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

| | |
|---|---|
| Analysis No. | TS-S&T2402120 |
| Report Date | 29 August 2024 |
| Quarry/Fabricator | Kitledge Grey |
| Date Sampled | 09 August 2024 |
| Where Sampled | Milford, NH USA |
| Sample Received | 15 August 2024 |
| Sampled By | Client |

This is to attest that we have examined Natural Stone Material identified: Kitledge Grey Granite

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 Dimension Stone" |
| ASTM C 170-17 | "Standard Test Method for Compressive Strength of Dimensional Stone" |
| ASTM C 880-18 | "Standard Test Method for Flexural Strength of Dimension Stone" |
| ASTM C 241-21 | "Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser"[1] |

The Natural Stone identified above has the following average[2] properties:

| | | | | |
|---|---|---|---|---|
| Average % Absorption | | | 0.30 | (5) |
| Average Bulk Specific Gravity | | | 2 638 kg/m$^3$ | (5) |
| | | | 164.6 lbs/ft$^3$ | (5) |
| Modulus of Rupture | Perpendicular | Dry | 2 200 psi | (5) |
| Compressive Strength | Perpendicular | Dry | 22 100 psi | (5) |
| Flexural Strength | Perpendicular | Dry | 2 200 psi | (5) |
| Abrasion Resistance | | | 36.4 Ha | (3) |

END OF ANALYSIS

The attached Report of Test is an Integral part of this Summation Certificate.

[1]NOTE: For Igneous Samples we run ASTM C 241, for Sedimentary and Metamorphic Samples we run ASTM C 1353. [2]Number in Parentheses is Samples tested for the Average

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Director, Stone & Tile Laboratory

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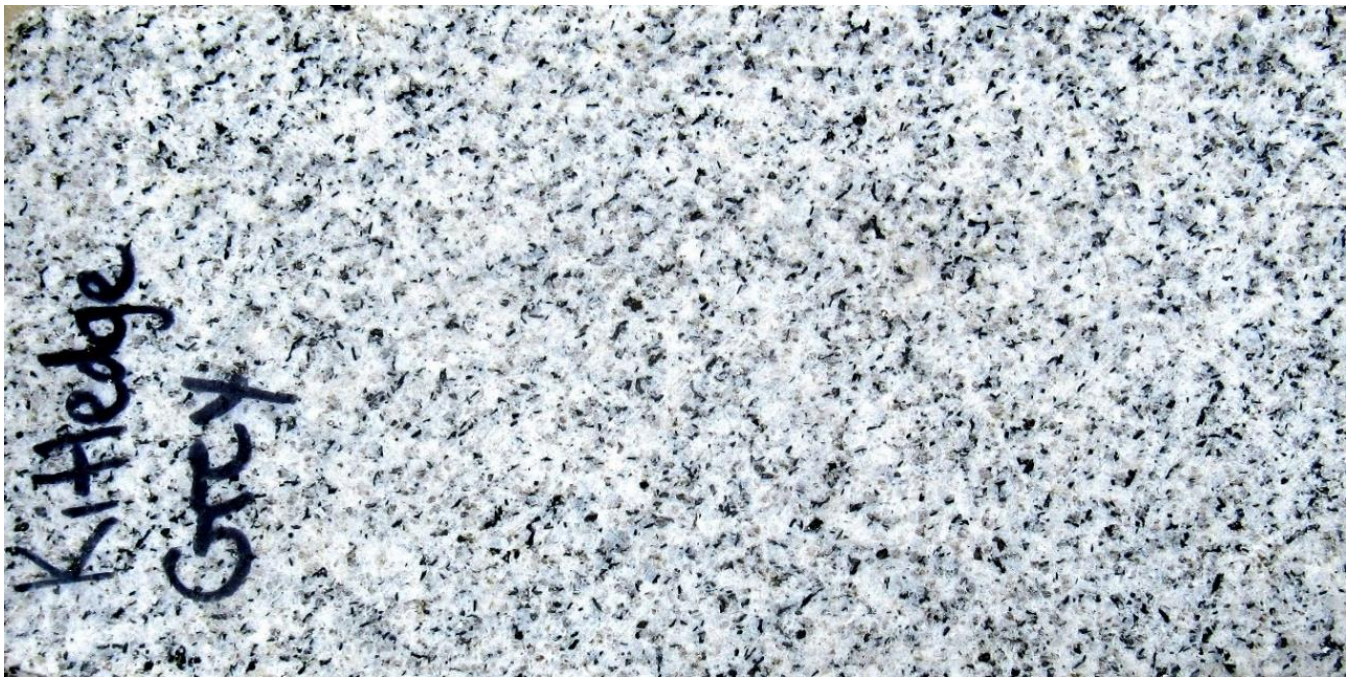
SUMMATION CERTIFICATE




Kitledge Grey Granite as received.

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# TEST REPORT

| | | |
|---|---|---|
| TESTING APPLICANT: | Georgia Stone Industries Incorporated<br>15 Branch Pike<br>Smithfield, RI 02917-1211<br>USA | Phone +1401-232-2040<br>Fax<br>www.granitesofamerica.com |
| FABRICATOR/QUARRY: | Kitledge Grey Quarry<br>Milford NH 03055<br>USA | |
| SAMPLES RECEIVED DATE: | 15 August 2024 | |
| 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: | 09 August 2024 | |
| LOCATION OF SAMPLING: | Milford, NH USA | |
| SCOPE / PURPOSE OF TESTING: | Determine Compliance with the requirements of ASTM C 615/C 615M-18 "Standard Specification for Granite Dimension Stone" | |
| STANDARD(S) EVALUATED: | 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 Dimension Stone", ASTM C 170-17 "Standard Test Method for Compressive Strength of Dimensional Stone", ASTM C 880-18 "Standard Test Method for Flexural Strength of Dimension Stone" ASTM C 241-21 "Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser"[1] | |
| TESTING DATE(S): | 15 – 29 August 2024 | |
| PRODUCT DESCRIPTION(S): | Natural Stone identified: Kitledge Grey Granite | |

COMPLIANCE SUMMARY: Natural Stone identified above has the following average[2] properties: Tested Perpendicular to the Rift

| | | | | |
|---|---|---|---|---|
| Average % Absorption | | | 0.30 | (5) |
| Average Bulk Specific Gravity | | | 2 638 kg/m$^3$ / 164.6 lbs/ft$^3$ | (5) |
| Modulus of Rupture | Perpendicular | Dry | 2 200 psi | (5) |
| Compressive Strength | Perpendicular | Dry | 22 100 psi | (5) |
| Flexural Strength | Perpendicular | Dry | 2 200 psi | (5) |
| Abrasion Resistance | | | 36.4 Ha | (3) |

[1]NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353. [2]Number in Parentheses is Samples tested for the Average.

See Test Results for Further details



Form: TEi-TS-S&T Revision 04/2020

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TEST REPORT

TABLE OF CONTENTS



[1]NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353

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# TEST REPORT

## 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

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TEST REPORT

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 | 402.11 | 403.35 | 250.95 | 0.3084 | 2 639 | 164.6 |
| B | 399.59 | 400.74 | 249.6 | 0.2878 | 2 643.8 | 165.0 |
| C | 402.79 | 403.99 | 251.47 | 0.2979 | 2 640.9 | 164.8 |
| D | 414.77 | 416.03 | 258.36 | 0.3038 | 2 630.6 | 164.2 |
| E | 401.16 | 402.37 | 250.18 | 0.3016 | 2 635.9 | 164.5 |

Average % Absorption – 0.2999

Average Bulk Specific Gravity – 2 638.0 kg/m$^3$ or 164.6 lb/ft$^3$

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TEST REPORT

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

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 MARKING AND MEASURING SPECIMENS

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

9.0 CONDITIONING

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

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

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TEST REPORT

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 Dry | | | | | |
|---|---|---|---|---|---|
| Sample | Length | Width | Thickness | Load (lbf) | Modulus of Rupture (psi) |
| A | 7.000 | 3.992 | 2.287 | 4 475 | 2 250 |
| B | 7.000 | 4.010 | 2.302 | 4 462 | 2 205 |
| C | 7.000 | 3.994 | 2.291 | 4 229 | 2 118 |
| D | 7.000 | 4.006 | 2.309 | 4 180 | 2 055 |
| E | 7.000 | 3.994 | 2.285 | 4 377 | 2 204 |

Average Modulus of Rupture Perpendicular - Dry – 2 166 psi

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# TEST REPORT

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 $in^{2.}$

Round each individual result to the nearest 100 psi.

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TEST REPORT

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) | Compressive Strength (psi) |
| A | 2.029 | 1.997 | 2.316 | 92 476 | 22 823 |
| B | 1.979 | 1.995 | 2.316 | 92 806 | 23 507 |
| C | 2.003 | 1.997 | 2.317 | 80 091 | 20 023 |
| D | 2.000 | 2.057 | 2.315 | 90 123 | 21 906 |
| E | 1.917 | 1.999 | 2.315 | 84 822 | 22 135 |

Average Compressive Strength Perpendicular Dry – 22 079 psi

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# TEST REPORT

## 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.

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TEST REPORT

10.0 CALCULATION

10.1 Calculate the flexural strength, σ, as follows:

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

where: σ = flexural strength (psi)
W = maximum load (lbf)
L = span, (inches)/10d
b = width of specimen (inches); b ≥ 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 | 12.810 | 3.972 | 1.281 | 1 508 | 2 223 |
| B | 12.780 | 3.978 | 1.278 | 1 590 | 2 346 |
| C | 13.000 | 4.021 | 1.300 | 1 492 | 2 141 |
| D | 13.010 | 4.022 | 1.301 | 1 504 | 2 156 |
| E | 12.780 | 3.978 | 1.278 | 1 590 | 2 346 |

Average Flexural Strength Perpendicular - Dry – 2 242 psi

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# TEST REPORT

## ASTM C 241[1]
"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.

1.2 – 1.3 Omitted, see Standard

### 2.0 REFERENCED DOCUMENTS – Omitted, see Standard

### 3.0 TERMINOLOGY

3.1 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

5.1 NOTE: The Test Equipment used is in accordance with the Specifications found in the Section

### 6.0 SAMPLING

6.1 NOTE: Sampling was done in accordance with the requirements of this Section. Sampling and Sample preparation was done by the Client.

### 7.0 TEST SPECIMENS

7.1 NOTE: The test specimens were tested "As Received". Sample preparation was done by the Client. See RESULTS

### 8.0 CONDITIONING

8.1 NOTE: Conditioning of the Test Specimens was followed without exception as described in this Section.

### 9.0 PROCEDURE

NOTE: The Test Procedure was followed without exception as described in this Section. See RESULTS

### 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.

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TEST REPORT

11.0 REPORT – Omitted, see Standard and RESULTS

12.0 PERCISION AND BIAS – Omitted, see Standard

13.0 KEYWORDS – Omitted, see Standard

RESULTS

| Results | | | | | | |
|---|---|---|---|---|---|---|
| Sample | Before Abrasion Weight | After Abrasion Weight | Weight Loss | Ws | Bulk Density | Abrasive Hardness Value (Ha) |
| A | 145.54 | 144.78 | 0.76 | 145.14 | 2.6380 | 37.2298 |
| B | 152.63 | 151.81 | 0.76 | 152.22 | | 34.62 |
| C | 143.96 | 143.20 | 0.76 | 143.58 | | 37.20 |

The tests were conducted at 38% Relative Humidity @ 74 °F

Average Abrasive Hardness Value = 36.4 Ha

[1]NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353. For Manufactured Stone we used the best suited of the 2 Standards

CONCLUSION:

The Natural Stone identified above has the following average[2] properties:

| | | | |
|---|---|---|---|
| Average % Absorption | | 0.2999 | (5) |
| Average Bulk Specific Gravity | | 2 638.0 kg/m$^3$ | (5) |
| | | 164.6 lbs/ft$^3$ | (5) |
| Modulus of Rupture Perpendicular | Dry | 2 200 psi | (5) |
| Compressive Strength Perpendicular | Dry | 22 100 psi | (6) |
| Flexural Strength Perpendicular | Dry | 2 200 psi | (5) |
| Abrasion Resistance | | 36.4 Iw | (3) |

[1]NOTE: For Igneous Samples we run ASTM C 241 for Sedimentary and Metamorphic Samples we run ASTM C 1353. [2]Number in Parentheses is Samples tested for the Average

END OF ANALYSIS

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TEST REPORT

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$^3$ (kg/m$^3$) (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 |


Kittledge Grey Granite as received.

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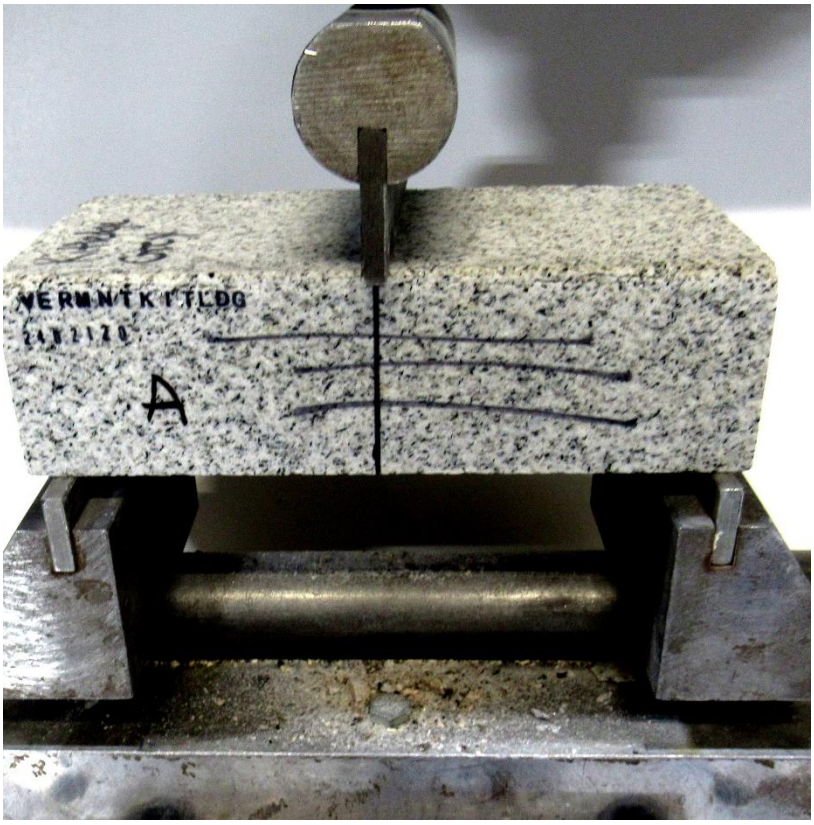
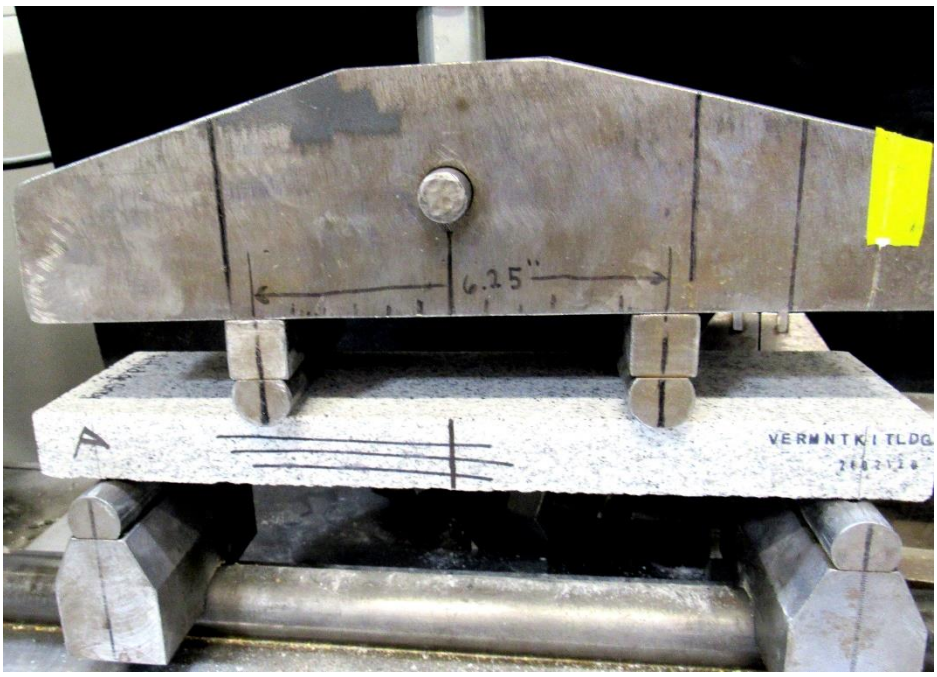
TEST REPORT




Sample during ASTM C 99 testing.




Picture of sample ready for ASTM C 880 testing

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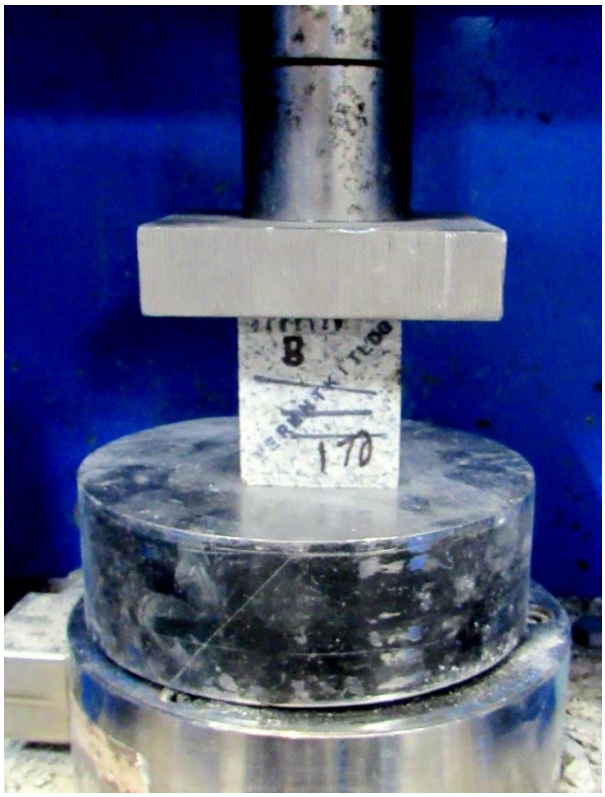
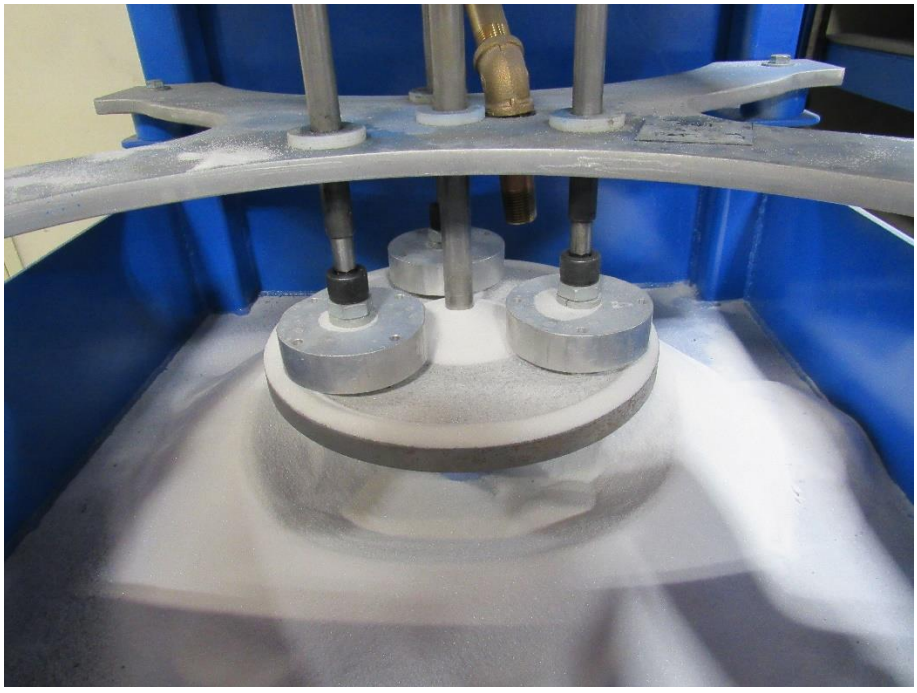
TEST REPORT




Sample during ASTM C 170 testing



ASTMC 241 abrasion test