



SPECIFICATIONS- Synthetic Turf Safety Surface

Supplier name Perfect Turf LLC
Product name Perfect Turf® PerfectLawn 82™

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 porous 100% recycled polypropylene playground pad, or poured rubber buffings layer, and stone base drainage system.

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

PART 1 – GENERAL

1.1) Summary - 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 fall height of the intended equipment. The stone base, nail board and drainage system may be provided separately by the owner or an approved contractor. The system shall consist of, but not necessarily be limited to, the following:

- a) A complete synthetic grass system, consisting of a synthetic grass with a pile height of at least 1.575 inches long, 100% monofilament polyethylene fibers and polyethylene/polyester thatch layer, tufted on a 3/8" tufting machine with a minimum face weight of 80 ounces of yarn per square yard. The fibers shall include anti-static yarns, anti-bacterial additives and "cool grass" reflective pigments to reduce the surface temperature. 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 infill or a combination thereof as accepted by the managing architect. 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 and have a minimum of 22 ounces of secondary polyurethane backing per square yard. The finished product shall also include perforations in a 2" by 4" pattern to ensure excellent surface drainage.

1.2) Qualifications, References and Submittals

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

- a) The turf manufacturer must be experienced in the manufacture of synthetic grass playground systems with antistatic, antibacterial, cool grass technology yarns and provide references of five (5) municipal or commercial playground installations in the last three (3) years.
- b) The turf installer must provide competent workmen 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.

- c) The turf installer will provide submittals of turf, shock pad, 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 F1292-17a, 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

- d) Submit one 12” by 12” sample of the synthetic turf and the underlayment padding to be installed. A submission of at least one pound of the infill material to be used is also required.
- e) 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.
- f) Documentation: Submit warranty and ensure that forms have been completed in Owner's name and registered with approved manufacturer. The installer of the infill turf system must accept the aggregate base as completed to standards prior to installation of the synthetic turf system.

PART 2 - SYNTHETIC GRASS MATERIALS

1.2) Manufacturers

Approved synthetic turf products are:

- a. PerfectLawn 82™
- i. Pile Height: 1.575”
 - ii. Roll Width: 15’ (180”)
 - iii. Yarn Color: Two-tone blades with tan and green thatch layer
 - iv. Yarn Type: Long blades, Polyethylene, W-shape, 10,800 denier. Thatch blades are polypropylene, 4,000 denier.
 - v. Construction Details: Type- tufted | Gauge: 3/8”
 - vi. Primary Backing: 2 layers of 13 pic polybac.
 - vii. Secondary Backing: 22 oz. polyurethane.
 - viii. Perforations: Yes, 2x4 on center.
 - ix. Infill Requirements: Yes, 2 lbs/SqFt of infill based on application and customer preferences.
 - x. Warranty: Based on Application- 10 years on playgrounds, 16 years on landscape.

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 10,800 , 100% true monofilament polyethylene, low friction fiber, measuring not less than 1.575 inches high. The thatch fiber shall be a minimum 4,000 denier, minimum 140-micron thickness, 100% polyethylene and polyester fiber. These material specifications will be confirmed by providing the following independent lab testing:

- a. ASTM D1577 Standard Test Method for Linear Density of Yarn by the Short Method (Denier)
 - b. ASTM D3218 Standard Specification of Polyolefin Monofilaments (Ribbon Thickness & Width)
 - c. ASTM D5823 Standard Test Method for Tuft Height of Pile Yarn Floorcoverings
- b) The polyester in the thatch zone fiber is required for anti-static properties. The silver-oxide based antimicrobial additives in the yarn are designed to keep the surface more sanitary for children. The “cool grass” reflective pigments in the yarn are designed to keep the turf cooler to the touch. Any synthetic turf without these properties built into the yarn will not be acceptable. Infills and/or sprays designed to provide these properties will not be acceptable.
- c) The PlayGround Turf 80™ 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 and treated with UV inhibitor, guaranteed for a minimum of ten years. The PlayGround Turf 80 Colors will be either all yellow, all red, all white or all blue, meaning the long blades and the thatch blades are all the same color.
- d) The tufted fiber weight (aka face weight) shall not be less than 80 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:
- a. 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. The secondary backing shall consist of an application of a minimum of 22 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 4” on center to provide for excellent drainage. Non-perforated systems shall not be acceptable alternates for purposes of this specification. The turf shall have a minimum drainage rate of 250 inches per hour. These material specifications will be confirmed by independent lab testing:
- a. 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 100% recycled, post industrial cross linked, closed cell polyethylene-polyolefin foam material. The pad should allow for vertical and horizontal drainage. The pad should come with a 25-year manufacturer’s warranty.
- h) The alternate shock attenuation layer of unitary rubber buffing’s should be either EPDM, SBR or a combination mixed with aromatic or aliphatic urethane binder.
- i) The non-rubber infill shall be specified by architect. No other infills will be accepted without prior written approval by the architect and/or owner.

PART 3 – EXECUTION AND INSTALLATION

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.

- a) The turf installer will accept the stone base substrate prior to the installation of the synthetic turf system. See Addendum A for common stone base profiles.
- b) Extreme care should be taken to avoid disturbing the substrate in regard to planarity.
- c) Playground pad shall be laid out and cut around the playground equipment so as not to leave gaps greater than 1/4" between the post and the pad. [Alternate poured rubber base layer should be poured to touch the equipment poles with no gaps between the posts and the rubber.]
- d) The full width rolls of synthetic grass shall be laid out across the area, utilizing standard state-of-the-art gluing procedures each roll shall be seamed to the next.
- e) 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.
- f) The synthetic turf will be fastened to perimeter nail boards with triple coated 1" construction lag screws every 4"-5" around the perimeter.
- g) The play area will be infilled with 1.5 - 2 pounds per square foot of rounded infill (or alternative infill as specified by the architect and/or owner) and brushed with a motorized rotary nylon broom to stand up the fibers and allow the infill to settle to the bottom of the turf upon completion of the installation.

PART 4 – MAINTENANCE AND WARRANTY

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

- a) The turf manufacturer shall provide a warranty to the owner that covers defects in materials and workmanship of the turf for a period of at least 10 years from the date of Substantial Completion. A ten (10) year "UV stabilization" warranty shall be included in the warranty.
- b) 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.
- c) The bidder shall provide a warranty to the owner that covers defects in the installation workmanship for a period of at least 2 years, and further warrant the installation was done in accordance with the manufacturer's recommendations.
- d) 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.
- e) The turf installer and/or manufacturer's rep will provide on-site maintenance training upon substantial completion of the project. Optional maintenance equipment will be demonstrated and discussed at that time.

Addendum A – Common Aggregate Base Profiles

Specifier note: these generic base profiles do not consider the site-specific characteristics that the specifier must consider. Drainage issues, subgrade condition, and environmental factors will all impact the decision as to which base profile will work best in any specific site. In all cases, we recommend aggregate be compacted in lifts every 2" (as opposed to the more common 4 inches) so to minimize settling problems in the future.

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. If the shock attenuation layer is going to be recycled foam padding, the base layer should be compacted to a 90 proctor and laser graded for planarity. If the shock attenuation layer is going to be poured rubber buffing's, the base layer should be compacted to a 90 proctor, but it is not necessary to have the base laser graded, just level to the eye is sufficient.

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 repair as needed, test for fall height, then cover with synthetic turf and retest for fall height.

Conversion from Wood Fiber:

When the playground surface is being converted from wood fiber to synthetic turf, there is usually between 12" to 24" of base layer to fill. In these cases, layers of CA5 on the bottom, then CA7, then CA6 or CA16 (3/8" chips) can be used to fill the excavated area to the proper level.

An alternative of Vulcan 210 can be used to fill the area with a 1" layer of CA6 or CA16 at the top for planarity.