

Revised - September, 2016 by JM

Product Guide Specification 32 18 16.13

Protective Trail Surfacing

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) Format, including *MasterFormat* (2004 edition), *SectionFormat*, and *PageFormat*, contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

Specifier Notes: This section covers the following recreational surfacing materials from Zeager:

WOODCARPET® engineered wood fiber surfacing containing 100 percent pre-consumer recovered wood. It is designed to provide a stable resilient surface for trails.

DURALINER® fabric is a weed barrier and prevents the aggregate from mixing with the subsurface and the engineered wood fiber. This in combination with aggregate will help to extend the life of your WoodCarpet® surfacing. (See Job specification 6.)

DURADRAIN® resilient drain panel made from recycled foam in a thermal process that does not use chemicals. A layer of geotextile fabric is bonded to the top surface to ensure that the fabric will not get pulled up. Provides excellent vertical and horizontal drainage. Is a lightweight complete drainage system and is used as an alternative to an aggregate drainage system.

WOODCARPET® BINDER: A polyurethane binder that is mixed with WoodCarpet® to form a pervious, firm, stable and slip resistant surface.

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

- A. Trail Surfacing.

### 1.2 RELATED SECTIONS

Specifier Notes: Edit the following list as required for the project. List other sections with work directly related to the trail surfacing.

- A. Section 312000 – Earth Moving: Sub-grade preparation.

Revised - September, 2016 by JM

- B. Section 334600 – Sub-drainage: Drainage piping and aggregate drainage material.

### 1.3 REFERENCES - WOODCARPET, DURALINER & DURADRAIN PRODUCTS

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

- A. ASTM D 2434 – Standard Test Method for Permeability of Granular Soils (Constant Head).
- B. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
- C. ASTM D 3776 – Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
- D. ASTM D 3786 – Standard Test Method for Bursting Strength of Textile Fabrics - Diaphragm Bursting Strength Tester Method.
- E. ASTM D 4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- F. ASTM D 4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
- G. ASTM D 4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- H. ASTM D 4716 – Standard Test Method for Determining the (In plane) Flow rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
- I. ASTM D 4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- J. ASTM D 4833 – Standard Test Method for Index Puncture Resistance of Geomembranes, and Related Products.
- K. ASTM D 5199 – Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.
- L. ASTM F 1951 – Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- M. ASTM F 2075 – Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment.
- N. 16 CFR 1500.44 – Method for Determining Extremely Flammable and Flammable Solids.

### 1.4 SYSTEM DESCRIPTION – LOOSE FILL SYSTEM

- A. Engineered Wood Fiber Surfacing: WoodCarpet® engineered wood fiber installed over a gravel drain system or a DuraDrain foam drain system for trail, pathway and picnic area surfaces. It is both natural and pervious.
- B. Geotextile Fabric: DuraLiner® - Placed both below and above aggregate drainage material to create a weed barrier and to prevent the aggregate from mixing with the subsurface and the engineered wood fiber.

Revised - September, 2016 by JM

- C. Resilient Drain Panel: DuraDrain® - Made from recycled foam in a thermal process that does not use chemicals. A layer of geotextile fabric is bonded to the top surface to ensure that the fabric will not get pulled up. Provides excellent vertical and horizontal drainage. Is a lightweight complete drainage system and is used as an alternative to an aggregate drainage system.

## 1.5 SYSTEM DESCRIPTION - UNITARY SYSTEMS

- A. Bonded Engineered Wood Fiber Surfacing: WoodCarpet® engineered wood fiber bonded together over a gravel drainage system or a DuraDrain® foam panel system for trail, pathway and picnic area surfaces. The WoodCarpet® is mixed with a polyurethane binder to form a firm, stable and slip resistant surface that is natural, pervious and resistant to washout. See Job Specification 6. Specific binder is available through Zeager.

## 1.6 SUBMITTALS

- A. Comply with Section 013300 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including installation instructions, ASTM F1951 Accessibility test results, ASTM F2075 test results, and IPEMA Certificates of Compliance where applicable.
- C. Samples: Submit manufacturer's samples of each specified material.
- D. Maintenance Instructions: Submit manufacturer's maintenance instructions for trail surfacing.
- E. Warranty: Submit manufacturer's standard warranty.
- F. References: Submit at least 3 customers that have been using the product for at least 3 years.

## 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Member of International Play Equipment Manufacturer's Association (IPEMA).
  - 2. Total Liability Insurance Coverage: \$11,000,000.
  - 3. Sales Representatives trained by National Playground Safety Institute (NPSI).
- B. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by surfacing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

Specifier Notes: Describe requirements for a meeting to coordinate the installation of the trail surfacing and to sequence related work. Delete this paragraph if not required.

- C. Pre-installation Meeting: Convene a pre-installation meeting [2] [\_\_\_\_\_] weeks before start of installation of trail surfacing. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and installer. Review installation and coordination with other work.

Revised - September, 2016 by JM

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer. Deliver engineered wood fiber trail surfacing to site in bulk.
- B. Storage: Store materials in a clean, dry area in accordance with manufacturer's instructions. Store engineered wood fiber trail surfacing to prevent contamination. Store binder in tightly closed containers to prevent moisture contamination. Binder reacts slowly with water to form CO<sub>2</sub> gas, which can cause sealed containers to expand and possibly rupture. Do not reseal binder containers if contamination is suspected. Store binder in a cool, dry area and at a minimum temperature of 40°F (5°C) and maximum of 150°F (66°C).
- C. Handling: Protect materials during handling and installation to prevent damage. Handle engineered wood fiber trail surfacing to prevent contamination. Avoid breathing vapors or mist from Binder. Avoid binder contact with eyes, skin or clothing. Do not expose binder containers to open flame, excessive heat or direct sunlight.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Zeager Bros., Inc., 4000 East Harrisburg Pike, Middletown, Pennsylvania 17057. Toll Free (800) 346-8524. Phone (717) 944-7481. Fax (717) 944-7681. Web Site: [www.zeager.com](http://www.zeager.com). E-Mail [sales@zeager.com](mailto:sales@zeager.com).
- B. Zeager Hardwood Co., 340 Steele Road, Franklin, Kentucky. Toll Free (800) 296-9227. Phone (270) 586-4491. Fax (270) 586-4493. Web Site: [www.zeager.com](http://www.zeager.com). E-Mail [zhc@zeager.com](mailto:zhc@zeager.com).

### 2.2 TRAIL SURFACING

Specifier Notes: Consult Zeager Bros. for assistance in editing this article for the specific application.
--

- A. Engineered Wood Fiber Surfacing: WOODCARPET®
  - 1. Composition: Engineered wood fiber. No chemical treatments or additives.
  - 2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
  - 3. Recycled Content: 100 percent pre-consumer recovered materials.
  - 4. Dimensions: Per sieve analysis, ASTM F2075 / 4.4: Meets Criteria.
  - 5. Hazardous Metal, ASTM F 2075 / 4.5: Meets Criteria.
  - 6. Tramp Metal, ASTM F 2075 / 4.6: Meets Criteria.
  - 7. Coefficient of Permeability, ASTM D 2434: Greater than 0.6 cm/s.
  - 8. When bonded: Permeability per falling head test, EM1110-2-1906-VII-13: 191.19 gal/min/sq.ft.
  - 9. Moisture Absorption: Maximum of 150 percent by weight.
  - 10. Moisture Content: 25 to 60 percent by weight.
  - 11. Density: 15 to 24 pounds per cubic foot.

Revised - September, 2016 by JM

Specifier Notes: In the interest of public playground safety, IPEMA provides an independent laboratory which validates a manufacturer's certification of conformance to ASTM F2075. A list of current validated products, their thickness and critical height may be viewed at [www.ipema.org](http://www.ipema.org).

12. Accessibility, ASTM F 1951: Meets criteria.
  13. Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials- D2859: Meets criteria.
  14. Flammable, 16 CFR 1500.44, Federal Hazardous Substances Act Title 16, Chapter II, Subchapter C for Rigid and Pliable Solids: Did not ignite.
- B. Drainage Fabric: DURALINER®
1. Composition: nonwoven filter fabric of staple fibers that is formed into a random network, needle punched and heat-set for dimensional stability.
  2. Recycled content: N/A
  3. Size: 5 feet wide x 300 feet long. / 1.5 m wide x 91.4 m Long
  4. Weight, ASTM D5261 Min. 3.5 ounces per square yard
  5. Grab Tensile Strength: ASTM D4632 0.45 kN / 57 lbs
  6. Grab Tensile Elongation " " 50%
  7. CBR Puncture: ASTM D6241 .064kN/ 145 lbs
  8. UV Resistance: ASTM D4355 70% @500 hrs
  9. Trapezoidal Tear : ASTM D45330.13kN / 29 lbs
  10. Permittivity ASTM D4491 2.20 sec
  11. Water Flow Rate: " " 6112 lpm/m 150 gpm/ft
  12. Apparent Opening size ASTM D4751-0300 mm/50 US Std Sieve.
- C. Resilient Foam Drainage: DURADRAIN®.
1. Composition: Recycled closed-cell, cross-linked, polyethylene, foam nuggets permanently fused together.
  2. Top surface: each piece covered with one layer of non-woven geotextile fabric.
  3. Recycled Content: 98 percent pre-consumer recovered materials.
  4. Size: 48 inches by 72 inches.
  5. Weight: 89 oz./sq. yd.
  6. Thickness: 1.375 inches.
  7. Density: 86 oz./cu. ft.
  8. Transmissivity, ASTM D4716: 3.65E-003 m<sup>2</sup> / sec.
  9. Flow Rate, ASTM D2434: 38 gallons/ minute per sq. ft.
- D. Binder for WOODCARPET® used in system 6.
1. Composition: Proprietary chemical blend.
  2. Chemical family: Aromatic Isocyanate Prepolymer.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas to receive trail surfacing. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

Revised - September, 2016 by JM

### 3.2 INSTALLATION

- A. Prepare and final grade the site in accordance with the project engineer's specifications. Ensure that site drainage is routed away from or around the trail to prevent soil, silt, or other foreign material from contaminating the WOODCARPET®. Sand, silt, soil, and other foreign material carried by the water can reduce the resiliency of the WOODCARPET®. If installing bonded layer, dig trail slightly wider to allow tapering the sides to backfill over the edges. This will not allow the edges to be exposed, thus preventing vandalism.

Specifier Notes: If subsoil is loose or sandy, a layer of geotextile fabric should be installed before installing resilient foam drainage
---

- B. Place DURALINER® fabric over the soil and overlap seams 10 inches (25cm).
- C. Spread drainage gravel (1 inch to 2 inches [3cm-6cm] clean gravel) to a minimum depth of 2 inches (5cm). If using the foam drain option, skip step 2 and install DURADRAIN® panels fabric down on top of subsoil in place of gravel. Panels can be cut using a utility knife or a circular saw. Proceed to step 4.
- D. Spread WOODCARPET® 4 inches, wet, compact with an 8 by 8 inch tamper or with a mechanical compactor. Spread another 4 inch layer and repeat wetting and compacting steps until a 6 inch compacted thickness is achieved.
- E. If a more accessible surface is desired, skip 3.2, D and install bonded WOODCARPET® directly over drainage base instead of WoodCarpet. No loose fill layer of WoodCarpet is required. See maximum accessibility option in Job Specification 6. Please call your Zeager representative for an authorized installer near you.

**END SECTION**