

Revised – Feb. 2017 by JM

Product Guide Specification 32 18 16.13

Protective Playground Surfacing- Recbase Synthetic grass system only

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:

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.

RECBASE[®] 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

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.

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1.3 REFERENCES - RECBASE SYNTHETIC GRASS

- 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.

1.4 SYSTEM DESCRIPTION - UNITARY SYSTEMS

- A. 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.
- B. System 81- RecBase® Synthetic Grass System is a tough nylon or PE 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 absorbed by the combination of a gravel / foam base and the synthetic grass 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 synthetic grass in place.

1.5 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.

1.6 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).

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- 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 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.

1.8 WARRANTY

- A. Warranty Covers Playground Surfacing for Following Periods:
 - 1. Synthetic grass: 5 years impact / 7-8 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.

- A. Drainage Fabric:
 - 1. Composition: nonwoven geotextile 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

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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.

B. 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 2.125 inch.
7. Impact Attenuation: ASTM F 1292. Meets criteria.
8. Transmissivity, 1.125 inch thick: ASTM D4716: 4.25E-004 m² / sec.
9. Transmissivity, 2.125 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.

C. Synthetic Grass:

1. RecBase® low pile- LP synthetic grass:
 - 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.
 - 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.

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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. RecBase® high pile- HP synthetic grass:

- 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
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

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RecBase® high pile- HP synthetic grass-(cont):

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 1 All values are ± 5%

3. RecBase® -Color Turf CT synthetic grass:

- a. Composition: Polyethylene fiber / nylon thatch w/ 5mm foam pad backing.
- b. Primary Yarn Polymer – PE.
- c. Yarn Cross Section – Web slit film; Standard Color – multiple colors available.
- d. UV Stabilized – Yes.
- e. Fabric Construction - Tufted.
- f. Secondary Yarn Polymer Thatch - Nylon
- g. Primary Backing - 13 Pic Woven (2).
- h. Coating Type – 5 Mil Biocel™ Polyurethane cushion
- i. Polyethylene Yarn Denier / Ends – 8040/1.
- 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 - 8 years- See warranty for details.
- n. Accessibility: ASTM F1951 - Meets criteria.

Finish Fabric	English System		Metric System - ASTM Test F-1551		
	Value	Units	Value	Units	Method
Nominal Specification	1	inches	2.54	cm	D-5823
Pile Height (Nominal)	58	oz/yd2	1920	g/m ²	D-5848
Face Weight	123	oz/yd2	4071	g/m ²	D-5848
Total Fabric Weight	7	oz/yd2	232	g/m ²	D-5848
Primary Backing Weight	58	oz/yd2	1920	g/m ²	D-5848
Secondary Coating Weight	>8	lbs.	>3.63	kg	D-1335
Tuft Bind	>200	lbs.	>91	kg.	D-5034
Grab Tear Strength (Avg)	<50	ppm	<50	ppm	F-2765
Lead Content	12,240	Denier	13434	dtex	D-1577
Total Yarn Linear Density	>60	%	>60	%	D-2256
Elongation to Break	>19	lbs.	>8.62	kg	D-2256
Yarn Breaking Strength	248	F°	120	C°	D-7138
Yarn Melting Point	6.7	inches	17.018	cm	D-5793
Stitch Rate	3/16	inches	0.47625	cm	D-5793
Machine Gauge	Test Passed		Test Passed		D-2859
Flammability	n/a	n/a	n/a	n/a	n/a
Water Permeability	3.9	mils	100	microns	D-3218
Fiber Thickness (Prim/Sec)	15	feet	4.6	m	None
Fabric Width	None				

Note 1 All values are ± 5%

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4. RecBase® -General Purpose Play & DOGPS synthetic grass
 - a. Composition: Polyethylene w/ Biocel polyurethane perforated backing
 - b. Primary Yarn Polymer – PE
 - c. Yarn Cross Section – Diamond Monofilament; Standard Color –Verde Green
 - d. UV Stabilized – Yes.
 - e. Fabric Construction - Tufted.
 - f. Secondary Yarn Polymer Thatch – Nylon – Color- Turf Green
 - g. Primary Backing - 13 Pic Woven (2).
 - h. Coating Type -Biocel™ Polyurethane
 - i. Polyethylene Yarn Denier / Ends – 5000/4.
 - j. Texturized Thatch Denier / Ends - 4200/8.
 - k. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
 - l. Warranty Period - 7 years- See warranty for details.
 - m. Accessibility: ASTM F1951 - Meets criteria.

Finish Fabric	English System		Metric System - ASTM Test F-1551		
	Value	Units	Value	Units	Method
Nominal Specification	1	inches	2.54	cm	D-5823
Pile Height (Nominal)	1	inches	2.54	cm	D-5823
Face Weight	50	oz/yd2	1655	g/m ²	D-5848
Total Fabric Weight	77	oz/yd2	2548	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	9200	Denier	10120	dtex	D-1577
Elongation to Break	>50	%	>50	%	D-2256
Yarn Breaking Strength	>18	lbs.	>8.14	kg	D-2256
Yarn Melting Point	248	F°	120	C°	D-7138
Stitch Rate	4.00	inches	1.5	cm	D-5793
Machine Gauge	3/16	inches	0.48	cm	D-5793
Flammability	Test Passed		Test Passed		D-2859
Water Permeability	>30	inches/hr	.48	CM/hr	DN18-035
Fiber Thickness (Prim/Sec)	3.9	mils	100	microns	D-3218
Fabric Width	15	feet	4.6	m	None

Note 1 All values are ± 5%

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.

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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®/FOAM DRAINAGE system- Spec 13.

Systems:

RECBASE® Synthetic Grass System 81

- A. RECBASE® 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 RecBase® grass 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