



COMMERCIAL TESTING LABORATORIES

A DIVISION OF CTL/THOMPSON, INC.

December 16, 2002

[REDACTED]
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Attention: Mr. Ric Meyers

Subject: Mohs Hardness Testing
Rock Sample "Brownstone Natural"
CTL Job No.: CT-10578

Dear Mr. Meyers:

This report presents results of the Mohs Hardness Testing that you requested be conducted on a sample of rock submitted by you to our laboratory on December 9, 2002. The hardness determinations were performed using our Mohs Hardness kit. Three pieces were submitted and the set was identified by you as "Brownstone Natural." The sample's hardness is indicated by the tendency of minerals of a known hardness to scratch the sample or resist being scratched by the sample. Ten minerals of known hardness are used in the test to establish the Mohs Hardness Scale. A hardness of 1 is soft, represented by the mineral talc. A hardness of 10 is the hardest, represented by the mineral diamond.

Using the Mohs Hardness kit it was determined that the "Brownstone Natural" sample has a hardness of 4.5 on the Mohs scale.

If you have any questions regarding this information please do not hesitate to call.

Very truly yours,

COMMERCIAL TESTING LABORATORIES

Andrew W. Flynn
Laboratory Manager
AWF/JLG/awf

Reviewed by:

Jeffrey L. Groom, P.E.
Principal

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-0777

This test report relates only to the items tested and shall not be reproduced, except in full, without written approval of Commercial Testing Laboratories



Testing
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Analysis No. TS-S&T 00111
 Report Date 17 May 2002
 Date Sampled 14 March 2002
 Where Sampled Denver, CO
 Sample Received 15 March 2002
 Sampled By Client

This is to certify that we have examined: Dimensional Stone identified: Brownstone, Quarried in Colorado, USA

When examined to the applicable requirements of:

- ASTM C 97-96 "Standard Test Methods for Absorption and Bulk Specific Gravity of Dimensional Stone"
- ASTM C 99-87 "Standard Test Method for Modulus of Rupture of Dimensional Stone"
- ASTM C 170-90 "Standard Test Method for Compressive Strength of Dimensional Stone"
- ASTM C 241-90 (R97) "Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic"
- ASTM C 880-98 "Standard Test Method for Flexural Strength of Dimension Stone"

The above identified material had the following values:

TEST RESULTS				
STANDARD	TEST	AVERAGE	TEST	AVERAGE
ASTM C 97	ABSORPTION (3)	3.4%	BULK SPECIFIC GRAVITY (3)	2 232
ASTM C 99 MODULUS of RUPTURE	Perpendicular - Dry (3)	1 000 psi		
	Perpendicular - Wet (3)	800 psi		
	Parallel - Dry (3)	800 psi		
	Parallel - Wet (3)	600 psi		
ASTM C 170 COMPRESSIVE STRENGTH	Perpendicular - Dry (5)	13 600 psi		
	Perpendicular - Wet (5)	12 800 psi		
	Parallel - Dry (5)	10 300 psi		
	Parallel - Wet (5)	10 300 psi		
ASTM C 241 ABRASION RESISTANCE	DRY (3)	9.4 Ha		
ASTM C 880 FLEXURAL STRENGTH	Perpendicular - Dry (5)	900 psi		
	Perpendicular - Wet (5)	900 psi		
	Parallel - Dry (5)	700 psi		
	Parallel - Wet (5)	600 psi		

* Number in parenthesis is the number of samples tested that the average was calculated on.
 The attached Report of Test is an integral portion of this certificate.

Merrill Gee P.E. - Engineer in Charge

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