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### Testing of Northern Pink Dimension Stone

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

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## **INTRODUCTION:**

This report presents the results of testing performed by Element Materials Technology – St. Paul, Minnesota (Element) on samples of Northern Pink Dimension Stone submitted by Vetter Stone. The scope of our work was limited to the following:

1. Perform absorption, bulk specific gravity, and density testing of the stone according to ASTM C97.
2. Perform modulus of rupture testing of the stone according to ASTM C99.
3. Perform compressive strength testing of the stone according to ASTM C170.
4. Perform flexural strength testing of the stone according to ASTM C880.
5. Prepare a report in regards to the results.

Our work was requested and authorized by Mr. Bob Vetter of Vetter Stone on February 17, 2014.

## **SUMMARY OF TEST RESULTS:**

The following is a summary of our test results.

### **Absorption, Bulk Specific Gravity and Density**

<u>Sample Type</u>	<u>Average Absorption, %</u>	<u>Average Bulk Specific Gravity</u>	<u>Average Density, lbs/ft<sup>3</sup></u>
Northern Pink	4.0	2.458	153.4

### **Modulus of Rupture**

<u>Sample Type</u>	<u>Plane of Bedding with Respect to the Load</u>	<u>Moisture Condition</u>	<u>Average Modulus of Rupture, psi</u>
Northern Pink	Normal	Dry	1,390
Northern Pink	Perpendicular	Dry	1,230

### **Compressive Strength**

<u>Sample Type</u>	<u>Plane of Bedding with Respect to the Load</u>	<u>Moisture Condition</u>	<u>Average Compressive Strength, psi</u>
Northern Pink	Normal	Dry	9,410

### **Flexural Strength**

<u>Sample Type</u>	<u>Plane of Bedding with Respect to the Load</u>	<u>Moisture Condition</u>	<u>Average Flexural Strength, psi</u>
Northern Pink	Normal	Dry	1,220
Northern Pink	Perpendicular	Dry	1,210

**SAMPLE DESCRIPTION:**

On February 18, 2014, samples of the Northern Pink Dimension Stone were submitted to Element for physical testing. The approximate size and sample quantity were as follows:

<u>Tests</u> <u>Sample Type</u>	<u>Nominal</u> <u>Sample Size</u>	<u>Quantity</u>
Absorption/BSG	2" x 2" x 2"	5
Modulus of Rupture	8" x 4" x 2-1/4"	20
Compressive Strength	2" x 2" x 2"	20
Flexural Strength	1.25" x 4" x 15"	20

**TEST PROCEDURES:**

Our testing work was performed on February 23, 2014 and subsequent dates according to the current versions of:

- ASTM C97, "Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone"
- ASTM C99, "Standard Test Method for Modulus of Rupture of Dimension Stone"
- ASTM C170, "Standard Test Method for Compressive Strength of Dimension Stone"
- ASTM C880, "Standard Test Method for Flexural Strength of Dimension Stone"

**REMARKS:**

The tested samples are subject to disposal thirty days from the date of this report.