trees and foliage, drainage, bird and animal usage patterns, and age of system.

8. Warranty

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

The turf manufacturer shall provide a warranty to the owner that covers defects in workmanship for one (1) year and materials for ten (10) years of the turf playground surfacing system from the



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date of Substantial Completion. A ten (10) year "UV stabilization" warranty shall be included in the warranty.

The manufacturer's warranty shall include damage caused from UV degradation. The warranty shall specifically exclude vandalism, acts of War and acts of God beyond the control of the owner, installer, general contractor or the manufacturer.

The bidder shall provide a warranty to the owner that covers defects in the installation workmanship for a period of at least 1 year, and further warrant the installation was done in accordance with the manufacturer's recommendations.

All turf warranties shall be limited to repair or replacement of the affected areas and shall include all necessary materials, labor, transportation costs, and other associated costs to complete said repairs. All warranties are contingent on the full payment by the owner of all pertinent invoices.

The turf installer and/or manufacturer's rep will provide written maintenance instructions upon substantial completion of the project.

8. Technical Services

Pro-Techs Surfacing, LLC., works closely with the contractor to ensure the site is prepared and the installation is on schedule. For technical assistance, contact us.

9. Quality Assurance

Prospective bidders and/or installers of the turf shall be required to comply with the following:

Field Supervisor to be present onsite who is employed by the manufacturer as a W2 payroll employee, must be Certified Playground Safety Inspector and Triax Trained, a certified Playground Surfacing Technician, and an OSHA30 card holder to ensure safety and quality control for projects that exceed a contract value greater than \$100,000.

The turf manufacturer must be experienced in the manufacture of synthetic grass playground systems with microbial-resistant and anti-glare technology yarns and provide references of five (5) municipal or commercial playground installations in the last three (3) years. Manufacturer should have the following additional qualifications:

- International Playground Equipment Manufacturers Association (IPEMA) Certified
- Be in good standing with the Synthetic Turf Counsel (STC)
- Member in good standing of F08 Turf Committees
- Product is manufactured in the USA.

The turf installer must provide competent workers skilled in this specific type of synthetic grass installation. The designated supervisory personnel on the project must be competent in the installation of this material, including gluing of seams. Installer to be trained by the manufacturer

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of the surfacing system, having experience with other projects of the scope and scale of the work described in this section.

The turf installer will provide submittals of turf, shock pad or rubber base, glue and seam materials as detailed in the submittals section of the specifications. These details should include the following ASTM test method for the complete system.

- ASTM F1292-22, Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment
- ASTM F1951-14: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

Submit one 18” by 18” sample of the synthetic turf and the underlayment (Brock Shock Pad or Unitary Base) to be installed. A submission of at least one pound of the infill material to be used is also required.

Submit manufacturer’s certification that the products and materials comply with the requirements of these specifications. Submit test results showing compliance with the reference standards as listed in the specifications.

Documentation: Submit warranty and ensure that forms have been completed in Owner's name and registered with Pro-Techs Surfacing.

The installer of the system must accept the aggregate base as completed to standards prior to installation of the synthetic turf system.