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October 29, 2018

Durango Stone
Mr. Joel Allred
7946 E. McClain Dr.
Scottsdale, AZ 85260

Reference: Ashian Travertine - Vein Cut
Physical Properties Testing

Dear Mr. Allred:

Construction Testing Sciences, LLC (CTS) has completed the laboratory testing of the Ashian Travertine - Vein Cut samples submitted by Durango Stone. This test program included the following tests, performed in accordance with the applicable ASTM test standards.

ASTM C 97, Absorption and Bulk Density of Dimension Stone
ASTM C 99, Modulus of Rupture of Dimension Stone
ASTM C 170, Compressive Strength of Dimension Stone
ASTM C 880, Flexural Strength of Dimension Stone

A summary of the test results is given on the following pages.

This product is also being tested for freeze/thaw durability. The samples will be subjected to 300 cycles of freeze/thaw exposure in accordance with ASTM C 666. Upon completion, results of this test will be issued under separate cover.

We appreciate the opportunity to provide these services and look forward to working with you on this and future projects. If there are any questions concerning the attached test data or we can be of further assistance, please contact us at your convenience.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Jack Gary".

Jack Gary
General Manager





Client: Durango Stone
Material: Ashian Travertine - Vein Cut
Project No.: 101426

Summary of Results

Based on the test results obtained by CTS, the submitted material meets or exceeds the minimum requirement for class I - exterior travertine dimension stone. The table below gives the required values compared to the actual values obtained by CTS.

Test Results			
Physical Property	ASTM C1527 Minimum Requirements	Actual Results	Classification
Absorption by weight, max, %	2.5	1.32	Class I - Exterior
Density, min, lbs/cu ft	144	158.85	Class I - Exterior
Compr. Strength, min, psi	7,500 (Exterior) 5,000 (Interior)	15,148 (Wet) 17,175 (Dry)	Class I - Exterior
Modulus of Rupture	N/A	1,848 (Wet) 1,851 (Dry)	N/A
Flexural Strength	500	1,271 (Wet) 1,388 (Dry)	Class I - Exterior



LIMITATIONS: The test results presented herein were prepared based upon the specific samples provided for testing. We assume no responsibility for variation in quality (composition, appearance, performance, etc.) or any other feature of similar subject matter provided by persons or conditions over which we have no control. Our letters and reports are for the exclusive use of the clients to whom they are addressed and shall not be reproduced except in full without the written approval of



Report of Absorption and Bulk Specific Gravity of Dimension Stone

Client: Durango Stone
Project: Physical Properties Testing
Project No.: 101426

Report No.: 12931
Date of Service: 10/10/18

Material: Ashian Travertine - Vein Cut
Test Method: ASTM C97, Absorption and Bulk Specific Gravity of Dimension Stone
Calculation: Absorption= $((SSD\ Weight - Oven\ Dry\ Weight) / Oven\ Dry\ Weight) \times 100$
 Bulk Specific Gravity= $(Oven\ Dry\ Weight) / (SSD\ Weight - In\ Water\ Weight)$
 Density= $Bulk\ Specific\ Gravity \times 62.4$

Sample Identification	Oven Dry Weight (g)	SSD Weight (g)	In Water Weight (g)	Absorption (percent)	Bulk Specific Gravity	Density (lbs./cu. ft.)
1	299.68	304.49	186.05	1.61	2.53	157.9
2	312.15	315.72	195.09	1.14	2.59	161.5
3	299.77	305.71	186.65	1.98	2.52	157.1
4	303.74	306.70	186.96	0.97	2.54	158.3
5	303.93	306.65	187.75	0.89	2.56	159.5
Average				1.32	2.55	158.85

Technician: K. Scarborough





Report of Modulus of Rupture

Client: Durango Stone **Report No.:** 12931
Project: Physical Properties Testing **Date of Service:** 10/18/18
Project No.: 101426

Material: Ashian Travertine - Vein Cut
Test Method: ASTM C99, Test Method for Modulus of Rupture of Dimension Stone
Calculation: $(3 \times \text{the failure load} \times \text{the span}) / (2 \times \text{width} \times \text{thickness squared})$
Loading: Applied center point with the finished face in tension at 600 psi per minute.
Nominal Dimensions:

Span (inches)	Width (inches)	Thickness (cm)
7	4.0	5.0

Conditioning: Dry: Minimum 48 hours in a heated, ventilated, chamber at 140F (+/-4F)
 Wet: Minimum 48 hours immersion in water at 72F (+/-4F)

Finish: Honed
Rift Direction: Parallel to the direction of loading

Sample Number	Block Number	Dimensions			Failure Load (pounds)	Test Results (psi)
		Span (inches)	Width (inches)	Thickness (inches)		
Wet-1	N/A	7.00	4.04	1.87	2370	1761
Wet-2	N/A	7.00	4.00	1.98	2220	1486
Wet-3	N/A	7.00	4.02	1.91	2240	1604
Wet-4	N/A	7.00	4.01	1.94	2650	1844
Wet-5	N/A	7.00	4.01	1.94	2770	1927
Dry-1	N/A	7.00	4.02	1.88	2420	1788
Dry-2	N/A	7.00	4.05	1.92	1613	1134
Dry-3	N/A	7.00	4.02	1.93	2680	1879
Dry-4	N/A	7.00	4.01	1.93	3020	2123
Dry-5	N/A	7.00	4.02	1.92	2420	1715
Average wet mode:						1725
Standard deviation:						179
Variance:						10.38 %
Average dry mode:						1728
Standard deviation:						366
Variance:						21.18 %
Average wet and dry mode:						1726
Standard deviation:						271
Variance:						15.70 %

Technician: K. Scarborough



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Report of Compressive Strength

Client: Durango Stone **Report No.:** 12931
Project: Physical Properties Testing **Date of Service:** 10/09/18
Project No.: 101426

Material: Ashian Travertine - Vein Cut
Test Method: ASTM C170, Compressive Strength of Dimension Stone
Calculation: Applied Load / (Length x Width)
Loading: Load applied at a maximum rate of 100 psi per second.
Nominal Dimensions:

Length (inches)	Width (inches)	Height (inches)
2	2	2

Conditioning: Dry: Minimum 48 hours in a heated, ventilated, chamber at 140F (+/-4F)
 Wet: Minimum 48 hours immersion in water at 72F (+/-4F)

Finish: Sawn

Rift Direction: Parallel to the direction of loading

Sample Number	Block Number	Dimensions			Failure Load (lbf)	Compressive Strength (psi)
		Length (inches)	Width (inches)	Area (sq. in.)		
Wet 1	N/A	1.96	1.95	3.82	62,420	16,332
Wet 2	N/A	1.96	1.96	3.84	45,630	11,878
Wet 3	N/A	1.95	1.95	3.80	58,310	15,335
Wet 4	N/A	1.95	1.96	3.82	54,710	14,314
Wet 5	N/A	1.96	1.95	3.82	65,160	17,049
Dry 1	N/A	1.93	1.95	3.76	61,560	16,357
Dry 2	N/A	1.96	1.95	3.82	82,890	21,688
Dry 3	N/A	1.96	1.94	3.80	59,040	15,527
Dry 4	N/A	1.94	1.95	3.78	63,940	16,902
Dry 5	N/A	1.94	1.94	3.76	56,930	15,126
Average Wet Mode:						15,148
Standard Deviation						2341
Variance						15.45
Average Dry Mode:						17,175
Standard Deviation						3056
Variance						17.79

Technician: K. Scarborough





Report of Flexural Strength

Client: Durango Stone
Project: Physical Properties Testing
Project No.: 101426

Report No.: 12931
Date of Service: 10/17/18

Material: Ashian Travertine - Vein Cut
Test Method: ASTM C880, Test Method for Flexural Strength of Dimensional Stone
Calculation: (3 x the failure load x the span) / (4 x width x thickness squared)
Loading: Applied quarter point with the finished face in tension at 600 psi per minute.
Nominal Dimensions:

Span (inches)	Width (inches)	Thickness (cm)
12.5	4.0	3.0

Conditioning: Dry: Minimum 48 hours in a heated, ventilated, chamber at 140F (+/-4F)
 Wet: Minimum 48 hours immersion in water at 72F (+/-4F)

Finish: Honed

Rift Direction: Parallel to the direction of loading

Sample Number	Block Number	Dimensions			Failure Load (pounds)	Test Results (psi)
		Span (inches)	Width (inches)	Thickness (inches)		
Wet-1	N/A	12.50	4.01	1.24	889	1352
Wet-2	N/A	12.50	4.02	1.24	867	1315
Wet-3	N/A	12.50	4.02	1.23	964	1486
Wet-4	N/A	12.50	4.01	1.24	697	1060
Wet-5	N/A	12.50	4.01	1.24	753	1145
Dry-1	N/A	12.50	4.01	1.22	856	1345
Dry-2	N/A	12.50	4.01	1.22	904	1420
Dry-3	N/A	12.50	4.00	1.22	788	1241
Dry-4	N/A	12.50	4.02	1.20	757	1226
Dry-5	N/A	12.50	4.01	1.20	1052	1708
Average wet mode:						1271
Standard deviation:						170
Variance:						13.37 %
Average dry mode:						1388
Standard deviation:						196
Variance:						14.12 %
Average wet and dry mode:						1330
Standard deviation:						173
Variance:						13.01 %

Technician: K. Scarborough

