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|||||  
GEORGIA STONE INDUSTRIES INCORPORATED  
15 BRANCH PIKE  
SMITHFIELD RI 02917-1211  
USA

Analysis No. TS-S&T2001816  
Report Date 01 May 2020  
Quarry/Fabricator New England Stone Industry  
Date Sampled 04 April 2020  
Where Sampled Addison, ME USA  
Sample Received 14 April 2020  
Sampled By Client

This is to attest that we have examined Natural Stone Material identified: Addison Black Granite with Water Jet Finish

When examined to the applicable requirements of:

ANSI/NFSI B101.3-2012 "Test Method for Measuring Wet DCOF of Common Hard Surface Floor Materials"

The material has the following average properties:

Sample Identification	Dynamic Coefficient of Friction Wet (DCOF Wet)
Addison Black Granite with Water Jet Finish	0.79 Average

END OF ANALYSIS

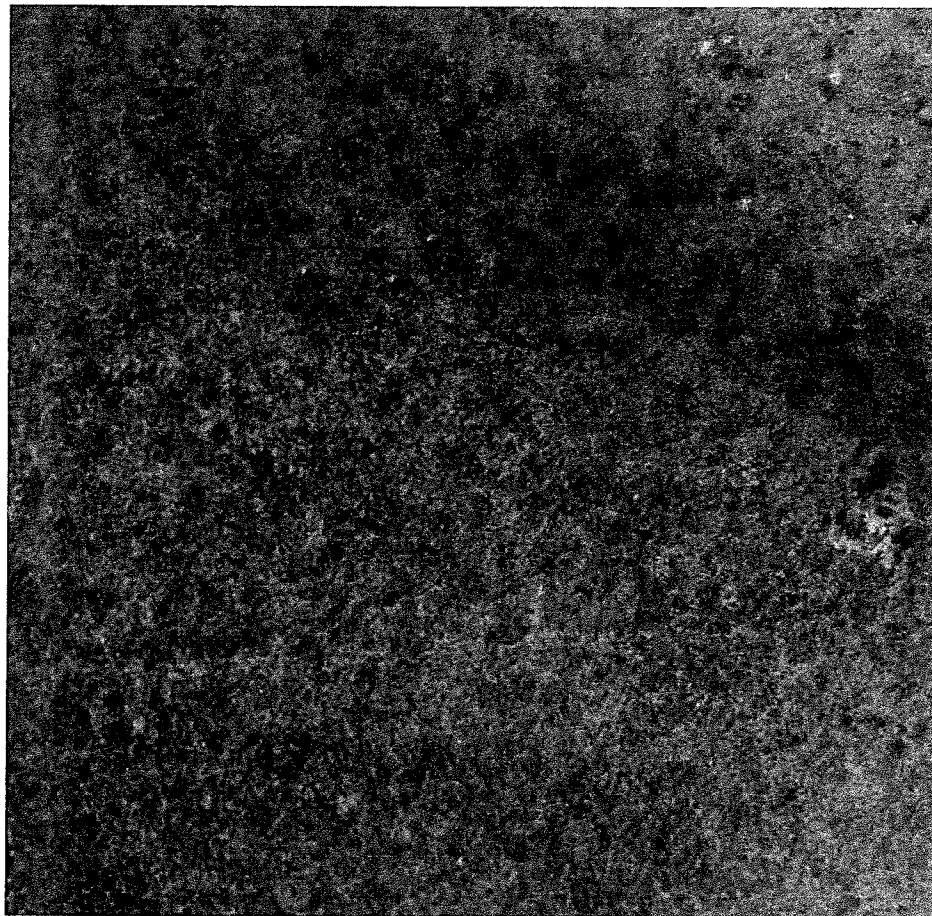
The attached Report of Test is an integral portion of this Summation Certificate.

Frank Strickland – MS-Geology  
Director, Stone & Tile Laboratory

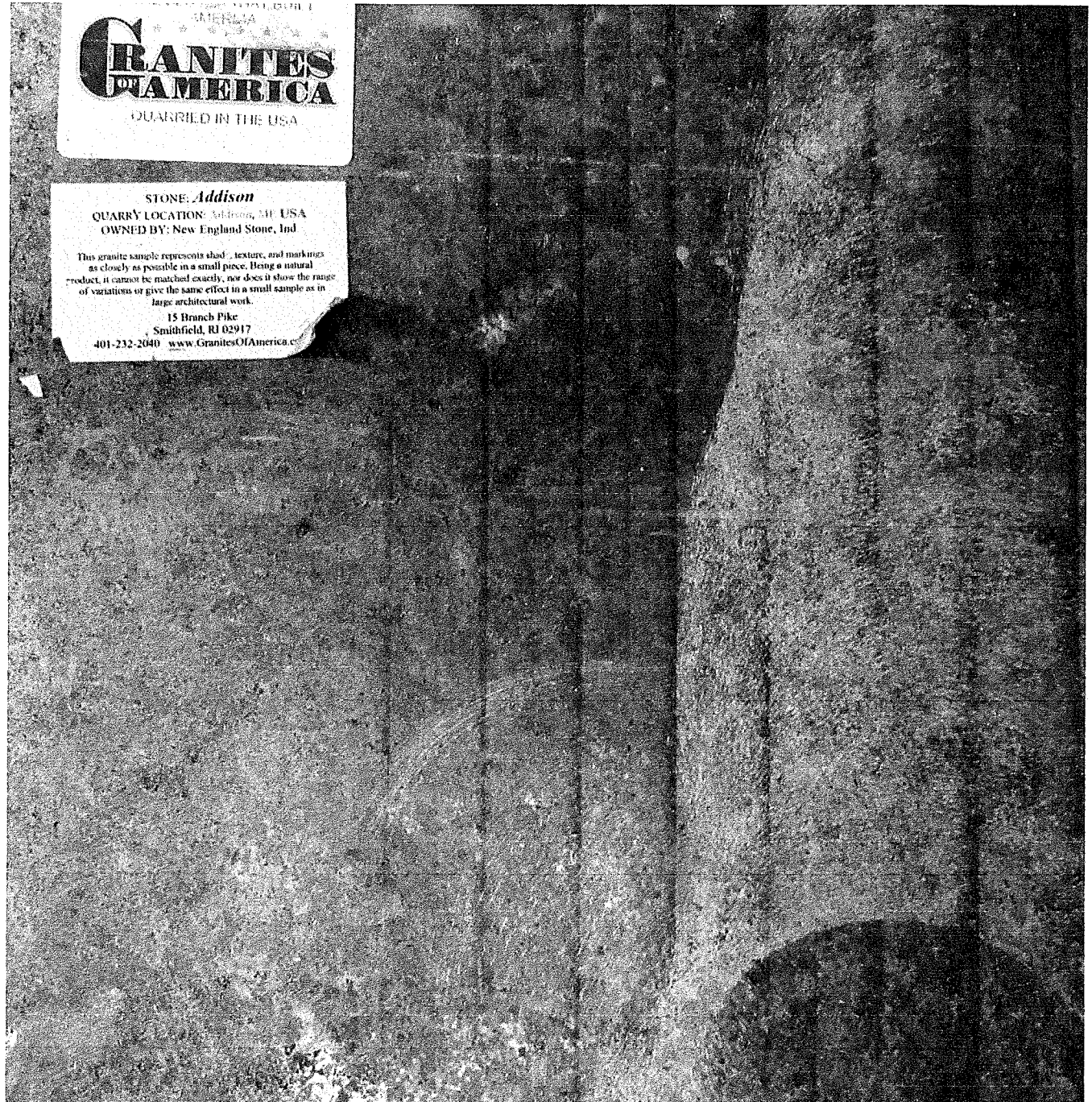
Table 1.

Wet DCOF Value ( $\mu$ D)	Slip Resistance Potential	Action
>0.45 (inclines) >0.42 (level)	High - Lower probability of slipping	Monitor DCOF regularly and maintain cleanliness.
0.30 - 0.45 (inclines) 0.30 - 0.42 (level)	Acceptable - Increased probability of slipping	Monitor DCOF regularly and maintain cleanliness. Consider traction enhancing products and practices where applicable for intended use
< 0.30	Low - Higher probability of slipping	Seek professional intervention. Consider replacing flooring and/or coating with high traction products.

See NOTE in Standard for additional information on Table 1.



Sample as Received  
Finished Side



Sample as Received  
Reverse Side



Sample Under Test



TESTING APPLICANT: Georgia Stone Industries, Incorporated  
15 Branch Pike  
Smithfield, RI 02917-1211  
USA  
TEL: +1 401 232 8225  
FAX: +1  
web-site: granitesofamerica.com

FABRICATOR/QUARRY: New England Stone Industry  
Addison, ME  
USA

SAMPLES RECEIVED DATE: 14 April 2020

SAMPLE PLAN: Natural Stone cut to the sizes stated in the Standards below were received in "NEW" condition. Samples submitted by client.

DATE OF SAMPLING: 04 April 2020

LOCATION OF SAMPLING: Addison, ME USA

SCOPE / PURPOSE OF TESTING: To determine the Dynamic Coefficient of Friction Wet value of Natural Stone Material for use as Floor covering.

STANDARD(S) EVALUATED: ANSI/NFSI B101.3-2012 "Test Method for Measuring Wet DCOF of Common Hard Surface Floor Materials"

TESTING DATE(S): 14 April – 01 May 2020

PRODUCT DESCRIPTION(S): Natural Stone Material identified: Addison Black Granite with Water Jet Finish

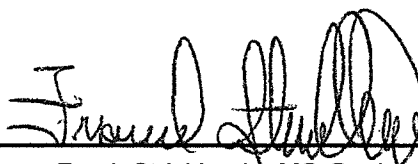
SUMMARY STATEMENT: Natural Stone Material identified above cut to shape as required by the standard(s) listed above:

DCOF – Wet                      0.79 Average

See test results for further details

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Frank Strickland – MS-Geology  
Director, Stone & Tile Laboratory

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## SECTION 1.0 SCOPE/PURPOSE/APPLICATION/EXCEPTION

1.1 Scope - This test method specifies the procedures and devices used for both laboratory and field testing to measure the wet dynamic coefficient of friction (DCOF) of common hard-surface floor materials.

1.2 Purpose - This test method provides a measurement procedure setting forth DCOF ranges which facilitate remediation of walkway surfaces when warranted.

1.3 Application - This test method does not apply to carpeting of any type, however does address the common hard-surfaced flooring materials such as: ceramic and porcelain tile, polished concrete, stone, vinyl floor coverings, wood and synthetic laminates, and such materials with coatings or polishes applied.

Note: Omitted see Standard.

1.4 Exceptions – Omitted see Standard.

## SECTION 2.0 REFERENCE TO OTHER STANDARDS AND PUBLICATIONS – Omitted see Standard

## SECTION 3.0 DEFINITIONS

3.1 Directional Bias - a characteristic of a material whose coefficient of friction measurement may differ depending on the direction in which the material is being tested.

3.2 Dynamic Coefficient of Friction (DCOF) - the ratio of the horizontal component of force applied to a body required to overcome resistance to movement when the body is already in motion divided by the vertical component of the weight of the body or force applied to the surface where movement occurs.

3.3 Dynamic Friction - the resistance opposing the force required to perpetuate the movement of one surface on or over another.

3.4 Friction - resistance to the relative motion of two solid objects in contact. On a level surface, this force is parallel to the plane of contact and is perpendicular to the normal force.

3.5 Grain - a characteristic of many natural materials such as wood that may exhibit directional bias as it relates to slip resistance.

3.7 Incline – A walkway with a maximum slope no greater than 1:12 (4.76 degrees)

3.8 Slip Resistance - the property of a floor or walkway surface that acts in sufficient opposition to those forces and movements exerted by a pedestrian under all normal conditions of human ambulation.

3.9 SBR - Styrene Butadiene Rubber

3.10 Surfactant Solution – A solution employed to reduce the water surface tension when testing on wet hard-surfaced floor materials.

3.11 Test Area - the physical space required for the testing apparatus to perform its primary function.

3.12 Tile Joint - the space between two (2) or more pieces of tile. This space may be filled or unfilled.

3.13 Traction - the friction between the sole material of a shoe and the fixed surface it moves upon.

3.14 Tribometer - an instrument or device specifically designed to measure the available level of traction upon a floor or walkway surface.

3.14.1 Approved Tribometer - a tribometer that is in compliance with the following criteria:

3.14.1.1 The tribometer shall demonstrate reliability and reproducibility in measuring the Dynamic Coefficient of Friction per the NFSI: Inter-Laboratory Study (ILS) for Tribometers Designed to Measure the Wet Dynamic Coefficient of Friction (DCOF) of Common Hard Surfaced Walkways

3.14.1.2 The tribometer manufacturer shall be capable of providing calibration, repair, and maintenance, and a reference tile method for field performance verification, and other services necessary to ensure device reliability.

3.14.1.3 The tribometer shall be capable of providing a digital display of results for DCOF to the hundredths (two positions right of the decimal point) using a scale of 0.00 to 1.00 or greater.

SECTION 4.0 TEST PROCEDURE

This test procedure shall be conducted using an approved tribometer designed to measure the wet dynamic coefficient of friction (DCOF) of a floor or walkway surface under anticipated use. Materials that are excluded from this test method include: sand or gravel beds, pebbles, rough asphalt, any cloth or textile materials, or any surface that would inhibit the normal operation of the testing device.

4.1 Testing Device – The equipment used was in accordance with the requirements of this Section.

4.2 Measuring the Reference Check Tile – The Check Tile was in accordance with the requirements of this Section.

4.3 Measuring the Wet DCOF of Uninstalled Flooring Material (Lab Procedure)

4.3.1 Randomly select three samples of the tiles or test areas under evaluation. Submitted samples shall be sized and formatted to enable laboratory testing of the DCOF.

NOTE: Three samples were used for the testing.

4.3.2 - 4.3.11 – The procedures stated in these Sections were followed without exception.

- If the COV is greater than 0.10 ( $> 0.10$ ), then reject the data set and re-test or correct the testing procedure and/or tribometer as required.

NOTE: The COV value for the sample overall average is 0.014. The COV value for the peak average is 0.017

4.4 Measuring the Wet DCOF of Installed Flooring Material (In-Situ Procedure) – Omitted, Not Conducted on the Samples.

SECTION 5.0 CALCULATIONS/DATA INTERPRETATION

Calculate the test result data in accordance with the testing device manufacturer's directions. The final test results shall be recorded as DCOF values on a linear scale from 0.00 to 1.00  $\mu$ D.



Table 1.

Wet DCOF Value ( $\mu$ D)	Slip Resistance Potential	Action
>0.45 (inclines) >0.42 (level)	High - Lower probability of slipping	Monitor DCOF regularly and maintain cleanliness.
0.30 - 0.45 (inclines) 0.30 - 0.42 (level)	Acceptable - Increased probability of slipping	Monitor DCOF regularly and maintain cleanliness. Consider traction enhancing products and practices where applicable for intended use
< 0.30	Low - Higher probability of slipping	Seek professional intervention. Consider replacing flooring and/or coating with high traction products.

NOTE: It is important to note that these categories are not indicative of all possible conditions. There are numerous variables that may add to, or take from the available slip resistance potential of any given floor surface. (ie: type or style of footwear, types and frequency contaminants, pedestrian preoccupation, etc). These ranges were established based on research done in Europe utilizing empirical and mathematical techniques and were validated in the laboratory and field through extensive testing with the following standardized methods: DIN 13287 - BST Tester; DIN 51130 - German Ramp; DIN 51131 - GMG 200 Tester. These values would be applicable to other test methods or devices which can produce an R correlation of greater than 0.80 to one of these three reference standards. . Data produced by tribometers which are not designed to measure wet DCOF do not necessarily correlate to the values listed in Table 1.

SECTION 6.0 TEST REPORT – Omitted, see details in RESULTS

SECTION 7.0 SAFETY & ENVIRONMENTAL INFORMATION – Omitted see Standard

APPENDIX A – Omitted see Standard

ATTACHMENT A – Omitted see Standard

ATTACHMENT B – Omitted see Standard

ATTACHMENT C – Omitted see Standard

## RESULTS

### Finished Surface – Overall Average

Sample No. 1				
Reading	0°	180°	270°	90°
1	0.77	0.78	0.81	0.80
2	0.76	0.78	0.81	0.79
3	0.79	0.78	0.80	0.79
4	0.77	0.81	0.80	0.79
5	0.77	0.81	0.80	0.78

Sample No. 2				
Reading	0°	180°	270°	90°
1	0.79	0.79	0.79	0.79
2	0.79	0.8	0.79	0.78
3	0.79	0.79	0.79	0.79
4	0.80	0.79	0.79	0.79
5	0.79	0.78	0.78	0.78

Sample No. 3				
Reading	0°	180°	270°	90°
1	0.80	0.80	0.79	0.79
2	0.80	0.80	0.78	0.77
3	0.80	0.80	0.79	0.78
4	0.80	0.79	0.78	0.79
5	0.81	0.80	0.79	0.79

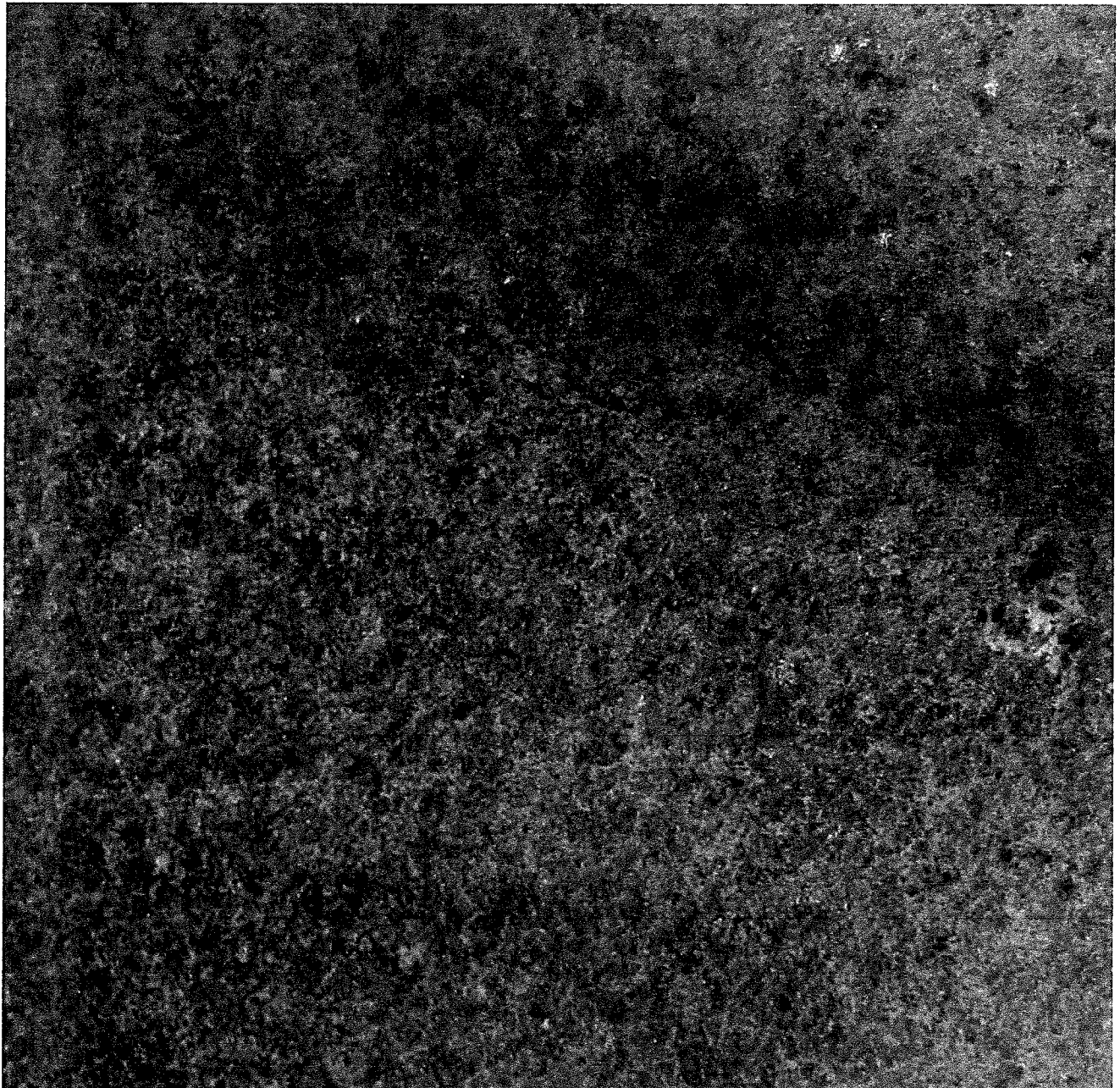
DCOF – Wet 0.790

NOTE: Prior to testing the equipment was tested for accuracy using Reference tile.  
The equipment was within +1% of the stated value of the Reference tile.  
The Coefficient of Variation (COV) of the testing is 0.014  
Sample Standard Deviation 0.011

CONCLUSION: Dynamic Coefficient of Friction Wet results are:

Finished Surface      Overall Average      0.79

END OF ANALYSIS

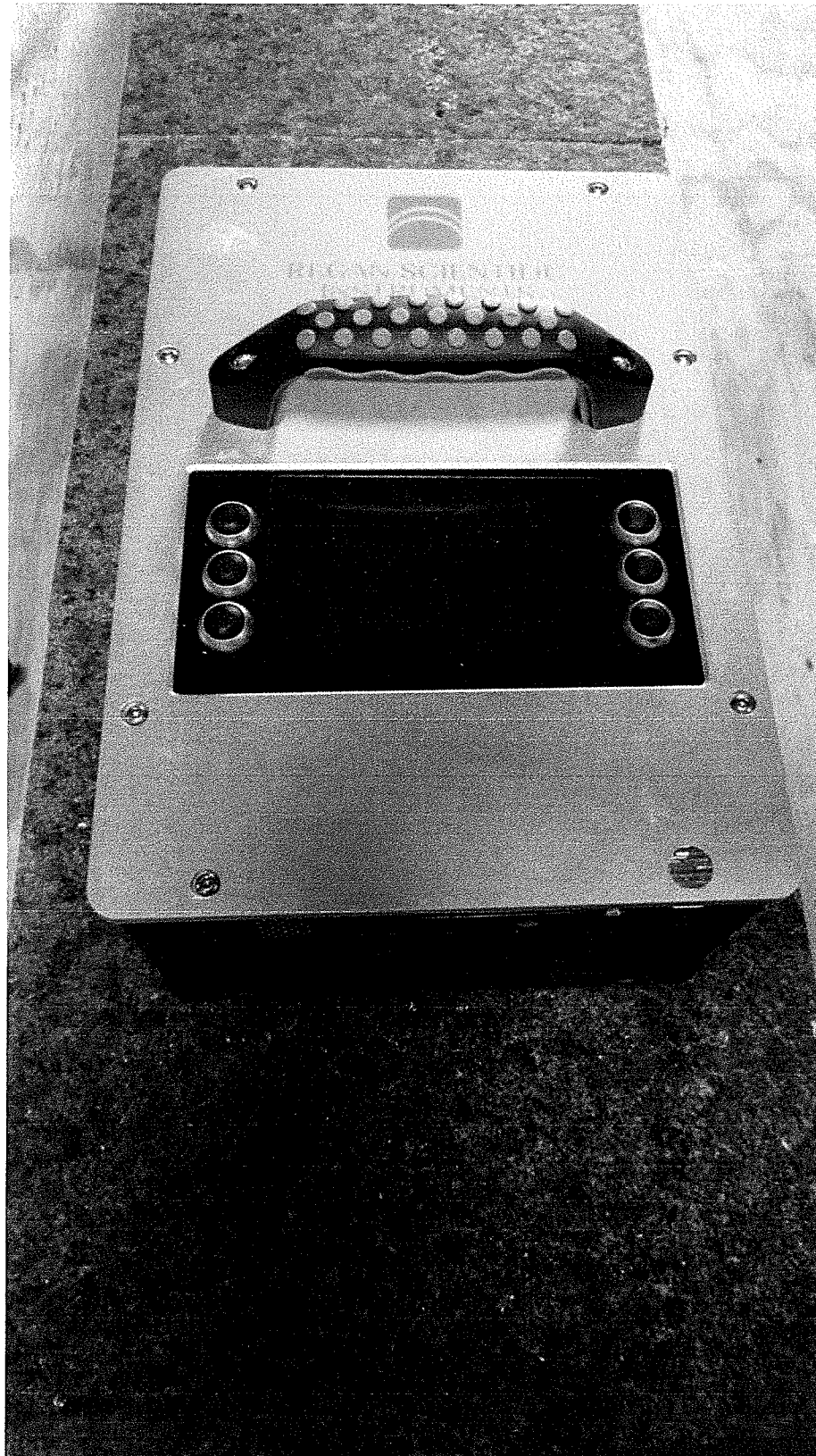


Sample as Received  
Finished Side



Sample as Received  
Reverse Side





Sample Under Test

TESTING APPLICANT: Georgia Stone Industries, Incorporated  
15 Branch Pike  
Smithfield, RI 02917-1211  
USA  
TEL: +1 401 232 8225  
FAX: +1  
web-site: granitesofamerica.com

FABRICATOR/QUARRY: New England Stone Industry  
Addison, ME  
USA

SAMPLES RECEIVED DATE: 14 April 2020

SAMPLE PLAN: Natural Stone cut to the sizes stated in the Standards below were received in "NEW" condition. Samples submitted by client.

DATE OF SAMPLING: 04 April 2020

LOCATION OF SAMPLING: Rapidan, VA USA

SCOPE / PURPOSE OF TESTING: To determine compliance with ASTM C 615-18 "Standard Specification for Granite Dimension Stone"

STANDARD(S) EVALUATED: ASTM C 97-18, ASTM C 99-18, ASTM C 170-17, ASTM C 241-15<sup>1</sup> "and ASTM C 880-18 "Standard Test Method for Flexural Strength of Dimension Stone

TESTING DATE(S): 14 April – 15 May 2020

PRODUCT DESCRIPTION(S): Natural Stone Material identified: Jet Mist Granite with Water Jet Finish

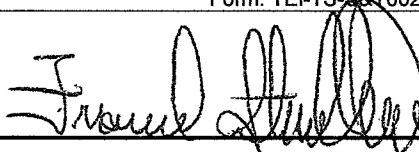
SUMMARY STATEMENT: Natural Stone identified above cut to shape as required by the standards listed above:

Average % Absorption	0.16
Average Bulk Specific Gravity (3 044 kg/m <sup>3</sup> )	189.9 lbs/ft <sup>3</sup>
Modulus of Rupture Perpendicular – Dry	5 500 psi
Compressive Strength Perpendicular – Dry	31 100 psi
Abrasion Resistance	29.3 Ha
Flexural Strength Perpendicular – Dry	5 400 psi
See test results for further details	

<sup>1</sup>NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353

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Frank Strickland – MS-Geology  
Director, Stone & Tile Laboratory



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**ASTM C 97**

**"Standard Test Methods for Absorption and Bulk Specific Gravity of Dimensional Stone"**

**1.0 SCOPE**

1.1 These test methods cover the tests for determining the absorption and bulk specific gravity of all types of dimension stone, except slate.

1.2 – 1.3 Omitted, see Standard

**2.0 REFERENCED DOUCMENTS – Omitted, see Standard**

**3.0 TERMINOLOGY**

3.1 Definitions - All definitions are in accordance with Terminology C 119.

**4.0 SIGNIFICANCE AND USE**

4.1 These test methods are useful in indicating the differences in absorption between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

**ABSORPTION**

**5.0 SAMPLING – Omitted, see Standard**

NOTE: Sampling was done by the Client.

**6.0 TEST SPECIMENS – Omitted, see Standard**

NOTE: The test specimens were tested "As Received". See RESULTS

**7.0 PROCEDURE – Omitted, see Standard**

NOTE: The specimens were tested in accordance with the requirements of this Section

**8.0 CALCULATION**

8.1 Calculate the weight percentage absorption for each specimen as follows:

$$\text{Absorption, weight \%} = [(B-A)/A] \times 100$$

where A = weight of the dried specimen, and  
B = weight of the specimen after immersion

**9.0 REPORT – Omitted, see Standard and RESULTS**

## BULK SPECIFIC GRAVITY

10.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the requirements of this Section

## 11.0 CALCULATION

11.1 Calculate the bulk specific gravity as follows:

$$\text{Bulk specific gravity} = \frac{A}{(B-C)}$$

where: A = weight of the dried specimen,  
B = weight of the soaked and surface dried specimen in air,  
C = weight of soaked specimen in water.

11.2 Calculate the results to three decimal places and round off to two. Report the Average, Maximum and Minimum values.

12.0 REPORT – Omitted, see Standard and RESULTS

13.0 PRECISION AND BIAS – Omitted, see Standard

14.0 KEYWORDS – Omitted, see Standard

## RESULTS

Results – As Received						
Sample	Dry Weight	Soaked/Dried Weight	Wet Weight	% Absorption	Bulk Specific Gravity X 1 000	Bulk Specific Gravity X 62.4
A	379.38	380.28	254.68	0.2372	3020.5	188.5
B	378.82	379.39	254.87	0.1505	3042.2	189.8
C	379.86	380.43	255.79	0.1501	3047.7	190.2
D	381.81	382.36	258.19	0.1441	3074.9	191.9
E	374.23	374.73	251.37	0.1336	3033.6	189.3

Average % Absorption – 0.1631

Average Bulk Specific Gravity – 3044 kg/m<sup>3</sup>  
189.9 lb/ft<sup>3</sup>

ASTM C 99  
"Standard Test Methods for Modulus of Rupture of Dimensional Stone"

1.0 SCOPE

1.1 This test method covers the determination of the modulus of rupture of all types of dimensional stone except slate.

1.2 - 1.3 Omitted, see Standard

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in modulus of rupture between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine – Omitted, see Standard

NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 MARKING AND MEASURING SPECIMENS – Omitted, see Standard

NOTE: The Specimens were measured and marked in accordance with the requirements of this Section.

9.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

10.0 PROCEDURE – Omitted, see Standard

NOTE: The procedures outlined were followed without exception in accordance with the requirements of this Section.

## 11.0 CALCULATION

11.1 Calculate the modulus of rupture of each specimen as follows:

$$R = \frac{3Wl}{2bd^2}$$

where R = modulus of rupture, psi  
W = breaking load, lbf  
l = length of span, in.  
b = width of specimen, in. and  
d = thickness of specimen, in.

12.0 REPORT – Omitted, see Standard and RESULTS

13.0 PRECISION AND BIAS – Omitted, see Standard

14. KEYWORDS – Omitted, see Standard

## RESULTS

Perpendicular to Rift – Dry					
Sample	Length	Width	Thickness	Load (lbf)	Modulus of Rupture (psi)
A	7.000	4.103	1.960	8 250	5 496
B	7.000	4.087	1.975	8 260	5 440
C	7.000	4.070	1.972	8 275	5 490
D	7.000	4.087	1.957	8 295	5 564
E	7.000	4.069	1.969	8 240	5 485

Average Modulus of Rupture Perpendicular to Rift - Dry – 5 495 psi

ASTM C 170  
"Standard Test Methods for Compressive Strength of Dimensional Stone"

1.0 SCOPE

1.1 This test method covers the sampling, preparation of specimens, and determination of the compressive strength of dimensional stone.

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in compressive strength between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 CONDITIONING

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

9.0 PROCEDURE

NOTE: The specimens were tested in accordance with the requirements of this Section.

10.0 CALCULATION

10.1 Calculate the compressive strength for each specimen as follows:

$$C = \frac{W}{A}$$

where C = compressive strength of the specimen, psi  
W = total load, lbf on the specimen at failure, and  
A = calculated area of the bearing surface in in<sup>2</sup>.

Round each individual result to the nearest 100 psi.

11.0 REPORT – Omitted, see Standard and RESULTS



12.0 PRECISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

## RESULTS

Perpendicular to Rift – Dry					
Sample	Length	Width	Thickness	Load (lbf)	Compressive Strength (psi)
A	1.981	1.991	2.023	120 542	30 562
B	1.992	1.951	2.031	116 545	29 988
C	1.995	1.985	2.033	118 541	29 934
D	1.993	1.980	2.037	119 285	30 228
E	1.991	1.992	2.041	118 258	29 817

Average Compressive Strength Perpendicular Dry – 30 106 psi

ASTM C 241  
"Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic"

1.0 SCOPE

1.1 This test method covers the determination of the abrasion resistance of all types of stones for floors, steps, and similar uses where the wear is caused by the abrasion of foot traffic.

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in abrasion resistance between the various building stones. This test method also provides one element in comparing stones of the same type.

5.0 APPARATUS – Omitted, see Standard

NOTE: The Equipment used is in accordance with the Requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: The sample used to prepare the specimens was in accordance with the Requirements of this Section. The sample was selected by the Quarry and/or Client for testing.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The specimens used were in accordance with the Requirements of this Section. The specimens were prepared by the Quarry and/or Client for testing.

8.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned prior to testing in accordance with the Requirements of this Section.

9.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the Procedure stated in this Section, without deviation.

10.0 CALCULATION

10.1 Calculate the abrasion resistance of each specimen as follows:

$$Ha = \frac{10G(2000 + Ws)}{2000Wa}$$

where:

G = bulk specific gravity of the sample

Ws = average weight of the specimen (original weight plus final weight divided by 2)

Wa = loss of weight during the grinding operation.

11.0 REPORT – Omitted, see Standard and RESULTS

12.0 PRECISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

## RESULTS

Tested Dry					
Sample	Beginning Weight	Ending Weight	Weight Loss	Bulk Specific Gravity	Abrasion Resistance (Ha)
a	410.52	409.27	1.25	3.044	29.34
b	407.55	406.31	1.24		29.54
c	348.24	347.01	1.23		29.05

The tests were conducted at 32% Relative Humidity @ 72 °F

Average Abrasion Resistance = 29.3

ASTM C 880  
"Standard Test Method for Flexural Strength of Dimension Stone"

1.0 SCOPE

1.1 This test method covers the procedure for determining the flexural strength of stone by use of a simple beam using quarter-point loading.

1.2 Stone test shall be made when pertinent for the situation when the load is perpendicular to the bedding plane and when the load is parallel to the bedding plane.

1.3 As required, the flexural tests shall also be conducted under wet conditions.

1.4 Omitted, see Standard

2.0 REFERENCE DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in flexural strength between the various dimension stones. This test method also provides one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine – Omitted, see Standard

NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

9.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the requirements of this Section.

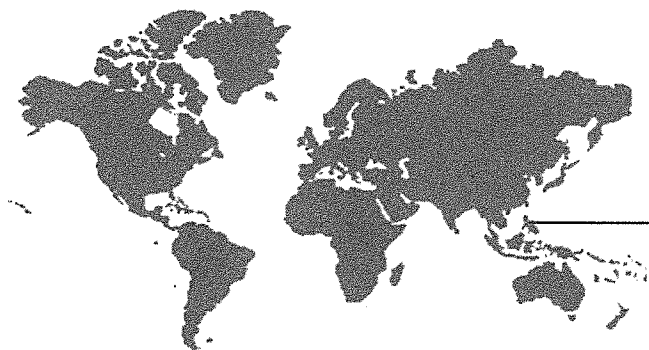
Requirements for Granite According to ASTM C 615

Physical Property	Test Requirement	Test Method(s)
Average % Absorption (Max.)	0.40	C 97
Average Density lbs/ft <sup>3</sup> (kg/m <sup>3</sup> ) (Min.)	160.0 (2 560)	C 97
Modulus of Rupture psi (MPa) (Min.)	1 500 (10.34)	C 99
Compressive Strength psi (MPa) (Min.)	19 000 (131)	C 170
Abrasion Resistance (Min.)	25 Ha	C 241 / C 1353
Flexural Strength psi (MPa) (Min.)	1 200 (8.27)	C 880



Sample as Received





# TEI Testing Services<sup>sm</sup>

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|||||  
GEORGIA STONE INDUSTRIES INCORPORATED  
15 BRANCH PIKE  
SMITHFIELD RI 02917-1211  
USA

Analysis No. TS-S&T2001820  
Report Date 15 May 2020  
Quarry/Fabricator New England Stone Industry  
Date Sampled 04 April 2020  
Where Sampled Addison, ME USA  
Sample Received 14 April 2020  
Sampled By Client

This is to attest that we have examined Natural Stone Material identified: Addison Black Granite with Water Jet Finish

When examined to the applicable requirements of:

ASTM C 97-18	"Standard Test Method for Absorption and Bulk Specific Gravity of Dimensional Stone"
ASTM C 99-18	"Standard Test Method for Modulus of Rupture of Dimensional Stone"
ASTM C 170-17	"Standard Test Method for Compressive Strength of Dimensional Stone"
ASTM C 241-15 <sup>1</sup>	"Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic"
ASTM C 880-18	"Standard Test Method for Flexural Strength of Dimension Stone"

The material has the following average properties:

Average % Absorption	0.12
Average Bulk Specific Gravity	187.8 lbs/ft <sup>3</sup> 3 009 kg/m <sup>3</sup>

Modulus of Rupture Perpendicular	Dry	4 600 psi
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Compressive Strength Perpendicular	Dry	26 200 psi
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Abrasion Resistance	30.2 Ha
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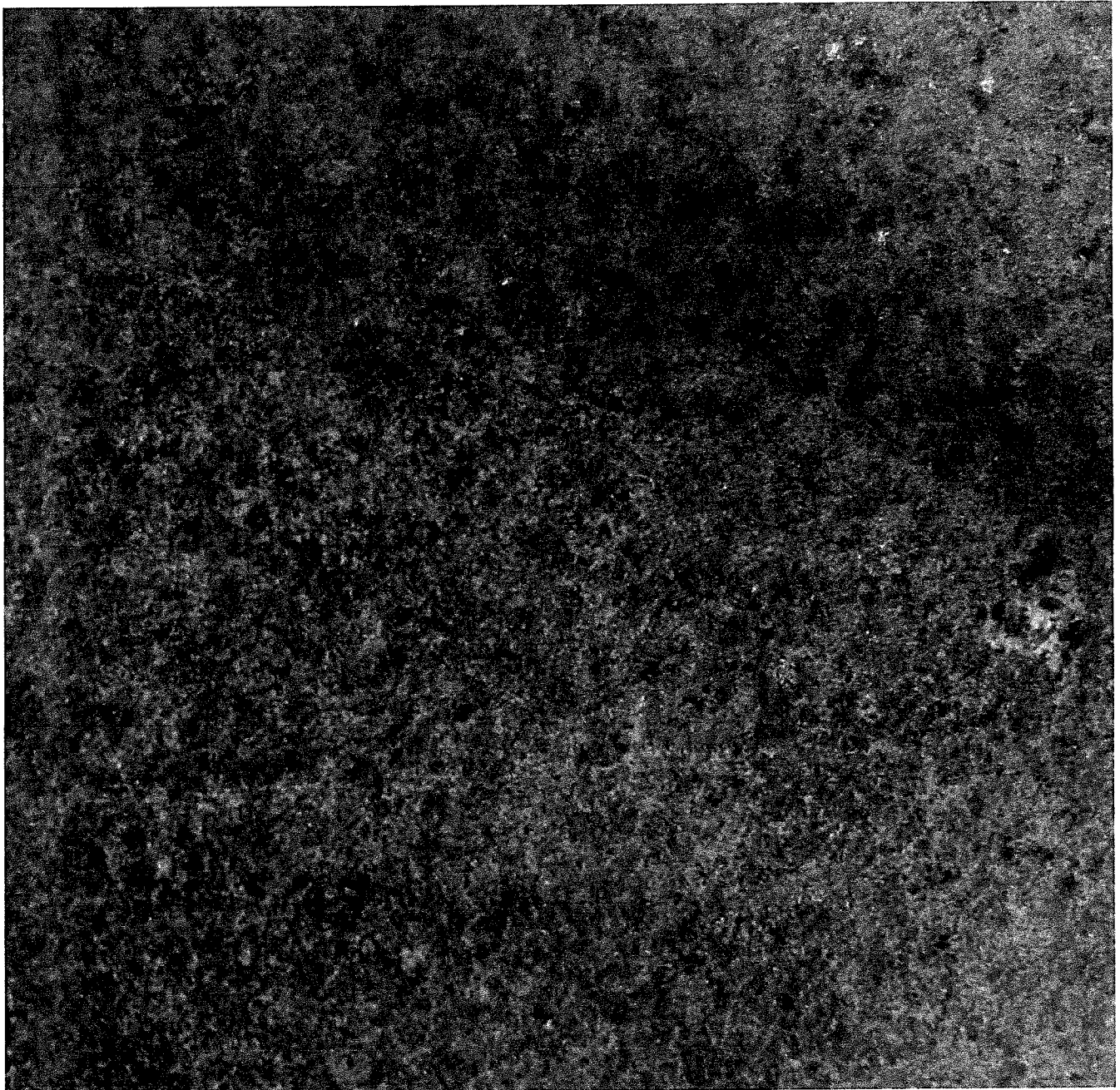
<sup>1</sup>NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353

Flexural Strength Perpendicular	Dry	4 400 psi
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END OF ANALYSIS

The attached Report of Test is an integral portion of this Summation Certificate.

Frank Strickland – MS-Geology  
Director, Stone & Tile Laboratory



Sample as Received

TESTING APPLICANT: Georgia Stone Industries, Incorporated  
15 Branch Pike  
Smithfield, RI 02917-1211  
USA  
TEL: +1 401 232 8225  
FAX: +1  
web-site: granitesofamerica.com

FABRICATOR/QUARRY: New England Stone Industry  
Addison, ME  
USA

SAMPLES RECEIVED DATE: 14 April 2020

SAMPLE PLAN: Natural Stone cut to the sizes stated in the Standards below were received in "NEW" condition. Samples submitted by client.

DATE OF SAMPLING: 04 April 2020

LOCATION OF SAMPLING: Addison, ME USA

SCOPE / PURPOSE OF TESTING: To determine compliance with ASTM C 615-18 "Standard Specification for Granite Dimension Stone"

STANDARD(S) EVALUATED: ASTM C 97-18, ASTM C 99-18, ASTM C 170-17, ASTM C 241-15<sup>1</sup> "and ASTM C 880-18 "Standard Test Method for Flexural Strength of Dimension Stone

TESTING DATE(S): 14 April – 15 May 2020

PRODUCT DESCRIPTION(S): Natural Stone Material identified: Addison Black Granite with Water Jet Finish

SUMMARY STATEMENT: Natural Stone identified above cut to shape as required by the standards listed above:

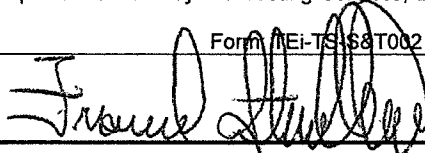
Average % Absorption	0.12
Average Bulk Specific Gravity (3 009 kg/m <sup>3</sup> )	187.8 lbs/ft <sup>3</sup>
Modulus of Rupture Perpendicular – Dry	4 600 psi
Compressive Strength Perpendicular – Dry	26 200 psi
Abrasion Resistance	30.2 Ha
Flexural Strength Perpendicular – Dry	4 400 psi

See test results for further details

<sup>1</sup>NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353

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Frank Strickland – MS-Geology  
Director, Stone & Tile Laboratory

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**ASTM C 97**

**"Standard Test Methods for Absorption and Bulk Specific Gravity of Dimensional Stone"**

**1.0 SCOPE**

1.1 These test methods cover the tests for determining the absorption and bulk specific gravity of all types of dimension stone, except slate.

1.2 – 1.3 Omitted, see Standard

**2.0 REFERENCED DOUCMENTS – Omitted, see Standard**

**3.0 TERMINOLOGY**

3.1 Definitions - All definitions are in accordance with Terminology C 119.

**4.0 SIGNIFICANCE AND USE**

4.1 These test methods are useful in indicating the differences in absorption between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

**ABSORPTION**

**5.0 SAMPLING – Omitted, see Standard**

NOTE: Sampling was done by the Client.

**6.0 TEST SPECIMENS – Omitted, see Standard**

NOTE: The test specimens were tested "As Received". See RESULTS

**7.0 PROCEDURE – Omitted, see Standard**

NOTE: The specimens were tested in accordance with the requirements of this Section

**8.0 CALCULATION**

8.1 Calculate the weight percentage absorption for each specimen as follows:

$$\text{Absorption, weight \%} = [(B-A)/A] \times 100$$

where A = weight of the dried specimen, and  
B = weight of the specimen after immersion

**9.0 REPORT – Omitted, see Standard and RESULTS**

## BULK SPECIFIC GRAVITY

10.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the requirements of this Section

## 11.0 CALCULATION

11.1 Calculate the bulk specific gravity as follows:

$$\text{Bulk specific gravity} = \frac{A}{(B-C)}$$

where: A = weight of the dried specimen,  
B = weight of the soaked and surface dried specimen in air,  
C = weight of soaked specimen in water.

11.2 Calculate the results to three decimal places and round off to two. Report the Average, Maximum and Minimum values.

12.0 REPORT – Omitted, see Standard and RESULTS

13.0 PRECISION AND BIAS – Omitted, see Standard

14.0 KEYWORDS – Omitted, see Standard

## RESULTS

Results – As Received						
Sample	Dry Weight	Soaked/Dried Weight	Wet Weight	% Absorption	Bulk Specific Gravity X 1 000	Bulk Specific Gravity X 62.4
A	397.70	397.90	266.35	0.0503	3032.2	188.6
B	411.95	412.43	274.62	.01165	2989.3	186.5
C	414.43	415.29	268.64	0.0275	2826.0	176.3
D	401.84	402.35	276.41	0.1269	3190.7	199.1
E	396.03	396.40	265.09	0.0934	3016.0	188.2

Average % Absorption – 0.1189

Average Bulk Specific Gravity – 3009.0 kg/m<sup>3</sup>  
187.8 lb/ft<sup>3</sup>

ASTM C 99  
"Standard Test Methods for Modulus of Rupture of Dimensional Stone"

1.0 SCOPE

1.1 This test method covers the determination of the modulus of rupture of all types of dimensional stone except slate.

1.2 - 1.3 Omitted, see Standard

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in modulus of rupture between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine – Omitted, see Standard

NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 MARKING AND MEASURING SPECIMENS – Omitted, see Standard

NOTE: The Specimens were measured and marked in accordance with the requirements of this Section.

9.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

10.0 PROCEDURE – Omitted, see Standard

NOTE: The procedures outlined were followed without exception in accordance with the requirements of this Section.

## 11.0 CALCULATION

11.1 Calculate the modulus of rupture of each specimen as follows:

$$R = \frac{3Wl}{2bd^2}$$

where R = modulus of rupture, psi  
W = breaking load, lbf  
l = length of span, in.  
b = width of specimen, in. and  
d = thickness of specimen, in.

12.0 REPORT – Omitted, see Standard and RESULTS

13.0 PRECISION AND BIAS – Omitted, see Standard

14. KEYWORDS – Omitted, see Standard

## RESULTS

Perpendicular to Rift – Dry					
Sample	Length	Width	Thickness	Load (lbf)	Modulus of Rupture (psi)
A	7.000	3.976	2.007	6 958	4 564
B	7.000	3.958	2.017	7 211	4 702
C	7.000	3.873	2.003	6 818	4 610
D	7.000	3.849	2.006	6 750	4 578
E	7.000	3.966	2.000	6 510	4 309

Average Modulus of Rupture Perpendicular to Rift - Dry – 4 553 psi



ASTM C 170  
"Standard Test Methods for Compressive Strength of Dimensional Stone"

1.0 SCOPE

1.1 This test method covers the sampling, preparation of specimens, and determination of the compressive strength of dimensional stone.

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in compressive strength between the various dimension stones. These test methods also provide one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 CONDITIONING

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

9.0 PROCEDURE

NOTE: The specimens were tested in accordance with the requirements of this Section.

10.0 CALCULATION

10.1 Calculate the compressive strength for each specimen as follows:

$$C = \frac{W}{A}$$

where C = compressive strength of the specimen, psi  
W = total load, lbf on the specimen at failure, and  
A = calculated area of the bearing surface in in<sup>2</sup>.

Round each individual result to the nearest 100 psi.

11.0 REPORT – Omitted, see Standard and RESULTS

12.0 PRECISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

**RESULTS**

Perpendicular to Rift – Dry					
Sample	Length	Width	Thickness	Load (lbf)	Compressive Strength (psi)
A	1.981	1.991	2.023	98 710	25 029
B	1.995	1.951	2.033	103 581	26 612
C	1.995	1.985	2.043	104 511	26 391
D	1.995	1.980	2.037	108 025	27 347
E	1.991	2.043	2.051	104 572	25 708

Average Compressive Strength Perpendicular Dry – 26 217 psi

ASTM C 241  
"Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic"

1.0 SCOPE

1.1 This test method covers the determination of the abrasion resistance of all types of stones for floors, steps, and similar uses where the wear is caused by the abrasion of foot traffic.

2.0 REFERENCED DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in abrasion resistance between the various building stones. This test method also provides one element in comparing stones of the same type.

5.0 APPARATUS – Omitted, see Standard

NOTE: The Equipment used is in accordance with the Requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: The sample used to prepare the specimens was in accordance with the Requirements of this Section. The sample was selected by the Quarry and/or Client for testing.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The specimens used were in accordance with the Requirements of this Section. The specimens were prepared by the Quarry and/or Client for testing.

8.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned prior to testing in accordance with the Requirements of this Section.

9.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the Procedure stated in this Section, without deviation.

10.0 CALCULATION

10.1 Calculate the abrasion resistance of each specimen as follows:

$$Ha = \frac{10G(2000 + Ws)}{2000Wa}$$

where:

G = bulk specific gravity of the sample

Ws = average weight of the specimen (original weight plus final weight divided by 2)

Wa = loss of weight during the grinding operation.

11.0 REPORT – Omitted, see Standard and RESULTS

12.0 PRECISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

## RESULTS

Tested Dry					
Sample	Beginning Weight	Ending Weight	Weight Loss	Bulk Specific Gravity	Abrasion Resistance (Ha)
a	408.76	407.56	1.20	3.009	30.19
b	409.56	408.41	1.15		31.52
c	401.91	400.66	1.25		28.90

The tests were conducted at 32% Relative Humidity @ 72 °F

Average Abrasion Resistance = 30.2

ASTM C 880  
"Standard Test Method for Flexural Strength of Dimension Stone"

1.0 SCOPE

1.1 This test method covers the procedure for determining the flexural strength of stone by use of a simple beam using quarter-point loading.

1.2 Stone test shall be made when pertinent for the situation when the load is perpendicular to the bedding plane and when the load is parallel to the bedding plane.

1.3 As required, the flexural tests shall also be conducted under wet conditions.

1.4 Omitted, see Standard

2.0 REFERENCE DOCUMENTS – Omitted, see Standard

3.0 TERMINOLOGY

3.1 Definitions - All definitions are in accordance with Terminology C 119.

4.0 SIGNIFICANCE AND USE

4.1 This test method is useful in indicating the differences in flexural strength between the various dimension stones. This test method also provides one element in comparing stones of the same type.

5.0 APPARATUS

5.1 Testing Machine – Omitted, see Standard

NOTE: The equipment used is in accordance with the requirements of this Section.

6.0 SAMPLING – Omitted, see Standard

NOTE: Sampling was done by the Client.

7.0 TEST SPECIMENS – Omitted, see Standard

NOTE: The test specimens were tested "As Received". See RESULTS

8.0 CONDITIONING – Omitted, see Standard

NOTE: The specimens were conditioned in accordance with the requirements of this Section. The specimens were tested "Dry", Perpendicular to the Rift.

9.0 PROCEDURE – Omitted, see Standard

NOTE: The specimens were tested in accordance with the requirements of this Section.

## 10.0 CALCULATION

10.1 Calculate the flexural strength,  $\sigma$ , as follows:

$$\sigma = \frac{3WL}{4bd^2}$$

where:  $\sigma$  = flexural strength (psi)  
W = maximum load (lbf)  
L = span, (inches)/10d  
b = width of specimen (inches);  $b \geq 1.5d$   
d = depth of specimen (inches)

11.0 REPORT – Omitted, see Standard and RESULTS

12.0 PERCISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

## RESULTS

Perpendicular Dry					
Sample	Length	Width	Thickness	Load (lbf)	Flexural Strength (psi)
A	13.820	3.975	1.382	3 370	4 601
B	13.720	3.980	1.372	3 256	4 472
C	13.600	4.019	1.360	3 064	4 204
D	14.050	3.978	1.405	3 190	4 281
E	13.570	4.012	1.357	3 332	4 590

Average Flexural Strength Perpendicular - Dry – 4 430 psi

## CONCLUSION:

The material has the following average properties:

Average % Absorption 0.12  
Average Bulk Specific Gravity 187.8 lbs/ft<sup>3</sup>  
3 009 kg/m<sup>3</sup>

Modulus of Rupture Perpendicular Dry 4 600 psi

Compressive Strength Perpendicular Dry 26 200 psi

Abrasion Resistance 30.2 Ha

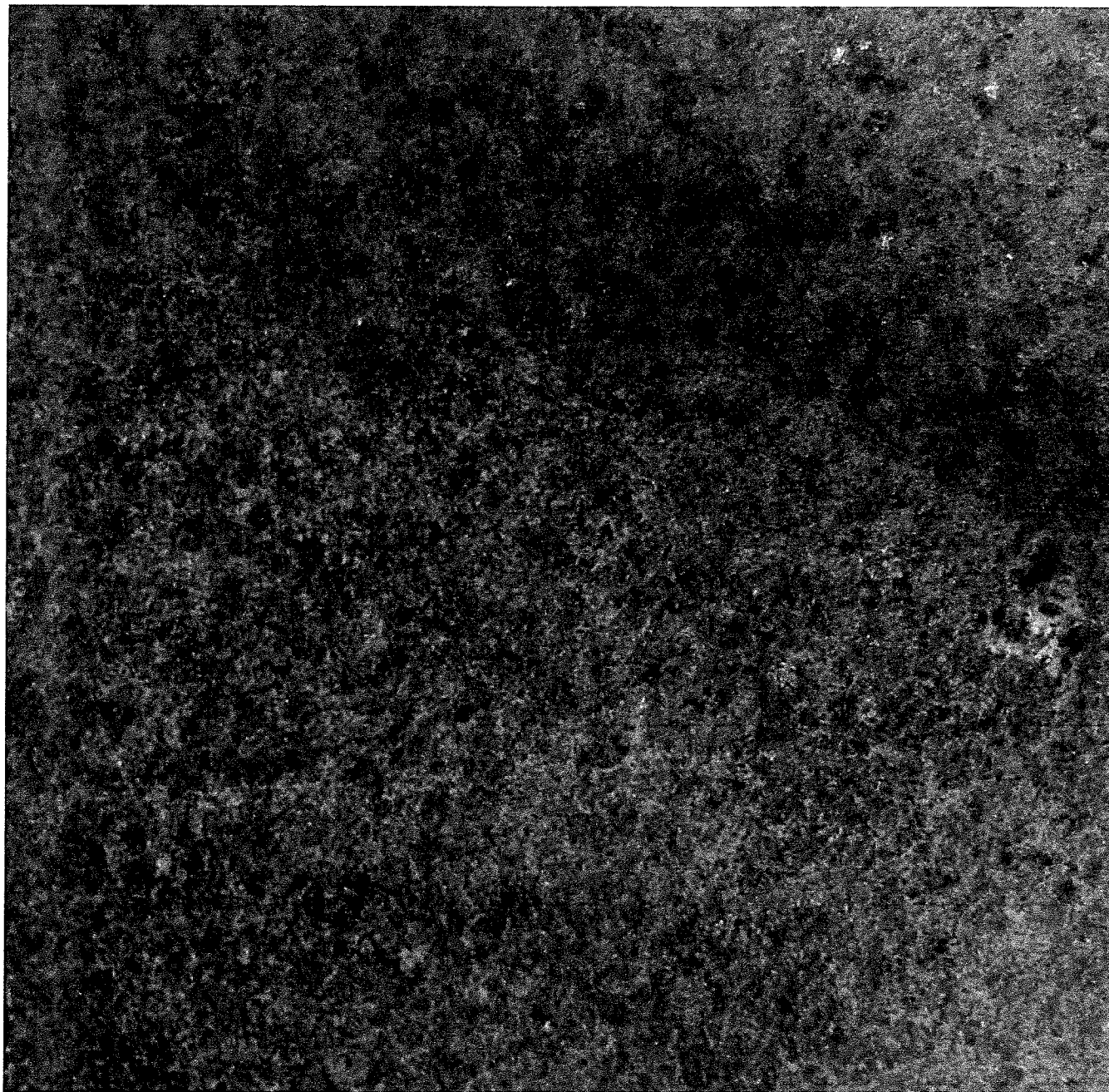
<sup>1</sup>NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353

Flexural Strength Perpendicular Dry 4 400 psi

END OF ANALYSIS

Requirements for Granite According to ASTM C 615

Physical Property	Test Requirement	Test Method(s)
Average % Absorption (Max.)	0.40	C 97
Average Density lbs/ft <sup>3</sup> (kg/m <sup>3</sup> ) (Min.)	160.0 (2 560)	C 97
Modulus of Rupture psi (MPa) (Min.)	1 500 (10.34)	C 99
Compressive Strength psi (MPa) (Min.)	19 000 (131)	C 170
Abrasion Resistance (Min.)	25 Ha	C 241 / C 1353
Flexural Strength psi (MPa) (Min.)	1 200 (8.27)	C 880



Sample as Received