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Product Guide Specification 32 18 16.13

Protective Playground 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 reduce injuries on playgrounds and provide a stable resilient surface for trails. Tested according to ASTM methods to ensure compliance with ADA, ASTM, CPSC, and CSA standards for playground surfacing.

DURALINER® fabric 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. (See system 1 spec.)

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 MAT® FOAM: playground surfacing wear mat manufactured from recycled foam in a thermal process that does not use chemicals and topped with a heavy duty vinyl. It is designed to be anchored in place on top of engineered wood fiber playground surfacing or glued to the top of DURADRAIN® in kick-out areas to improve accessibility and prevent displacement. Custom sizes available.

WOODCARPET® BINDER: A polyurethane binder that is mixed with WoodCarpet® to form an accessible layer over loose fill WoodCarpet®. This layer is firm and slip resistant yet resilient enough to be used on playgrounds.

RECMAT® interlocking mats are manufactured from 90 percent recycled rubber. Designed to reduce injuries on playgrounds and provide a stable resilient surface. Tested according to ASTM methods to ensure compliance with ADA, ASTM, CPSC, and CSA standards for playground surfacing.

RECBASE® resilient foam base 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 as well as adding extra fall protection.

RECGRASS® synthetic grass is an artificial grass surface manufactured with tough nylon fibers designed to be installed over RecBase® resilient foam base to provide fall protection and accessibility for playgrounds. Tested according to ASTM methods to ensure compliance with ADA, ASTM, CPSC, and CSA standards for playground surfacing.

PART 1 - GENERAL

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1.1 SECTION INCLUDES

- A. Playground 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 playground surfacing.

- A. Section 312000 – Earth Moving: Sub-grade preparation.
- B. Section 334600 – Sub-drainage: Drainage piping and aggregate drainage material.
- C. Section 116800 - Play Field Equipment and Structures: Playground equipment installed over playground surfacing.

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 1292 – Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.

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- M. ASTM F 1951 – Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- N. ASTM F 2075 – Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment.
- O. 16 CFR 1500.44 – Method for Determining Extremely Flammable and Flammable Solids.

1.4 REFERENCES - RECMAT INTERLOCKING TILES

- A. ASTM C 67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
- B. ASTM C 501 – Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
- C. ASTM D 395 – Standard Test Methods for Rubber Property - Compression Set.
- D. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
- E. ASTM D 573 – Standard Test Method for Rubber - Deterioration in an Air Oven.
- F. ASTM D 624 – Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- G. ASTM D 1667 – Standard Specification for Flexible Cellular Materials – Poly (Vinyl Chloride) Foam (Closed-Cell).
- H. ASTM D 2047 – Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- I. ASTM D 2240 – Standard Test Method for Rubber Property - Durometer Hardness.
- J. ASTM D 2859 – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
- K. ASTM D 3676 – Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay.
- L. ASTM E 108 – Standard Test Methods for Fire Tests of Roof Coverings.
- M. ASTM E 303 – Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
- N. ASTM F 1292 – Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.
- O. ASTM F 1951 – Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- P. US Consumer Product Safety Commission (CPSC) Handbook for Public Playground Safety.

1.5 REFERENCES - RECGRASS SYNTHETIC GRASS

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- A. ASTM F 1292 - Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.
- B. ASTM F 1951 – Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- C. ASTM F 1551 - Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials.
- D. ASTM F 2765 - Standard Specification for Total Lead Content in Synthetic Turf Fibers.

1.6 SYSTEM DESCRIPTION – LOOSE FILL SYSTEM

- A. Engineered Wood Fiber Surfacing: WoodCarpet® - A recreational surface manufactured from 100 percent pre-consumer recovered wood. It is designed to reduce injuries on playgrounds and provide a stable resilient surface for trails. Tested according to ASTM methods to ensure compliance with ADA, ASTM, CPSC, and CSA standards for playground surfacing.
- 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.
- 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.
- D. Playground Surfacing Wear Mat - Foam: Made from recycled foam in a thermal process that does not use chemicals topped with heavy duty vinyl. It is designed to be anchored in place on top of engineered wood fiber playground surfacing or glued to the top of the Resilient Drain Panel in kick-out areas to improve accessibility and prevent displacement. Custom sizes available.

1.7 SYSTEM DESCRIPTION - UNITARY SYSTEMS

- A. System 71 RecMat®/RecBase®: RecMats® are manufactured from 90 percent recycled rubber. Designed to reduce injuries on playgrounds and provide a stable resilient surfacing. This tile utilizes a unique, interlocking channel that eliminates seam problems and joins to form a smooth surface for greater play value. Added fall height is achieved by adding layers of RecBase® below the tile.
 - 1. Available Accessories:
 - a. Corners – prefabricated outside and inside corners made from same material as tiles.
 - b. Edges: Prefabricated edges made from same material as tiles.
 - c. ADA compliant ramp: made from same material as tiles.
 - d. Adhesive: Furnished by Zeager.
- B. Resilient foam base: RecBase® - A lightweight foam panel made from recycled, closed cell, cross linked, thermally fused polyethylene foam. A layer of fabric is thermally bonded to one side of the surface to prevent sediment from clogging the foam nuggets. For use under unitary surfaces such as rubber tiles, carpet, and artificial turf to add fall protection and improve drainage.
- C. System 81 RecGrass®/ RecBase®: RecGrass® synthetic grass system is a tough nylon grass that comes in roll form to be installed over RecBase® foam panels for added fall height protection. It is a non-infill system in that no messy rubber or sand fillers are used to achieve fall heights. All impact attenuation is

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absorbed by the combination of a gravel / foam base and the RecGrass® layer. Seam tape and adhesive are used at the seams of the turf while stapling the outside edge of the turf to a wood border holds the RecGrass® in place.

- D. System 6 and 7 Bonded WoodCarpet: WoodCarpet® engineered wood fiber is used as a base installed over a gravel drainage system or a DuraDrain® foam panel system. To make this a more accessible surface, the top 2 inches of the WoodCarpet® is mixed with a polyurethane binder which forms a resilient, slip resistant surface that is natural looking and able to absorb impact on playgrounds. It can also be installed over a stone base to form a trail that is resistant to wash out. See specification 6. Specific binder is available through Zeager.

1.8 SUBMITTALS

- A. Comply with Section 013300 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including installation instructions, ASTM F 1292 test results, 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 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.

1.9 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 playground surfacing and to sequence related work. Delete this paragraph if not required.
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- 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.

1.10 DELIVERY, STORAGE, AND HANDLING

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- 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 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.
- C. Handling: Protect materials during handling and installation to prevent damage. Handle engineered wood fiber playground surfacing to prevent contamination.

1.11 WARRANTY

- A. Warranty Covers Playground Surfacing for Following Periods:
 - 1. Engineered Wood Fiber Playground Surfacing: 15-20 years.
 - 2. Bonded engineered wood fiber playground surfacing: 1 year product/ 3 years- impact.
 - 3. Bonded engineered wood fiber for trails – 1 year.
 - 4. Playground surfacing wear mat: 5 years.
 - 5. Interlocking mats: 10 years- product / 5 years impact.
 - 6. Synthetic grass: 5 years impact / 8 years color fade and wear.

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. E-Mail sales@zeager.com.
- B. Zeager Bros. Inc. KY office.- 340 Steele Road, Franklin, Kentucky. Toll Free (800) 296-9227. Phone (270) 586-4491. Fax (270) 586-4493. Web Site: www.zeager.com. E-Mail zhc@zeager.com.

2.2 PLAYGROUND SURFACING

Specifier Notes: Consult Zeager Bros. for assistance in editing this article for the specific application.
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- A. Engineered Wood Fiber Playground 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.

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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.
12. Impact Attenuation: ASTM F 1292. Meets criteria.
13. IPEMA Certification: 8 inch thickness rated to 8 feet and 12 inch thickness to 12 feet.

Specifier Notes: In the interest of public playground safety, IPEMA provides an independent laboratory which validates a manufacturer's certification of conformance to ASTM F1292 & F2075. A list of current validated products, their thickness and critical height may be viewed at www.ipema.org.

14. Accessibility, ASTM F 1951: Meets criteria.
15. Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials- D2859: Meets criteria.
16. 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 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 m² / sec.
9. Flow Rate, ASTM D2434: 38 gallons/ minute per sq. ft.
10. Impact Attenuation: ASTM F 1292. Meets criteria.
11. IPEMA Certification: 1.375” inch DURADRAIN® under 9 inches of WOODCARPET® rated to 12 feet.

D. Binder for WOODCARPET® used in system 6 and 7 for maximum accessibility.

1. Composition: Proprietary chemical blend.
2. Chemical family: Aromatic Isocyanate Prepolymer.
3. Chemical name: Diphenylmethane Diisocyanate (MDI) Prepolymer.
4. Available in 5 gal. buckets or 260 gal. totes.

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E. Playground Surfacing Wear Mat: WOODCARPET MAT® Foam.

1. Composition: Closed-cell, cross-linked, polyethylene, foam nuggets thermally fused together.
2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
3. Coating: The top surface of each mat is covered with a layer of heavy duty vinyl.
4. Drainage Holes: 0.38 inch diameter holes, one per square foot.
5. Recycled Content: 15 percent pre-consumer recovered materials.

Specifier Notes: Specify the required size or sizes for the project. Delete the sizes below if they are indicated on the drawings.

Recommended use for each size mat:

44 inches by 44 inches / finished size 32 inches by 32 inches. - Slide exit

44 inches by 74 inches / finished size 32 inches by 62 inches - Swing and double wide slide

72 inches by 72 inches – Tire swing. 72 inches by 96 inches – Swing bay

6. Size: 44 inches by 44 inches [32 inches by 32 inches, finished size]. 44 inches by 74 inches [32 inches by 62 inches, finished size] [As indicated on the drawings]. Other custom sizes available for various types of equipment.
7. Weight: 1.8 lbs./sq ft.
8. Thickness: 1.25 inches.
9. IPEMA Certification: 1.25 inch thick mat over 11 inches WoodCarpet®- rated to 12 feet.

F. Interlocking rubber mats: RECMAT®.

1. Description: Resilient, interlocking, playground safety surfacing tiles.
2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
3. Material: Compression-molded, recycled rubber and binding agents.
4. Recycled Content: 90 percent post-consumer recovered materials.
5. Tile Locking: U-shaped male and female configuration on all 4 sides to lock tiles to adjacent tiles.
6. Top Edges: Chamfered.
7. Tile Bottom: Hollow core stanchion pattern.
8. Wear Layer: Combination of elongated SBR rubber and granulated crumb rubber. Pigmentation used to achieve color. Minimum 0.375 inch thick. Colors: Black (natural), Terra Cotta, Green.
9. Weight: 21.5 lbs.
10. Thickness: 1.75 in.
11. Size: 24 inches by 24 inches plus or minus 1/8 inch.
12. Impact Attenuation: ASTM F 1292. Meets criteria.
13. Freeze Thaw, ASTM C 67: No deterioration.
14. Rubber Deterioration/Air Oven, ASTM D 573: No deterioration.
15. Slip Resistance:
 - a. ASTM E 303:
 - 1) Dry: 102.
 - 2) Wet: 62.
 - b. ASTM D 2047:
 - 1) Dry: 0.81.
 - 2) Wet: .082.

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16. Compression Deflection, ASTM D 1667: 29.5 psi to 25 percent compression.
17. Compression Set, ASTM D 395: 4.37 percent permanent set.
18. Tensile Strength, ASTM D 412:
 - a. Plus Series: 135 psi.
 - b. Premium Series: 99.8 psi.
19. Elongation at Break, ASTM D 412: 165 percent.
20. Tear Strength, ASTM D 624:
 - a. Plus Series: 60 lbs/in.
 - b. Premium Series: 33.7 lbs/in.
21. Flammability:
 - a. Burning Pill, ASTM D 2859: Pass.
22. IPEMA certification: RecMat® over one layer of 1 inch RecBase® rated to 6 feet. RecMat® over two layers of 1 inch RecBase® plus 3 inches gravel rated to 10 feet. RecMat® over one layer of 2 inch RecBase® with 3 inches gravel rated to 8 feet.

G. Resilient foam base: RECBASE®

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 that is thermally bonded to the foam.
3. Recycled Content: 98 percent pre-consumer recovered materials.
4. Size: 48 inches by 72 inches.
5. Weight: 0.75 inch -16 lbs, 1.125 inch - 20 lbs., 1.5 inch – 22 lbs., 2 inch – 30 lbs.
6. Thickness: 0.75 inch, 1.125 inch, 1.5 inch, and 2.0 inch.
7. Impact Attenuation: ASTM F 1292. Meets criteria.
8. Transmissivity, 1 inch thick: ASTM D4716: 4.25E-004 m² / sec.
9. Transmissivity, 2 inch thick: ASTM D4716: 1.90E-003 m² / sec.
10. Flow Rate, ASTM D2434: 1 inch 1.0270 gal./ min. per sq. ft.
11. Flow Rate, ASTM D2434: 2 inch 4.5910 gal./ min. per sq. ft.

H. Synthetic Grass:

1. RecGrass® LP:
 - a. Composition: Nylon yarn and polyurethane backing.
 - b. Primary Yarn Polymer - Nylon.
 - c. Yarn Cross Section - Diamond Monofilament; Standard Color- Turf Green.
 - d. UV Stabilized – Yes.
 - e. Fabric Construction - Tufted.
 - f. Secondary Yarn Polymer Thatch - n/a; Secondary Yarn Color - n/a.
 - g. Primary Backing - 13 Pic Woven (2).
 - h. Coating Type - Biocel™ Polyurethane.
 - i. Polyethylene Yarn Denier / Ends - 4200/8.
 - j. Texturized Thatch Denier / Ends - n/a.
 - k. Sustainability – 100 percent Recyclable.
 - l. Compliance: Meet or exceed CPSC guidelines for impact attenuation.

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- m. Warranty Period - 8 years- see warranty for details.
- n. Accessibility: ASTM F1951 - Meets criteria.
- o. IPEMA Certification: RecGrass with 1 inch layer of RecBase and 3 inch layer of gravel base rated to 4 feet, RecGrass with 2 inch layer of RecBase and 3 inch layer of gravel base rated to 6 feet, RecGrass with one 1 inch and one 2 inch layer of RecBase and a 3 inch layer of gravel base rated to 8 feet.

Finish Fabric	English System		Metric System - ASTM Test F-1551		
	Value	Units	Value	Units	Method
Nominal Specification	3/4	inches	1.905	cm	D-5823
Pile Height (Nominal)	3/4	inches	1.905	cm	D-5823
Face Weight	53	oz/yd2	1756	g/m ²	D-5848
Total Fabric Weight	75	oz/yd2	2485	g/m ²	D-5848
Primary Backing Weight	7	oz/yd2	232	g/m ²	D-5848
Secondary Coating Weight	16	oz/yd2	530	g/m ²	D-5848
Tuft Bind	>8	lbs.	>3.63	kg	D-1335
Grab Tear Strength (Avg)	>200	lbs.	>91	kg.	D-5034
Lead Content	<50	ppm	<50	ppm	F-2765
Total Yarn Linear Density	4,200	Denier	4620	dtex	D-1577
Elongation to Break	>60	%	>60	%	D-2256
Yarn Breaking Strength	>19	lbs.	>8.62	kg	D-2256
Yarn Melting Point	248	F°	120	C°	D-7138
Stitch Rate	6.3	inches	16.002	cm	D-5793
Machine Gauge	3/16	inches	0.47625	cm	D-5793
Flammability	Test Passed		Test Passed		D-2859
Water Permeability	n/a	n/a	n/a	n/a	n/a
Fiber Thickness (Prim/Sec)	3.9	mils	100	microns	D-3218
Fabric Width	15	feet	4.6	m	None

Note: Any change from the specified values is considered a special product that will require confirmation from manufacturing. All values are plus or minus 5 percent.

2. RecGrass® HP:

- a. Composition: Nylon yarn and polyurethane backing.
- b. Primary Yarn Polymer - Nylon.
- c. Yarn Cross Section - Diamond Monofilament; Standard Color - Turf Green.
- d. UV Stabilized – Yes.
- e. Fabric Construction - Tufted.
- f. Secondary Yarn Polymer Thatch - Nylon; Secondary Yarn Color - Turf Green.
- g. Primary Backing - 13 Pic Woven (2).
- h. Coating Type - Biocel™ Polyurethane.
- i. Polyethylene Yarn Denier / Ends - 4200/8.
- j. Texturized Thatch Denier / Ends - 4200/8.
- k. Sustainability – 100 percent Recyclable.
- l. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
- m. Warranty Period - 10 years- See warranty for details.
- n. Accessibility: ASTM F1951 - Meets criteria.
- o. IPEMA Certification: RecGrass with 1 inch layer of RecBase and 3 inch layer of gravel base rated to 4 feet, RecGrass with 2 inch layer of RecBase and 3 inch layer of gravel base rated to 6 feet, RecGrass with one 1 inch and one 2 inch layer of RecBase and a 3 inch layer of gravel base rated to 8 feet.

Finish Fabric	English System		Metric System - ASTM Test F-1551		
	Value	Units	Value	Units	Method
Nominal Specification	1 1/4	inches	3.18	cm	D-5823
Pile Height (Nominal)	1 1/4	inches	3.18	cm	D-5823
Face Weight	54	oz/yd2	1787	g/m ²	D-5848

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Total Fabric Weight	81	oz/yd2	2681	g/m ²	D-5848
Primary Backing Weight	7	oz/yd2	232	g/m ²	D-5848
Secondary Coating Weight	20	oz/yd2	662	g/m ²	D-5848
Tuft Bind	>8	lbs.	>3.63	kg	D-1335
Grab Tear Strength (Avg)	>200	lbs.	>91	kg.	D-5034
Lead Content	<50	ppm	<50	ppm	F-2765
Total Yarn Linear Density	8,400	Denier	9240	dtex	D-1577
Elongation to Break	>60	%	>60	%	D-2256
Yarn Breaking Strength	>19	lbs.	>8.62	kg	D-2256
Yarn Melting Point	248	F°	120	C°	D-7138
Stitch Rate	6.5	inches	16.51	cm	D-5793
Machine Gauge	3/8	inches	0.9525	cm	D-5793
Flammability	Test Passed		Test Passed		D-2859
Water Permeability	>30	in/hr	>76.2	cm/hr	DIN 18-035
Fiber Thickness (Prim/Sec)	3.9	mils	100	microns	D-3218
Fabric Width	15	feet	4.6	m	None

Note: Any change from the specified values is considered a special product that will require confirmation from manufacturing. All values are plus or minus 5 percent.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

Specifier Notes: Specify one of the following systems for the project. The WOODCARPET® Aggregate System is Not Recommended For Play Areas Over A Hard Surface (asphalt, concrete, etc.) Use WOODCARPET®/DURADRAIN® system- Spec 13.

Systems:

WOODCARPET® Aggregate System 1.
 RECMAT® Interlocking Mat System 71.

WOODCARPET® DURADRAIN® System 11.
 RECGRASS® Synthetic Grass System 81

- A. WOODCARPET® Aggregate System 1.
 - 1. Review project plans and verify that playground equipment use zones, clearances, and reach ranges will comply with ASTM F1487 sections 8, 9, and 10, and with CAN/CSA-Z614 sections 14 and 15.
 - 2. Prepare sub-grade as specified in Section 312000. Ensure that site drainage is routed away from or around the playground area. Grade subsoil to a 2 percent grade toward the drainpipe.
 - 3. Install playground equipment in accordance with manufacturer's instructions at locations indicated on the drawings.
 - 4. Geotextile Fabric:
 - a. Lap seams a minimum of 10 inches or a minimum of 5 inches if a double bead of exterior grade construction adhesive is applied to lap.

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- b. Place seams parallel to direction of slides and travel of swings.
- 5. Install drainage piping and aggregate drainage material as specified in Section 334600.
- 6. Install a containment system around the play area edge.
- 7. Install fabric as described in step 4.
- 8. Engineered Wood Fiber Playground Surfacing:
 - a. Place wood fiber surfacing to a minimum depth of 8 inches after compaction for play equipment under 4 feet high and to a minimum depth of 12 inches after compaction for play equipment over 4 feet high.
 - b. Use mechanical equipment to uniformly compact and level material.

Specifier Notes: Choose one of the following wear mats: WoodCarpet® pvc mat or WoodCarpet® foam mat.
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- 9. Playground Surfacing Wear Mat:
 - a. Install a mat in each kick-out area.
 - b. Dig a channel around the mat edge down to the base of the engineered wood fiber and slope mat edges down into the channel. If anchoring the mat, install anchors and plastic cable ties to attach mat to anchors. Refill the channel with engineered wood fiber. Anchoring is necessary to keep the mat from shifting or being removed.
- 10. Installation Instructions for Bonded WoodCarpet®:
 - a. Ask your Zeager representative for a certified installer near you.
 - b. Do not install in temperatures below 40 degrees F.
 - c. Until the bonded surface wears in, we recommend installing a 1 to 2 inches of loose-fill WoodCarpet® in high traffic areas. The product may have a rough texture to it for the first few months of use. Installing wear mats below swings and slides is recommended. Contact a Zeager representative for an authorized installer near you.
 - d. If installing an accessible bonded pathway over an existing wood fiber surface we recommend tapering the edge of the pathway all the way down to the drainage base. A soft tapered edge rather than a straight drop off will allow for easier access on to the pathway as the loose wood fiber decays or gets kicked away. This will also prevent the edge of the pathway from being exposed and possibly vandalized. As with any loose fill and unitary surface combinations it is important to maintain surfacing depths between the loose fill layer and the unitary layer. The depth of the loose fill wood fiber layer will determine the width of the tapered edge needed. A typical 12 inch system will need a 24 inch tapered edge to reach the drainage layer. An 8 inch system will require an 18 inch edge to reach the bottom drainage layer. Add this to the width of the pathway when ordering material.
 - e. When installing wear mats do not install over loose fill WoodCarpet®. Install 10.5” thick Rebase foam block directly over drainage. Then install the wear mat over top the foam block. This method will not allow the wear mat to sink below the bonded layer.
 - f. When installing a bonded pathway up to a sidewalk edge, dig away the loose layer of WoodCarpet® approximately 12 inches from the concrete sidewalk and install the bonded layer all the way down to the drainage base. This will keep a smooth transition between pathway and sidewalk edge.

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11. Inspect the playground and verify that playground equipment use zones, clearances, and reach ranges comply with ASTM F1487 sections 8, 9, and 10, and with CAN/CSA-Z614 sections 14 and 15.

B. WOODCARPET® DURADRAIN® System 11.

Specifier Notes: When installing over a hard surface such as asphalt or concrete, use the DuraDrain® system, WoodCarpet® Mats at all high wear areas, and a minimum 12 inches of WoodCarpet®.

1. Review project plans and verify that playground equipment use zones, clearances, and reach

Specifier Notes: If additional vandal resistance is desired, at seams use exterior grade construction adhesive to glue overlaps to the adjacent panel.
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Specifier Notes: If subsoil is loose or sandy, a layer of geotextile fabric should be installed before installing resilient foam drainage

- ranges will comply with ASTM F1487 sections 8, 9, and 10, and with CAN/CSA-Z614 sections 14 and 15.
2. Prepare sub-grade as specified in Section 312000. Ensure that site drainage is routed away from or around the playground area. Grade subsoil to a 2 percent grade toward the drainpipe.
3. Install playground equipment in accordance with manufacturer's instructions at locations indicated on the drawings.
4. Install drainage piping as specified in Section 334600. Excavate a minimum 8 inch wide by 8 inch deep trench along low end of area to storm drain. Install drainpipe in trench.
5. Install a containment system around the play area edge.
6. Install Duraliner fabric over subsoil then install resilient foam drainage:
 - a. Install panels side by side fabric side up. Allow min. 1/2 inch gap at border to allow for expansion.
 - b. Cut around equipment base and border using utility knife or circular saw. Wrap around drainpipe, use plastic cable tie to secure foam to pipe.
7. Engineered Wood Fiber Playground Surfacing:
 - a. Place wood fiber surfacing to a minimum depth of 7 inches after compaction for play equipment under 4 feet high and to a minimum depth of 10 inches after compaction for play equipment over 4 feet high and to a minimum depth of 12 inches for play areas on top of a hard surface (asphalt, concrete, etc.).
 - b. Use mechanical equipment to uniformly compact and level material.
8. Playground Surfacing Wear Mat:
 - a. Install a mat in each kick-out area.
 - b. Dig a channel around the mat edge down to the base of the engineered wood fiber and slope mat edges down into the channel. If anchoring the mat, install anchors and plastic cable ties to attach mat to anchors. Refill the channel with engineered wood fiber. Anchoring is necessary to keep the mat from shifting or being removed.
9. Installation Instructions for Bonded WoodCarpet®:
 - a. Ask your Zeager representative for a certified installer near you.
 - b. Do not install in temperatures below 45 degrees F 24 hours before and after install.
 - c. Until the bonded surface wears in, we recommend installing a 1 to 2 inches of loose-fill WoodCarpet® in high traffic areas. The product may have a rough texture to it for the

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- first few months of use. Installing wear mats below swings and slides is recommended. Contact a Zeager representative for an authorized installer near you.
- d. If installing an accessible bonded pathway over an existing wood fiber surface we recommend tapering the edge of the pathway all the way down to the drainage base. A soft tapered edge rather than a straight drop off will allow for easier access on to the pathway as the loose wood fiber decays or gets kicked away. This will also prevent the edge of the pathway from being exposed and possibly vandalized. As with any loose fill and unitary surface combinations it is important to maintain surfacing depths between the loose fill layer and the unitary layer. The depth of the loose fill wood fiber layer will determine the width of the tapered edge needed. A typical 12 inch system will need a 24 inch tapered edge to reach the drainage layer. An 8 inch system will require an 18 inch edge to reach the bottom drainage layer. Add this to the width of the pathway when ordering material.
 - e. When installing wear mats do not install over loose fill WoodCarpet®. Install 1/4 minus compacted gravel to within 5-7 inches of top surface grade to allow for 2-3 layers of 2 inch Recbase (2 layers for 8 foot fall height, 3 layers for 10 foot fall height) and the 1 inch foam wear mat. Install bonded layer up to edge of wear mat to within 1/4 inch of top of wear mat. This method will not allow the wear mat to sink below the bonded layer.
 - f. When installing a bonded pathway up to a sidewalk edge, dig away the loose layer of WoodCarpet® approximately 12 inches from the concrete sidewalk and install the bonded layer all the way down to the drainage base. This will keep a smooth transition between pathway and sidewalk edge.
10. Inspect the playground and verify that playground equipment use zones, clearances, and reach ranges comply with ASTM F1487 sections 8, 9, and 10, and with CAN/CSA-Z614 Sections 14 and 15.

C. RECMAT® Interlocking Mat System 71: (see spec 71 for more details)

1. Review project plans and verify that playground equipment use zones, clearances, and reach ranges will comply with ASTM F1487 sections 8, 9, and 10, and with CAN/CSA-Z614 sections 14 and 15.
2. Prepare the site in accordance with the project engineer's directions and project specifications. Ensure that site drainage is routed away from or around the playground area to prevent sand, soil, silt, or other foreign material from being deposited in the playground area. Inside the play-ground area, grade subsoil to a 1 to 2 percent grade.
3. Install playground equipment.
4. Excavate an 8 inch wide and 8 inch deep trench along the low end of the area to a storm drain.
5. Install drain pipe in the trench to a storm drain. Make sure the drain pipe is at least 12 inches from borders and wrapped with fabric or RecBase®.
6. Install a border around play area edge (see our recommendations for a wood border).

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

7. Install, and level 1/2 inch max size gravel or crusher run to a minimum depth of 2 inches for below grade application. Make sure gravel fills the trench and surrounds drain pipe. For above grade, use gravel to fill in low areas in the soil and around drain pipe. Mechanically compact the gravel; a smooth surface is necessary to ensure resilient base seams will be flush. (If 3ft. of fall height is all that is needed, skip step 8).

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8. Install resilient base on top of gravel with fabric side down. Resilient base should be cut using a knife, sabre saw, or circular saw, to make a snug fit around play equipment and against borders. Make sure there are no visible gaps except as necessary around spring mounted equipment and border. Leave a gap as necessary around spring mounted equipment and leave a min. 1/2 inch gap between the foam base and the border.
9. See complete instructions available from your Zeager representative for RecMat® installation.

D. RECGRASS® synthetic grass system 81: (see spec for system 81 for more details)

1. Prepare the site in accordance with the project engineer's directions and project specifications. Ensure that site drainage is routed away from or around the playground area to prevent sand, soil, silt, or other foreign material from being deposited in the playground area. Inside the playground area, grade subsoil to a 1 to 2 percent grade. For installations over a hard surface such as asphalt or concrete, see spec 81 for details.
2. Excavate an 8 inch wide by 8 inch deep trench along the low end of the area to a storm drain.
3. Install a layer of geotextile fabric on top of the subsoil. Overlap seams 10 inches (25cm), or 5 inches (13cm) if a double bead of exterior grade construction adhesive is applied to the overlap.
4. Install drain pipe in the trench to a storm drain. Make sure the drain pipe is at least 12 inches from borders.
5. Install a wood border around play area edge (see our recommendations for a wood border).
6. Install and level 3/8 to 1 inch gravel to a minimum depth of 2 inches. Make sure gravel fills the trench and surrounds drain pipe. A smooth surface is necessary to ensure resilient base seams will be flush.
7. Install RecBase® on top of gravel. Lay panels fabric side down, side by side. Resilient base can be cut using a knife, saber saw, or circular saw around play equipment and border. Leave minimum 1/2 inch gap between the resilient base and the border to allow for expansion and contraction. Note: Foam will expand in heat.
8. Have a qualified Zeager dealer install the RecGrass® surface. Ask your Zeager representative for a dealer near you.
9. Backfill with soil around the outside of the wood border so soil is flush with the top of the wood border. Install ADA ramp for accessibility on above grade installations.

END SECTION