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SECTION 32 18 16.13

PLAYGROUND PROTECTIVE 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 for playgrounds, dog parks and trails. It is designed to be a natural, resilient and accessible surface. It has been tested according to ASTM methods to ensure compliance with ADA, ASTM, CPSC, and CSA standards for playground surfacing.

WOODCARPET® Geotextile Fabric for drainage material separation. It is 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. This in combination with aggregate will help to extend the life of your WoodCarpet® surfacing.

TUFFMAT® Surface Wear Mat, a playground surfacing wear mat manufactured with a foam base and a heavy-duty vinyl top. It is designed to be anchored in place on top of engineered wood fiber playground surfacing in high use areas, such as, under swings and slide exits. The purpose is to maintain a safe, level and accessible surface in these high wear areas. Without the mats, frequent maintenance is required to rake engineered wood fiber back into place.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Playground Surfacing:
   1. Engineered Wood Fiber.

2. Geotextile Fabric.
3. Surface Wear Mat.

1.2 RELATED SECTIONS

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

A. Section 31 20 00 – Earth Moving: Sub-grade preparation.

B. Section 33 46 00 – Sub-drainage: Drainage piping and aggregate drainage material.

C. Section 11 68 00 - Play Field Equipment and Structures: Playground equipment installed over playground surfacing.

1.3 REFERENCES

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

1. ASTM D2434 – Standard Test Method for Permeability of Granular Soils (Constant Head).
2. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
3. ASTM D3776 – Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
4. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics - Diaphragm Bursting Strength Tester Method.
5. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
6. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
7. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
8. ASTM D4716 – Standard Test Method for Determining the (In plane) Flow rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
9. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.
10. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes, and Related Products.

11. ASTM D5199 – Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.
12. ASTM F1292 – Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.
13. ASTM F1951 – Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
14. ASTM F2075 – Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment.
15. ASTM F3351 – Standard Test Method for Impact Testing in a Laboratory at a Specified Test Height.

B. Protect Plus

1. Protect Plus Certification for playground surfacing to ASTM D2859, F1292, F1951, F2075, and F3351.

1.4 DEFINITIONS

A. Engineered Wood Fiber: A natural, untreated, chipped wood material meeting specific size standards for playgrounds. It is designed to be a natural, resilient and accessible surface. It should be tested to ensure compliance with standards for playground surfacing.

B. Geotextile Fabric: A non-woven fabric for drainage material separation. It is 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. This in combination with aggregate will help to extend the life of Engineered Wood Fiber surfacing.

C. Playground Equipment Clearance: The vertical distance between the top of the playground surface and the bottom of the playground equipment. An example would be the distance between the top of the playground surface and the bottom of a swing seat.

D. Playground Equipment Use Zone: The surface area under and around a play structure where it is predicted that a playground user could land when falling from or exiting the play structure. Minimum recommended use zone dimensions are described within the ASTM F1487 and CSA Z614 standards. The surface within use zones should meet ASTM F1292 for fall safety.

E. Surface Wear Mat: A durable mat designed to be anchored in place on top of Engineered Wood Fiber playground surfacing in high use areas, such as, under swings and slide exits. The purpose is to maintain a safe, level and accessible surface in these high wear areas. Without the mats, frequent maintenance is required to rake engineered wood fiber back into place.

1.5 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including installation instructions, ASTM D2859 test results, ASTM F1292 test results, ASTM F1951 test results, ASTM F2075 test results, ASTM F3351 test results and Certificate of Compliance.

C. Samples: Submit manufacturer's samples of each specified material.

D. Maintenance Instructions: Submit manufacturer's maintenance instructions for playground 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.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with total liability insurance coverage of at least $10,000,000.

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 playground 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 playground surfacing. Require attendance of parties directly affecting work of this section, including contractor, architect, and installer. Review installation and coordination with other work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer. Deliver Engineered Wood Fiber playground surfacing to site in bulk.

B. Storage: Store materials in a clean, dry area in accordance with manufacturer's instructions. Store Engineered Wood Fiber playground surfacing to prevent contamination, washing out and where water or leachate can be collected by a storm drain. Leachate is water with naturally occurring tannins that rainwater can leach out of the wood.

C. Handling: Protect materials during handling and installation to prevent damage. Handle Engineered Wood Fiber playground surfacing to prevent contamination.

1.8 PROJECT SITE CONDITIONS

A. Coordinate all work with the work of other sections to avoid delay and interference with other work.

B. Protect excavations by shoring, bracing, or other methods as required to prevent cave-ins or loose dirt from entering excavations. Identify and limit access to open excavations and the project site by using barricades, caution tape, signs or lights as appropriate.

1.9 WARRANTY

A. Engineered Wood Fiber Playground Surfacing shall meet manufacturer's product specifications when delivered to the project site and meet ASTM F1292 for a minimum period of 10 years provided it is installed and maintained in accordance with the manufacturer's instructions, which will include topping off as necessary.

B. Surface Wear Mat shall meet manufacturer's product specifications when delivered to the project site and shall withstand abrasion from normal playground use for a minimum period of 5 years.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Acceptable Manufacturer: 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. Email: info@zeager.com.

B. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00 – Product Requirements.

2.2 PLAYGROUND PROTECTIVE SURFACING

A. Engineered Wood Fiber Playground Surfacing: WoodCarpet®

1. Composition: 100% pre-consumer recovered wood.
2. Dimensions: Randomly sized wood fibers.
3. Sieve Analysis, ASTM F2075: Meets criteria.
4. Hazardous Metal, ASTM F2075: Meets criteria.
5. Tramp Metal, ASTM F2075: Meets criteria.
6. Impact Attenuation, ASTM F1292: 12 inches of engineered wood fiber providing a critical fall height of at least 12 feet.
7. Accessibility, ASTM F1951: Meets Criteria.
8. Resistance to Flammability, ASTM D2859: Meets criteria.

9. Protect Plus+ Certification: Certification for ASTM D2859, F1292, F1951, F2075, and F3351.

Protect Plus+ certification uses independent third party labs to verify all Zeager products. Test results available upon request. More info is available at; www.zeager.com/protect-plus/

B. Geotextile Fabric: WoodCarpet® Geotextile Fabric
   1. Composition: nonwoven filter fabric of staple fibers that is formed into a random network, needle punched and heat-set for dimensional stability.
   2. Dimensions: 5’ x 300’ roll
   3. Weight, ASTM D5261: 3.5 ounces per square yard minimum
   4. Grab Tensile Strength, ASTM D4632: 90 lbs
   5. Grab Tensile Elongation, ASTM D4632: 50%
   6. CBR Puncture, ASTM D6241: 250 lbs
   7. UV Resistance, ASTM D4355: 70% @500 hrs
   8. Trapezoidal Tear, ASTM D4533: 40 lbs
   9. Permittivity, ASTM D4491: 2.00 sec^{-1}
   10. Water Flow Rate, ASTM D4491: 145 gpm/sq ft
   11. Apparent Opening Size, ASTM D4751: 50 US Std Sieve

C. Surface Wear Mat: Tuffmat®
   1. Composition: Closed-cell expanded polyethylene foam covered with heavy-duty vinyl.
   2. Recycled Content: 10% pre-consumer, 0% post-consumer.
   3. Dimensions: 36in. x 48in. (Universal size), 88” x 72” (swing bay)
   5. Weight: Universal = 15lbs, swing bay = 38 lbs.
   6. Thickness: 1.55 inches.
   7. Impact Attenuation, ASTM F3351: Surface Wear Mat over 11” of Engineered Wood Fiber passing at a drop height of 12 feet.
   8. Resistance to Flammability, ASTM D2859: Meets Criteria.
   9. Protect Plus Certification: Certification for ASTM D2859 and F3351.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine project site and areas to receive playground surfacing. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

B. Ensure that the area surrounding the playground is graded and sloped to prevent sand, soil, silt, or other foreign material from contaminating the Engineered Wood Fiber. Ensure the playground substrate has been graded to a 2% grade toward the drainpipe (Max 7-8% grade with stable substrate).

C. If substrate preparation, drainage preparation, playground surface borders, playground equipment or any other site condition is unsatisfactory and it is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation, installation or condition before proceeding.

D. Review project plans and verify that playground equipment has been installed in accordance with project plans and that playground equipment use zones, clearances, and reach ranges will comply with ASTM F1487 or CSA-Z614.

3.2 PREPARATION

A. Excavate a minimum 8 inch by 8 inch (20cm x 20cm) trench along the low end of the playground surface area and connect it to a storm drain. Wrap drain pipe with Geotextile Fabric.

3.3. INSTALLATION

Specifier Notes: The WOODCARPET® Aggregate System is Not Recommended For Play Areas Over A Hard Surface (asphalt, concrete, etc.

A. Place a layer of Geotextile Fabric on top of the subsoil. Overlap seams 10 in. (25 cm), or 5 in. (13 cm) if a double bead of exterior grade construction adhesive is applied to the overlap. Place seams parallel to the direction of slides and travel of swings whenever possible. For below grade sites with no containment border, run fabric up the side of the excavated ground to avoid soil and Engineered Wood Fiber from mixing together.

B. Spread drainage gravel (0.5 in. - 2.0 in (1.5 cm - 5.0 cm) clean gravel) to a minimum depth of 3 in. (8 cm). Fill drainage trench.

C. If not already installed, install timbers or an alternate containment system above or below grade. Provide an accessible entrance using ramp assembly for above grade installs. Install ADA approved ramp to provide access into play area to allow for proper access and to maintain an area to meet ADA change in level limitations (1/4" straight, 1/2" beveled).

D. As described in Step A, place an additional layer of Geotextile Fabric on top of the drainage gravel.

E. Install Engineered Wood Fiber in accordance with Manufacturer’s instructions.

F. Install Surface Wear Mats in designated areas in accordance with Manufacturer’s instructions.

G. Inspect the playground and verify that playground equipment use zones, clearances, and reach ranges comply with ASTM F1487 and with CSA-Z614.

H. Rake, level and compact Engineered Wood Fiber. Maintain as needed thereafter in accordance with Manufacturer's instructions.

END SECTION