

Submitted within this report are the results of testing conducted on samples of dimensional stone delivered to our laboratory on August 19, 2015. The samples were tested in general accordance with the methods listed below. Please contact the undersigned if you have any questions regarding this report.

<u>Test to Determine</u>	<u>Method of Test</u>
Standard Test Methods for Absorption and Bulk Specific Gravity of Dimensional Stone	ASTM C97
Standard Test Method for Modulus of Rupture of Dimensional Stone	ASTM C99
Standard Test Method for Compressive Strength of Dimensional Stone	ASTM C170
Standard Test Method for Flexural Strength of Dimensional Stone	ASTM C880

Respectfully submitted,

**GEOTECHNOLOGY, INC.**  
**Construction Materials Testing Group**



Zachary R. Bullock, CET  
CMT Laboratory Manager

ZRB/JPK:zrb

Copies Submitted: via email

Attachment: Test Results



**Material: EW Gold, Dolomitic Limestone, Color range light gold to gray, with various vein patterns on surface of stone**

**Condition: Dry and perpendicular to the rift**

**Source: Earthworks, Ste. Genevieve County, MO, Ledge 5**

**STANDARD TEST METHOD FOR ABSORPTION AND BULK SPECIFIC GRAVITY  
 OF DIMENSIONAL STONE – ASTM C97**

<u>Sample ID</u>	<u>Dry Weight, g</u>	<u>Immersed Weight, g</u>	<u>Saturated Weight, g</u>	<u>Percent Absorption</u>	<u>Bulk Spec. Gravity</u>
A1	403.6	258.9	408.3	1.2	2.701
A2	403.5	259.3	407.9	1.1	2.715
A3	408.9	262.6	413.5	1.1	2.710
A4	418.8	268.5	424.1	1.3	2.692
A5	419.7	269.4	425.3	1.3	2.692
				Avg. 1.2	2.702

**STANDARD TEST METHOD FOR MODULUS OF RUPTURE OF DIMENSIONAL  
 STONE – ASTM C99**

<u>Sample ID</u>	<u>Width, in</u>	<u>Length, in</u>	<u>Thickness, in</u>	<u>Load, lbs</u>	<u>Modulus of Rupture, psi</u>
M1	4.05	8.10	2.36	3,920	1,824
M2	4.05	8.09	2.36	4,400	2,048
M3	4.09	8.06	2.38	5,380	2,440
M4	4.09	8.13	2.34	4,630	2,169
M5	4.04	8.07	2.35	2,590	1,220
				Avg.	1,940



Earthworks, Inc.  
September 2, 2015  
Page No. 3

Report No. CS-374  
J008630.02.7001L

**STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF DIMENSIONAL  
STONE – ASTM C170**

<u>Sample ID</u>	<u>Area, in<sup>2</sup></u>	<u>Load, lbs</u>	<u>Strength, psi</u>
C1	3.98	93,000	23,400
C2	4.00	85,830	21,500
C3	4.02	84,570	21,000
C4	4.02	88,050	21,900
C5	4.00	91,910	<u>23,000</u>
		Avg.	22,200

**STANDARD TEST METHOD FOR FLEXURAL STRENGTH OF DIMENSIONAL  
STONE – ASTM C 880**

<u>Sample ID</u>	<u>Width, in</u>	<u>Length, in</u>	<u>Thickness, in</u>	<u>Load, lbs</u>	<u>Flexural Strength, psi</u>
F1	4.08	15.10	1.53	1,700	1,669
F2	4.04	15.15	1.53	1,510	1,497
F3	4.07	15.10	1.52	2,170	2,164
F1	4.08	15.10	1.47	2,010	2,137
F1	4.07	15.10	1.49	1,390	<u>1,442</u>
				Avg.	1,782



August 17, 2012

Lab. No.: H792

Page 1 of 2

TESTING ENGINEERS, INC.

12000 S. De Soto Ave., Suite 100  
San Leandro, CA 94577

Lab. No.: H792

Page 1 of 2

**SUBJECT:** Solar Reflectance Testing on four (4) sandblasted Stone Samples..

Dear Ms. Yamnitz;

At your request, four (4) stone samples submitted to our laboratory have been tested for determination of their Solar Reflectance in accordance with ASTM E1980. The stone samples were labeled as follows:

- *PEWTER MIST LIGHT*
- *PEWTER MIST DARK*
- *MERIDIAN RED*
- *EW GOLD L-5*

### **PROCEDURES & RESULTS**

The 6"x6" sandblasted samples were tested on their finish side for their solar reflectance.

The test results are presented in Tables I through IV.

If you have any questions regarding this report, please contact the undersigned at 510 835 3142.

Respectfully Submitted,  
**TESTING ENGINEERS, INC.**

Hossein Arbabi, Ph.D., P.E.  
Senior Engineer

*The results presented in this report relate only to the item(s) tested. This report can only be reproduced in its entirety unless written permission from TEI is obtained*

**Table I**  
**Solar Reflectance - ASTM E1980**  
**“Pewter Mist-Light” Limestone**

Sample ID	Solar Reflectance		Thermal Emittance		Solar Reflectance Index (SRI)		
	ASTM C1549		ASTM C1371		ASTM E1980		
	Average	Std. Dev.	Average	Std. Dev.	Low Wind	Medium Wind	High Wind
<b>Limestone 6”x6”</b>	<b>0.494</b>	<b>0.002</b>	<b>0.90</b>	<b>0.01</b>	<b>57</b>	<b>58</b>	<b>58</b>

**Table II**  
**Solar Reflectance - ASTM E1980**  
**“Pewter Mist-Dark” Limestone**

Sample ID	Solar Reflectance		Thermal Emittance		Solar Reflectance Index (SRI)		
	ASTM C1549		ASTM C1371		ASTM E1980		
	Average	Std. Dev.	Average	Std. Dev.	Low Wind	Medium Wind	High Wind
<b>Limestone 6”x6”</b>	<b>0.312</b>	<b>0.027</b>	<b>0.91</b>	<b>0.00</b>	<b>34</b>	<b>34</b>	<b>34</b>

**Table III**  
**Solar Reflectance - ASTM E1980**  
**“Meridian Red” Limestone**

Sample ID	Solar Reflectance		Thermal Emittance		Solar Reflectance Index (SRI)		
	ASTM C1549		ASTM C1371		ASTM E1980		
	Average	Std. Dev.	Average	Std. Dev.	Low Wind	Medium Wind	High Wind
<b>Limestone 6”x6”</b>	<b>0.386</b>	<b>0.008</b>	<b>0.91</b>	<b>0.00</b>	<b>44</b>	<b>44</b>	<b>44</b>

**Table IV**  
**Solar Reflectance - ASTM E1980**  
**“EW Gold-L5” Limestone**

Sample ID	Solar Reflectance		Thermal Emittance		Solar Reflectance Index (SRI)		
	ASTM C1549		ASTM C1371		ASTM E1980		
	Average	Std. Dev.	Average	Std. Dev.	Low Wind	Medium Wind	High Wind
<b>Limestone 6”x6”</b>	<b>0.411</b>	<b>0.009</b>	<b>0.91</b>	<b>0.00</b>	<b>47</b>	<b>47</b>	<b>47</b>