



PRI Construction Materials Technologies LLC

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Laboratory Test Report

Report for: Michelle Stander
Lifetime Roofing Specialists, Inc.
3546 E Apple Rd. Cortland, NE 68331

Product Name: Mosaic Grand Shingle

Project No.: 2581T0012

Dates Tested: Aug. 3 - 8, 2023

Test Methods: TAS 125-03
UL 580-06
UL 1897-12

Results Summary: No. 1, 8 fasteners/panel; 2x2 battens; 15/32 plywood: -217psf, Class 90
No. 2, 8 fasteners/panel; 2x2 battens; 15/32 plywood: -232psf, Class 90
No. 3, 12 fasteners/panel; 2x2 battens; 15/32 plywood: -367psf, Class 90

Purpose: Determine the uplift resistance in accordance with **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the Florida Building Code, Building), UL 580-06 Test for Uplift Resistance of Roof Assemblies and UL 1897-12 Uplift Tests for Roof Covering Systems**

Test Methods: Testing was completed as described in Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the *Florida Building Code, Building*), UL 580-06 *Test for Uplift Resistance of Roof Assemblies* and UL 1897-12 *Uplift Tests for Roof Covering Systems*. Specimens were tested to the loading schedule as described in UL 580, and where applicable, incrementally loaded in accordance with UL 1897 until failure.

Sampling: The following materials were received by PRI.

<u>Product</u>	<u>Source</u>	<u>Date</u>	<u>Sampling</u>
26 ga. Mosaic Grand Shingle	Client drop-off	Jul. 31, 2023	Lifetime
#10-15 x 2" Wood Grip screw	Client drop-off	Jul. 31, 2023	Lifetime
0.131 x 3.5" NailScrew	Client drop-off	Jul. 31, 2023	Lifetime

All other roofing components were procured by PRI Construction Materials Technologies LLC through local distribution.

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Product Description:	Mosaic Grand Shingle:	26ga. stone-coated steel panels; Coverage is 50.78" (1290mm) x 12.59" (320mm);
	#10-15 x 2" Woodgrip:	#10-15 x 2" Woodgrip HiLo MP, ¼" HWH, From SFS.
Deck Description:	Battens:	No. 2 SYP 2" x 2" wood battens installed approximately 14.5" o.c. parallel to the eave; Fastened using two (2) 0.131 x 3.5" bugle head NailScrews at each rafter intersection, and 5" o.c. between rafters.
	Underlayment:	ASTM D 226 Type II felt
	Decks:	CAT 15/32 PS 1-09, 32/16 span rated, CDX, 4-ply plywood sheathing installed over No. 2 lumber supports spaced 24" o.c. Decking attached with 0.113" x 2-3/8" ring shank nails spaced 6" o.c. along the perimeter and intermediate supports.

¹It is the judgment of the test engineer that the film and tape used to seal the specimen against air leakage did not influence the results of the test.

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Results: Test data are contained in Appendix A. Photographs after testing are shown in Appendix C.

Table 1. Summary of Test Results

Specimen No.	Panel	Attachment	Passing Uplift Pressure (psf)
1	26ga. steel Mosaic Grand Shingle	Attached in the nose of the panel using #10-15 x 2" Woodgrip HiLo fasteners starting 1.5" from the side lap and continuing 10" o.c thereafter for a total of 5 fasteners per panel. 3 Additional fasteners were placed through the top of the back shelf into the batten in a pattern of 1"-24"- 26" starting from the edge of the panel.	217
2	26ga. steel Mosaic Grand Shingle	Attached in the nose of the panel using #10-15 x 2" Woodgrip HiLo fasteners starting 1.5" from the side lap and continuing 10" o.c thereafter for a total of 5 fasteners per panel. 3 Additional fasteners were placed through the top of the back shelf into the batten in a pattern of 1"-24"- 26" starting from the edge of the panel.	232
3	26ga. steel Mosaic Grand Shingle	Attached in the nose of the panel using #10-15 x 2" Woodgrip HiLo fasteners starting 1.5" from the side lap and continuing 6" o.c thereafter for a total of 9 fasteners per panel. 3 Additional fasteners were placed through the top of the back shelf into the batten in a pattern of 1"-24"- 26" starting from the edge of the panel.	367

Classification:

Specimen Nos. 1, 2, and 3 installed as described herein meet **Class 90** requirements.

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Statement of Attestation:

Testing was conducted in accordance with **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the Florida Building Code, Building), UL 580-06 Test for Uplift Resistance of Roof Assemblies and UL 1897-12 Uplift Tests for Roof Covering Systems.** The test results and interpretations presented herein are representative of the materials supplied by the client.

Signed:



Bill Hinkle
Manager, Client Services

Date: 04/02/2024

Signed:



Zachary R. Priest, P.E.
No. 74021
Florida Registered Professional Engineer
PE No. 74021
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Date: 04/04/2024

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	04/02/2024	15	NA

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Specimen No. 1 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	16.2	0.050	0.101	0.101	0.000	Pass
5	13.8	16.2	0.151	0.101	0.202	0.050	Pass
60	13.8	8.1-27.7	0.202	0.202	0.202	0.101	Pass
5	0	24.2	0.151	0.151	0.202	0.050	Pass
5	20.8	24.2	0.202	0.151	0.202	0.101	Pass
Permanent Set:			0.101	0.101	0.000	0.101	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	32.3	0.151	0.151	0.202	0.050	Pass
5	27.7	32.3	0.252	0.252	0.252	0.151	Pass
60	27.7	16.2-55.4	0.404	0.303	0.404	0.252	Pass
5	0	40.4	0.252	0.252	0.252	0.151	Pass
5	34.6	40.4	0.404	0.303	0.404	0.252	Pass
Permanent Set:			0.050	0.050	0.050	0.050	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	48.5	0.303	0.252	0.252	0.151	Pass
5	41.5	48.5	0.454	0.353	0.404	0.303	Pass
60	41.5	24.2-48.5	0.454	0.404	0.454	0.303	Pass
5	0	56.5	0.353	0.303	0.353	0.252	Pass
5	48.5	56.5	0.555	0.505	0.555	0.404	Pass
Permanent Set:			0.000	0.101	0.202	0.050	Pass

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Specimen No. 1 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.606	0.505	0.555	0.454	Pass
1	127	0.706	0.606	0.706	0.505	Pass
1	142	0.858	0.706	0.807	0.606	Pass
1	157	0.959	0.807	0.908	0.656	Pass
1	172	1.211	0.908	1.060	0.858	Pass
1	187	1.463	1.009	1.413	0.959	Pass
1	202	1.665	1.161	1.564	1.060	Pass
1	217	2.220	1.262	1.665	1.161	Pass
40s	232	-	-	-	-	Fail – Batten withdrawal

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Specimen No. 2 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	16.2	0.101	0.050	0.151	0.050	Pass
5	13.8	16.2	0.151	0.101	0.202	0.101	Pass
60	13.8	8.1-27.7	0.252	0.151	0.202	0.151	Pass
5	0	24.2	0.151	0.101	0.202	0.050	Pass
5	20.8	24.2	0.252	0.151	0.202	0.151	Pass
Permanent Set:			0.000	0.050	0.000	0.050	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	32.3	0.202	0.101	0.202	0.101	Pass
5	27.7	32.3	0.303	0.202	0.202	0.202	Pass
60	27.7	16.2-55.4	0.404	0.303	0.303	0.353	Pass
5	0	40.4	0.252	0.151	0.202	0.151	Pass
5	34.6	40.4	0.404	0.303	0.303	0.303	Pass
Permanent Set:			0.000	0.050	0.000	0.050	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	48.5	0.303	0.202	0.202	0.202	Pass
5	41.5	48.5	0.454	0.353	0.353	0.404	Pass
60	41.5	24.2-48.5	0.454	0.353	0.353	0.404	Pass
5	0	56.5	0.353	0.252	0.252	0.252	Pass
5	48.5	56.5	0.606	0.454	0.404	0.404	Pass
Permanent Set:			0.050	0.000	0.000	0.000	Pass

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Specimen No. 2 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.606	0.505	0.404	0.454	Pass
1	127	0.706	0.606	0.505	0.505	Pass
1	142	0.858	0.706	0.606	0.606	Pass
1	157	1.161	0.807	0.656	0.757	Pass
1	172	1.211	0.908	0.757	0.858	Pass
1	187	1.362	1.060	0.858	1.009	Pass
1	202	1.665	1.211	1.009	1.211	Pass
1	217	1.867	1.362	1.463	1.362	Pass
1	232	1.968	1.463	1.615	1.564	Pass
0	247	-	-	-	-	Fail – Batten withdrawal

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Specimen No. 3 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	16.2	0.050	0.050	0.000	0.000	Pass
5	13.8	16.2	0.101	0.101	0.050	0.000	Pass
60	13.8	8.1-27.7	0.101	0.101	0.101	0.050	Pass
5	0	24.2	0.101	0.101	0.050	0.050	Pass
5	20.8	24.2	0.101	0.151	0.101	0.050	Pass
Permanent Set:			0.050	0.050	0.050	0.101	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	32.3	0.101	0.101	0.101	0.050	Pass
5	27.7	32.3	0.151	0.151	0.151	0.151	Pass
60	27.7	16.2-55.4	0.252	0.252	0.252	0.202	Pass
5	0	40.4	0.151	0.151	0.151	0.151	Pass
5	34.6	40.4	0.252	0.252	0.252	0.202	Pass
Permanent Set:			0.000	0.000	0.050	0.050	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure	Negative Pressure	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0	48.5	0.202	0.202	0.151	0.151	Pass
5	41.5	48.5	0.303	0.303	0.303	0.252	Pass
60	41.5	24.2-48.5	0.303	0.303	0.353	0.252	Pass
5	0	56.5	0.252	0.252	0.252	0.202	Pass
5	48.5	56.5	0.404	0.404	0.404	0.353	Pass
Permanent Set:			0.101	0.101	0.050	0.000	Pass

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Specimen No. 3 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.404	0.404	0.454	0.353	Pass
1	127	0.555	0.505	0.555	0.454	Pass
1	142	0.706	0.606	0.757	0.555	Pass
1	157	0.706	0.757	0.807	0.656	Pass
1	172	0.807	0.807	0.858	0.706	Pass
1	187	0.959	1.110	1.161	0.959	Pass
1	202	1.009	1.161	1.161	1.009	Pass
1	217	1.060	1.211	1.211	1.009	Pass
1	232	1.110	1.312	1.312	1.110	Pass
1	247	1.211	1.413	1.362	1.211	Pass
1	262	1.312	1.514	1.463	1.312	Pass
1	277	1.362	1.564	1.564	1.413	Pass
1	292	1.463	1.665	1.615	1.413	Pass
1	307	1.514	1.766	1.766	1.514	Pass
1	322	1.615	1.817	1.817	1.615	Pass
1	337	1.716	1.968	1.968	1.716	Pass
1	352	1.817	2.018	2.018	1.817	Pass
1	367	1.968	2.170	2.119	1.968	Pass
0	382	-	-	-	-	Fail – Batten withdrawal

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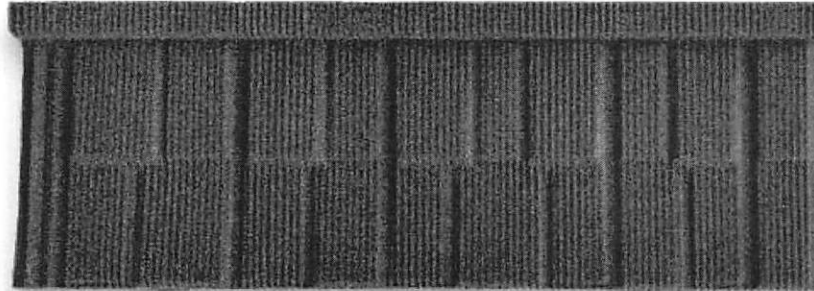
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ASTM E 8 Tensile Properties of 26ga. steel

Specimen	Width (in)	Thickness (in)	Gage Length (in)	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation at Break (%)
1	0.4985	0.0156	2	53.4	61.7	30.6
2	0.4985	0.0155	2	53.9	62.7	35.5
3	0.4975	0.0155	2	53.4	61.9	31.8
4	0.4985	0.0156	2	57.1	63.7	26.9
5	0.4995	0.0156	2	55.9	63.1	27.1
Average	0.4985	0.0156	2.0	54.7	62.6	30.4
St.Dev.	0.0	0.0	0.0	1.7	0.8	3.6

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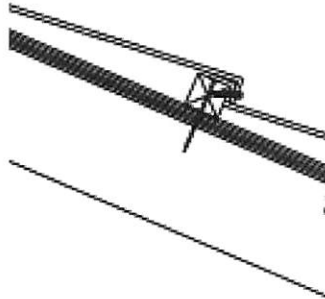


MOSAIC GRAND SHINGLE	
Thickness of steel (mm)	0.45
Length of tile (mm)	1340 ± 10
Cover length (mm)	1290
Width of tile (mm)	420 ± 10
Cover width (mm)	370
Side overlap (mm)	50
Weight of tile (kg)	2.8 ± 0.1
Weight of tiled roof (kg/m ²)	5.8
Coverage per tile (m ²)	0.48

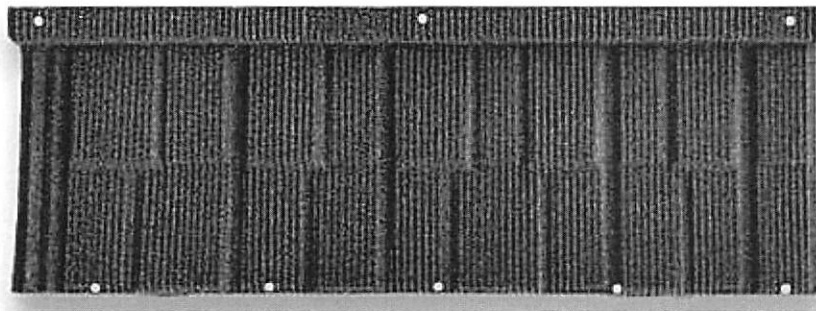
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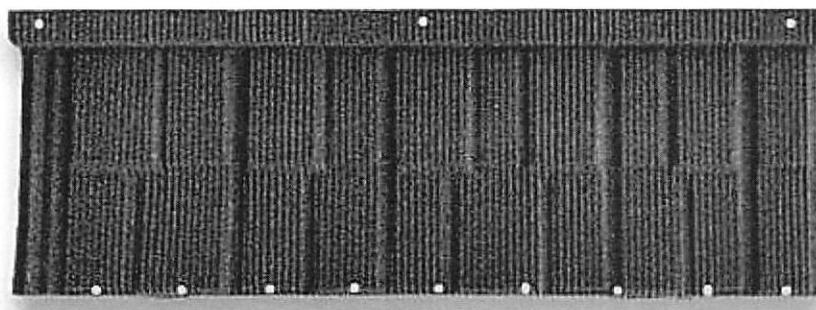
26ga. Mosaic Grand Shingle



Mosaic Grand Shingle Fastening



26ga. Steel Mosaic Grand Shingle – 5 fasteners/panel



26ga. Steel Mosaic Grand Shingle – 9 fasteners/panel

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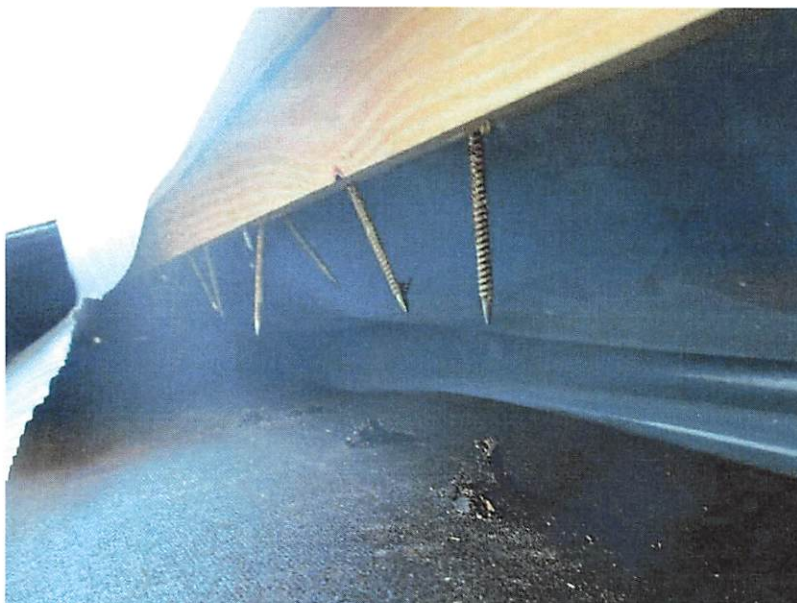
Specimen No. 1 After Testing



Specimen No. 2 After Testing

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Specimen No. 3 After Testing

END OF REPORT

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