



STONE LABORATORY TEST REPORT

Report No.: 25-0185.01-R0

Test Date(s): 02/05/26 – 03/17/26

Report Date: 03/18/26

Retention Date: 03/17/30

Prepared for: Jeff Green
Earthworks Inc.
4287 N. Highway 51
Perryville, MO 63775

Product: One Natural Stone Product (Trade Name: Ashbourne)

Scope: The Natural Stone Institute (NSI) was contracted by Earthworks Inc. to perform physical properties evaluations for one natural quartz-based stone product (Trade Name: Ashbourne). The scope of testing completed included: Absorption, Density, Compressive Strength, Modulus of Rupture, Flexural Strength, Slip Resistance, Abrasion Resistance, and Freeze Thaw Durability. All testing was performed at the NSI laboratory located in Oberlin, Ohio.

Methods: The products were evaluated in accordance with the following test method(s):

ASTM C616/C616M-22, *Standard Specification for Quartz-Based Dimension Stone*

ASTM C97/C97M-25, *Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone*

ASTM C170/C170M-24a, *Standard Test Method for Compressive Strength of Dimension Stone*

ASTM C99/C99M-25, *Standard Test Method for Modulus of Rupture of Dimension Stone*

ASTM C880/C880M-25, *Standard Test Method for Flexural Strength of Dimension Stone*

ANSI A326.3-2021 – *American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials*

ASTM C1353/C1353M-20e1, *Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser*

ASTM C1645-22ae1 *Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units (Modified for Stone)*

Test Materials: The test specimens were provided by Earthworks Inc. and were received on 02/16/26, in good condition for all testing other than the C880 flexural specimens. The stone was represented as being a natural Sandstone product (Trade Name: Ashbourne). All specimens were tested as received other than preconditioning as required by the applicable test method(s) prior to testing. Additional C880 specimens were received 03/05/26 in moderately unsuitable condition for testing. NSI personnel further diamond-saw prepared the C880 specimens into suitable test condition prior to preconditioning as required by the applicable test method. Representative test materials shall be retained by the NSI for a period of four years.

Test Witness Record

Name	Company
Clint Eads	NSI
Elena Foley	NSI
Scott Scallorn	NSI
Carmen Taran	NSI
Jeffrey Terleckyj	NSI

Test Procedure(s): Unless otherwise stated, all specimen conditioning and testing were conducted in standard laboratory conditions. Test photos are located on pages 16-21 of this report. Equipment calibration certificates are available upon request.

ASTM C97 - Absorption and Density Evaluation

The absorption and density evaluations were conducted in accordance with the procedures detailed in ASTM C97. The specimens were dried in a ventilated oven maintained at 60°C (ICN: NSI00012) to a stable mass condition (minimum 48 hours), reacclimated to ambient lab temperature and weighed on an Ohaus digital balance (ICN: NSI00022) for determination of dry condition mass. They were then immersed in a filtered water bath maintained at 22°C temperature (verified by a Thermometer (ICN: NSI00038) for 48 hours prior to individual specimen removal, surface drying and determination of wet condition mass. The specimens were then suspended in the water within a wire cage and weighed for determination of immersed condition mass. Absorption (%) and bulk specific gravity were calculated for each specimen as per the equations in ASTM C97, Section 9. Test results were averaged for the test series and evaluated against the performance criteria presented in ASTM C616, Table 1.

ASTM C170 – Compressive Strength Evaluation

The compressive strength evaluation was conducted on a Test Mark compression tester (ICN: NSI00001) in accordance with the procedures detailed in ASTM C170. Pretest specimen dimensions were measured with a 6" x 0.0005" Digital Caliper (ICN: NSI00008). Specimens were tested in both oven-dry and wet conditions. Dry condition specimens were oven-dried at 60°C for a minimum of 48 hours and cooled to ambient prior to testing. Wet condition specimens were immersed in water for 48 hours prior to individual removal and testing. Compressive strength was calculated for each specimen as per the equation in ASTM C170, Section 10.1. Test results were averaged for each test series and evaluated against the performance criteria presented in ASTM C616, Table 1.

ASTM C99 – Modulus of Rupture Evaluation

The Modulus of Rupture (MoR) evaluation was conducted on an ATS Universal Test Machine (ICN: NSI00003) employing a 12.5-kip load cell (ICN: NSI00004) in accordance with the procedures detailed in ASTM C99. Pretest specimen dimensions were measured with a 6" x 0.0005" Digital Caliper (ICN: NSI00008). Specimens were tested in both oven-dry and wet condition. Dry condition specimens were oven-dried at 60°C for a minimum of 48 hours and cooled to ambient prior to testing. Wet condition specimens were immersed in water for 48 hours prior to individual removal and testing. Specimens were supported at a test span of 7.0 in. and loaded at midspan until failure. Flexural strength was calculated for each specimen as per the equation in ASTM C99, Section 11.1. Test results were averaged for each test series and evaluated against the performance criteria presented in ASTM C616, Table 1.

ASTM C880 – Flexural Strength

The Flexural strength evaluation was conducted on an ATS Universal Test Machine Test Machine (ICN: NSI00003) employing a 12.5-kip load cell (ICN: NSI00004) in accordance with the procedures detailed in ASTM C880. Pretest specimen dimensions were measured with a 6" x 0.0005" Digital Caliper (ICN: NSI00008). Specimens were tested in both oven-dry and wet condition. Dry condition specimens were oven-dried at 60°C for a minimum of 48 hours and cooled to ambient prior to testing. Wet condition specimens were immersed in water for 48 hours prior to individual removal and testing. Specimens were supported at a test span of 12.5 in. and loaded at quarter point (6.25 in. loading span) until failure. Flexural strength was calculated for each specimen as per the equation in ASTM C880, Section 10.1. Test results for both wet and dry condition control series were averaged for each test series. Test results were averaged for each test series.

ANSI A326.3 Dynamic Coefficient of Friction (DCOF) Evaluation

The DCOF evaluation was conducted in accordance with the procedures detailed in ANSI A326.3, sections 8, and 9. Specimens were evaluated with a BOT 3000E tribometer (ICN: NSI00037) in wet condition (employing a 0.05% SLS solution). Four travel passes were taken at a 90° offset to one another and the resultant DCOF measurements averaged for each specimen. Mean individual specimen results were averaged for each test series and evaluated against the ANSI A326.3, Section 3.1 recommended slip resistance performance criteria of 0.42.

ASTM C1353 – Abrasion Resistance Evaluation

The abrasion resistance evaluation was conducted in accordance with the procedures detailed in ASTM C1353. The specimens were oven-dried at 60°C for a minimum of 48 hours and cooled prior to determination of pre-abrasion mass on an Ohaus digital balance (ICN: NSI00022). The specimens were then evaluated on a Taber Industries rotary platform abraser (ICN: NSI00024) employing H-22 Calibrade abrasive wheels with 1,000 grams of downward force applied to each for a total of 1000 wear cycles. Upon completion of cycling, post-exposure mass was determined for each specimen. Employing the bulk specific gravity results obtained from ASTM C97 evaluation, Index of Abrasion was calculated for each specimen as per the equation in ASTM C1353, Section 9.1. Test results were averaged for the series and evaluated against the performance criteria presented in ASTM C616, Table 1.

ASTM C1645 – Freeze-Thaw and De-Icing Salt Durability Evaluation

The freeze-thaw and de-icing salt durability evaluation was conducted in accordance with the procedures detailed in ASTM C1645. The specimens were immersed in a 3% saline solution for a period of 24 hours prior to initiation of exposure cycling. A total of 28 exposure cycles were conducted, each consisting of a 16 ± 1 hr. freezing period (to $-15 \pm 3^{\circ}\text{C}$ [$5 \pm 5^{\circ}\text{F}$]) followed by an 8 ± 1 hr. thawing period (to 5°C [40°F]). Upon completion of both 7 and 28 cycles, specimen visual condition was documented, any loose debris in the exposure bin was collected and either the exposure solution was replaced (at 7-cycles) or the exposure was discontinued (at 38-cycles). Debris filtered from solution and oven dried to determine total mass loss relative to initial test specimen surface area. Mass loss results were averaged for the series and evaluated against the performance criteria presented in ASTM C936, Section 5.5. The post-exposure specimens were oven conditioned to equilibrium dry mass for additional visual evaluation of condition relative to the unexposed control specimen for each test series.

Specimen Details

Test Method	Quantity	Nominal Dimensions	Description
ASTM C97	5	2.25 in. cubes (60 mm)	Dark grey tones natural sandstone with grained structure.
ASTM C170	20 Total Perpendicular, Wet: 5 Perpendicular, Dry: 5 Parallel, Dry: 5 Parallel, Wet: 5		
ASTM C99	20 Total Perpendicular, Wet: 5 Perpendicular, Dry: 5 Edge, Dry: 5 Edge, Wet: 5	4.0 in. x 8.0 in. x 2.25 in. (100 mm x 200 mm x 60 mm)	
ASTM C880	20 Total Perpendicular, Wet: 5 Perpendicular, Dry: 5 Edge, Dry: 5 Edge, Wet: 5	4.0 in. x 15.0 in. x 1.25 in. (100 mm x 380 mm x 30 mm)	
ANSI A326.3	3 Total (Honed Finish)	12 in. X 8.0 in. x 1.25 in. (300 mm x 200 mm x 30 mm)	
ASTM C1353	3 Total (Honed Finish)	12 in. X 8.0 in. x 1.25 in. (300 mm x 200 mm x 30 mm)	
ASTM C1645	3 Total (Thermal Finish)	12 in. X 8.0 in. x 1.25 in. (300 mm x 200 mm x 30 mm)	

Test Results**ASTM C97 – Absorption & Density Evaluation**

Specimen No.	Measured Mass (g)			Absorption (%)	Bulk Specific Gravity	Density	
	Oven-Dry	48-Hour Wetted	Immersed Suspended			(lbs/ft ³)	[kg/m ³]
1	527.74	536.35	330.97	1.63	2.570	160.4	2,570
2	538.07	545.99	338.21	1.47	2.590	161.7	2,590
3	536.01	544.22	336.59	1.53	2.582	161.2	2,582
4	525.64	535.09	328.82	1.80	2.548	159.1	2,548
5	530.92	540.37	332.47	1.78	2.554	159.4	2,554
Series Average				1.64	2.569	160.4	2,569
Standard Deviation				0.15	0.018	1.12	17.87
Coefficient of Variation (%)				8.85	0.695	0.70	0.70

ASTM C170 – Compressive Strength**Test Condition: Wet Condition, Perpendicular Loading**

Specimen No.	Test Condition	Specimen Dimensions (in)		Loading Area (in ²)	Failure Load (lb _f)	Compressive Strength	
		Length	Width			(psi)	[MPa]
PP-W-1	Loaded Perpendicular to stone rift plane	2.32	2.31	5.35	110,110	20,580	141.9
PP-W-2		2.33	2.34	5.44	87,260	16,040	110.6
PP-W-3		2.31	2.31	5.32	105,780	19,880	137.1
PP-W-4	Wet Condition	2.33	2.30	5.36	114,890	21,430	147.8
PP-W-5		2.33	2.30	5.35	102,890	19,230	132.6
Series Average						19,430	134.0
Standard Deviation						2,065	14.3
Coefficient of Variation (%)						10.6	10.6

ASTM C170 – Compressive Strength**Test Condition: Dry Condition, Perpendicular Loading**

Specimen No.	Test Condition	Specimen Dimensions (in)		Loading Area (in ²)	Failure Load (lbf)	Compressive Strength	
		Length	Width			(psi)	[MPa]
PP-D-1	Loaded Perpendicular to stone rift plane	2.40	2.33	5.59	129,540	23,170	159.8
PP-D-2		2.31	2.31	5.34	98,430	18,430	127.1
PP-D-3		2.31	2.34	5.40	123,900	22,940	158.2
PP-D-4	Dry Condition	2.33	2.31	5.36	93,470	17,440	120.2
PP-D-5		2.31	2.34	5.39	130,230	24,160	166.6
Series Average						21,230	146.4
Standard Deviation						3,061	21.1
Coefficient of Variation (%)						14.4	14.4

ASTM C170 – Compressive Strength**Test Condition: Wet Condition, Parallel Loading**

Specimen No.	Test Condition	Specimen Dimensions (in)		Loading Area (in ²)	Failure Load (lbf)	Compressive Strength	
		Length	Width			(psi)	[MPa]
LL-W-1	Loaded Parallel to stone rift plane	2.33	2.35	5.49	126,670	23,070	159.1
LL-W-2		2.33	2.36	5.49	106,460	19,390	133.7
LL-W-3		2.34	2.36	5.51	82,890	15,040	103.7
LL-W-4	Wet Condition	2.33	2.36	5.52	96,170	17,420	120.1
LL-W-5		2.38	2.33	5.55	108,700	19,590	135.0
Series Average						18,900	130.3
Standard Deviation						2,966	20.5
Coefficient of Variation (%)						15.7	15.7

ASTM C170 – Compressive Strength**Test Condition: Dry Condition, Parallel Loading**

Specimen No.	Test Condition	Specimen Dimensions (in)		Loading Area (in ²)	Failure Load (lbf)	Compressive Strength	
		Length	Width			(psi)	[MPa]
LL-D-1	Loaded Parallel to stone rift plane	2.30	2.36	5.41	151,300	27,970	192.8
LL-D-2		2.31	2.36	5.44	117,590	21,620	149.0
LL-D-3		2.31	2.36	5.44	107,090	19,690	135.7
LL-D-4	Dry Condition	2.31	2.36	5.47	127,290	23,270	160.4
LL-D-5		2.31	2.36	5.45	127,170	23,330	160.9
Series Average						23,180	159.8
Standard Deviation						3,065	21.1
Coefficient of Variation (%)						13.2	13.2

ASTM C99 – Modulus of Rupture**Test Condition: Wet Condition, Perpendicular Loading**

Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lbf)	Modulus of Rupture	
No.	Test Condition		Width	Depth		(psi)	[MPa]
PP-W-1	Loaded Perpendicular to stone rift plane	7.0	4.16	2.39	5,124	2,260	15.6
PP-W-2			4.16	2.39	7,157	3,170	21.9
PP-W-3			4.15	2.39	5,904	2,620	18.1
PP-W-4	Wet Condition		4.12	2.39	7,445	3,310	22.9
PP-W-5			4.12	2.38	6,575	2,960	20.4
Series Average						2,860	19.8
Standard Deviation						426	2.9
Coefficient of Variation (%)						14.90	14.89

ASTM C99 – Modulus of Rupture**Test Condition: Dry Condition, Perpendicular Loading**

Specimen No.	Test Conditions	Support Span (in)	Specimen Dimensions (in)		Failure Load (lb _f)	Modulus of Rupture	
			Width	Depth		(psi)	[MPa]
PP-D-1	Loaded Perpendicular to stone rift plane	7.0	4.11	2.40	8,251	3,670	25.3
PP-D-2			4.10	2.39	8,264	3,710	25.6
PP-D-3			4.09	2.39	8,456	3,800	26.2
PP-D-4	Dry Condition		4.09	2.40	7,296	3,250	22.4
PP-D-5			4.21	2.39	8,551	3,740	25.8
Series Average						3,630	25.1
Standard Deviation						220	1.5
Coefficient of Variation (%)						6.06	6.07

ASTM C99 – Modulus of Rupture**Test Condition: Wet Condition, Edge Loading**

Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lbf)	Modulus of Rupture	
No.	Test Condition		Width	Depth		(psi)	[MPa]
ED-W-1	Loaded Perpendicular to Edge of rift plane	7.0	4.04	2.37	4,959	2,300	15.8
ED-W-2			4.11	2.33	5,641	2,650	18.2
ED-W-3			4.06	2.28	6,288	3,120	21.5
ED-W-4	Wet Condition		4.11	2.33	4,901	2,320	16.0
ED-W-5			4.06	2.33	6,000	2,850	19.6
Series Average						2,650	18.2
Standard Deviation						351	2.4
Coefficient of Variation (%)						13.25	13.32

ASTM C99 – Modulus of Rupture**Test Condition: Dry Condition, Edge Loading**

Specimen No.	Test Conditions	Support Span (in)	Specimen Dimensions (in)		Failure Load (lb _f)	Modulus of Rupture	
			Width	Depth		(psi)	[MPa]
ED-D-1	Loaded Perpendicular to Edge of rift plane	7.0	4.21	2.32	6,881	3,190	22.0
ED-D-2			4.11	2.38	6,979	3,150	21.7
ED-D-3			4.08	2.20	8,008	4,250	29.3
ED-D-4	Dry Condition		4.18	2.21	7,206	3,690	25.5
ED-D-5			4.02	2.24	8,177	4,260	29.4
Series Average						3,710	25.6
Standard Deviation						543	3.7
Coefficient of Variation (%)						14.64	14.59

ASTM C880 – Flexural Strength**Test Condition: Perpendicular Loading, Wet Condition**

Test Condition: Perpendicular Loading, Wet Condition							
Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lb _f)	Flexural Strength	
No.	Test Condition		Width	Depth		(psi)	[MPa]
PP-W-1	Loaded Perpendicular to stone rift plane	12.5	4.08	1.22	1,761	2,710	18.7
PP-W-2			4.08	1.23	1,674	2,550	17.6
PP-W-3			4.06	1.22	2,009	3,100	21.4
PP-W-4	Wet Condition		4.08	1.23	1,779	2,720	18.8
PP-W-5			4.07	1.22	1,929	2,990	20.6
Series Average						2,810	19.4
Standard Deviation						225	1.5
Coefficient of Variation (%)						8.0	7.9

ASTM C880 – Flexural Strength**Test Condition: Perpendicular Loading, Dry Condition**

Test Condition: Perpendicular Loading, Dry Condition								
Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lb _f)	Flexural Strength		
No.	Test Condition		Width	Depth		(psi)	[MPa]	
PP-D-1	Loaded Perpendicular to stone rift plane	12.5	4.12	1.20	2,329	3,660	25.2	
PP-D-2			4.10	1.22	2,235	3,450	23.8	
PP-D-3			4.08	1.23	2,291	3,480	24.0	
PP-D-4	Dry Condition		4.16	1.22	2,256	3,400	23.4	
PP-D-5			4.12	1.22	1,788	2,730	18.8	
Series Average						3,340	23.1	
Standard Deviation						357	2.5	
Coefficient of Variation (%)						10.7	10.6	

ASTM C880 – Flexural Strength**Test Condition: Edge Loading, Wet Condition**

Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lb _f)	Flexural Strength		
No.	Test Condition		Width	Depth		(psi)	[MPa]	
ED-W-1	Loaded Perpendicular to Edge of rift plane	12.5	4.12	1.18	2,106	3,440	23.7	
ED-W-2			4.06	1.25	1,866	2,750	19.0	
ED-W-3			4.11	1.16	1,803	3,050	21.1	
ED-W-4	Wet Condition		4.06	1.21	2,324	3,700	25.5	
ED-W-5			4.07	1.21	2,031	3,200	22.1	
Series Average						3,230	22.3	
Standard Deviation						364	2.5	
Coefficient of Variation (%)						11.3	11.2	

ASTM C880 – Flexural Strength**Test Condition: Edge Loading, Dry Condition**

Specimen Details		Support Span (in)	Specimen Dimensions (in)		Failure Load (lbf)	Flexural Strength		
No.	Test Condition		Width	Depth		(psi)	[MPa]	
ED-D-1	Loaded Perpendicular to Edge of rift plane	12.5	4.05	1.19	2,173	3,540	24.4	
ED-D-2			4.09	1.19	2,263	3,680	25.4	
ED-D-3			4.06	1.21	2,691	4,220	29.1	
ED-D-4	Dry Condition		4.10	1.23	2,629	3,980	27.4	
ED-D-5			4.08	1.13	1,586	2,870	19.8	
Series Average						3,660	25.2	
Standard Deviation						514	3.6	
Coefficient of Variation (%)						14.0	14.1	

ANSI A326.3 - Dynamic Coefficient of Friction**Ashbourne Sandstone (Honed Finish – Wet Condition)**

Specimen No.	Test Orientation				Wet Condition DCOF
	0°	90°	180°	270°	
W - 1	0.60	0.63	0.63	0.65	0.63
W - 2	0.67	0.65	0.65	0.65	0.66
W - 3	0.63	0.65	0.66	0.63	0.64
Series Average					0.64
Standard Deviation					0.02
Coefficient of Variation (%)					2.9

ASTM C1353 – Abrasion Resistance**Ashbourne Sandstone (Honed Finish)**

Specimen No.	Bulk Specific Gravity †	Mass (g)			Wear Cycles Completed	Index of Abrasion
		Initial	End	Loss		
1	2.57	303.29	300.40	2.89	1,000	32.7
2		328.33	324.25	4.08		23.1
3		331.23	328.35	2.88		32.8
Series Average						29.5
Standard Deviation						5.5
Coefficient of Variation (%)						18.7

† Bulk specific gravity calculated per ASTM C97.

ASTM C1645 – Freeze-Thaw and De-Icing Salt Durability**Ashbourne Sandstone (Thermal Finish)**

Specimen No.	Specimen Facing Area		Collected Residue Mass (g)			Mass Loss g/m ²
	in ²	m ²	7-Day	28-Day	Total	
1	248.79	0.1609	0.09	5.51	5.60	34.9
2			0.07	0.03	0.10	0.6
3			0.16	0.80	0.96	6.0
Series Average						13.8
Standard Deviation						18.4
Coefficient of Variation (%)						133.3
Specimen No.	Visual Evaluation					
1	Minor surficial spalling and corner chipping observed (Primarily at specimen edge facings)					
2	None					
3	Minimal surficial spalling observed (Primarily at specimen edges)					

Conclusion: The test results as presented within this test report reflect the performance of those specimens provided for testing. The average test results for the Ashbourne product were evaluated against the performance criteria presented in ASTM C616, Table 1 (as applicable). The results of these evaluations are presented in the table below.

ASTM C616 Performance Evaluation Summary					
Physical Requirement	Test Series Detail		Result		
			Mean Test Value		Performance Evaluation
C97 Absorption (%): Class I (Sandstone): ≤8.0 Class II (Quartzitic Sandstone): ≤3.0 Class III (Quartzite): ≤1.0			1.64		Meets as Stated: Class I, II
C97 Density: (lbs/ft³, [kg/m³]) Class I (Sandstone): ≥125 [2,000] Class II (Quartzitic Sandstone): ≥150 [2,400] Class III (Quartzite): ≥160 [2,560]			160.4 lbs/ft³	2,569kg/m³	Meets as Stated: Class I, II, III
C170 Compressive Strength: (psi, [MPa]) Class I (Sandstone): ≥4,000 [28] Class II (Quartzitic Sandstone): ≥10,000 [69] Class III (Quartzite): ≥20,000 [138]	Perpendicular	Wet	19,430 psi	134.0 MPa	Meets as Stated: Class I, II
		Dry	21,230 psi	146.4 MPa	Meets as Stated: Class I, II, III
	Parallel	Wet	18,900 psi	130.3 MPa	Meets as Stated: Class I, II
		Dry	23,180 psi	159.8 MPa	Meets as Stated: Class I, II, III
C99 Modulus of Rupture: (psi, [MPa]) Class I (Sandstone): ≥350 [2.4] Class II (Quartzitic Sandstone): ≥1,000 [7] Class III (Quartzite): ≥2,000 [13.8]	Perpendicular	Wet	2,860 psi	19.8 MPa	Meets as Stated: Class I, II, III
		Dry	3,630 psi	25.1 MPa	
	Edge	Wet	2,650 psi	18.2 MPa	
		Dry	3,710 psi	25.6 MPa	
C1353 Abrasion Resistance: H _a ≥10			29.5 H _a		Meets as Stated: Class I, II, III
C880 Flexural Strength*: (psi, [MPa]) N/A	Perpendicular	Wet	2,810 psi	19.4 MPa	Design Property Only
		Dry	3,660 psi	25.2 MPa	
	Edge	Wet	3,23 psi	22.3 MPa	
		Dry	3,340 psi	23.1 MPa	

***Test Methods with no ASTM C616 minimum performance criteria are reported as obtained.**

Conclusion (Cont.):**ASTM C616 – Quartz-based Stone Properties Evaluation**

The Ashbourne product satisfied the ASTM C616 minimum performance requirements for both Class I (Sandstone) and Class II (Quartzitic Sandstone) product for all properties evaluated.

The Ashbourne product further performed at levels appropriate to a Class III (Quartzite) product for Density, Compressive Strength (when tested in dry condition only), Modulus of Rupture, and Abrasion Resistance.

There are no published ASTM C616 performance requirements for ASTM C880 flexural strength for quartz-based stone products, so results are reported as design property only.

ANSI A326.3 Performance Evaluation Summary			
Physical Requirement	Test Series Detail	Result	
		Mean Test Value	Performance Evaluation
ANSI A326.3 - Dynamic Coefficient of Friction (Wet): DCOF ≥ 0.42	Ashbourne (Honed Finish)	0.64	Meet as Stated

The Ashbourne natural stone paver product (Honed Finish) satisfied the ANSI A326.3 recommended minimum performance criteria of 0.42 DCOF for wet condition (Mean Wet Condition DCOF: 0.64).

ASTM C1645 Performance Evaluation Summary				
Physical Requirement	Test Series	Mass Loss Result		Post-Exposure Specimen Condition
		Mean Test Value	ASTM C936 Performance Evaluation	
ASTM C1645 – Freeze-Thaw and De-Icing Salt Durability: Total Mass Loss shall be $\leq 225 \text{ g/m}^2$	Ashbourne (Thermal Finish)	13.8 g/m ²	Meets as Stated	Minor surficial spalling observed at two specimens (Primarily at specimen edge facings) No other deleterious effects observed

The Ashbourne product satisfied the maximum permissible mass loss performance criteria presented in ASTM C936. Two of the three exposure specimens evaluated expressed minor surficial spalling (primarily at edge facings), and overall stone wear/loss was assessed to be minimal. Please refer to photo nos. 23 and 24 for loss visual detail.

It has been our pleasure to provide this product testing service for your project. Please do not hesitate to contact us if you have any questions or require additional information. Contact information is listed below.

Respectfully submitted,



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Revision Log

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