



March 21, 2011

Mr. Ron Marston
LOMPOC STONE
3135 Santa Rosa Road
Lompoc, CA 93436

Lab. No.: C021
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SUBJECT: Testing of Limestone Samples.

Dear Mr. Marston;

At your request, we have completed the testing of the above referenced stone sample, submitted to our laboratory. The test description and corresponding ASTM test method were as follows:

Test 1 – Compressive Strength – ASTM C170
Test 2 – Modulus of Rupture – ASTM C99
Test 3 – Abrasion Resistance – ASTM C241
Test 4 – Density and Absorption – ASTM C97
Test 5 – Flexural Strength - ASTM C888
Test 6 – Shear Bond Strength - ASTM C482
Test 7 – Freeze/Thaw - ASTM C67

PROCEDURES & RESULTS

The specimens for each test were prepared and tested in accordance with the above ASTM designations.

The data for tests 1 through 6 are presented in Tables 1 through 6.

The data from tests 1 through 5 conforms to the requirements for high density limestone specified in ASTM C568 (Standard Specifications for Limestone Dimension Stone).

The freeze/thaw test did not result in a loss of weight of specimens, and there were no indications of damage to the stone on completion of the freeze/thaw cycles (a total of 50 cycles).

If you have any questions regarding this report, please contact the undersigned at (510) 835 3142 ext. 199.

Respectfully Submitted,
TESTING ENGINEERS, INC.

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

TABLE 1

TEST #	BULK SPECIFIC GRAVITY & ABSORPTION (ASTM C-97)	
	Absorption (%)	Density, lbs/ft ³
1	2.22	162.2
2	2.26	162.2
3	2.00	163.5
4	1.94	163.5
5	2.43	161.6
Average	2.17	162.9

TABLE 2

TEST #	MODULUS OF RUPTURE, psi (ASTM C-99)	
	Parallel to Rift	Perpendicular to Rift
1	2911	4954
2	2529	2437
3	2211	4573
4	1694	5496
5	2295	2196
Average	2328	3931

TABLE 3

TEST #	COMPRESSIVE STRENGTH, psi (ASTM C170)	
	Parallel to Rift	Perpendicular to Rift
1	11,708	23,655
2	23,113	22,998
3	23,043	10,320
4	26,953	29,976
5	19,561	22,388
Average	20,876	21,867

TABLE 4

TEST #	ABRASION RESISTANCE, psi (ASTM C241)
1	16.48
2	16.93
3	19.58
Average	17.66

TABLE 5

TEST #	FLEXURAL STRENGTH, psi (ASTM C880)
1	2,776
2	2,701
3	1,308*
4	2,575
5	3,303
Average	2,533
Standard Deviation	739

*Discontinuity in stone sample.

TABLE 6

TEST #	Shear Bond Strength, psi (ASTM C482)*	Mode of Failure
1	88.7	Concrete/thin-set interface
2	73.3	Concrete/thin-set interface
3	92.8	Concrete/thin-set interface
4	104.1	Concrete/thin-set interface (90%), stone/thin-set interface (10%)
5	142.5	Concrete/thin-set interface (60%), stone/thin-set interface (40%)
Average	100.3	

*A polymer-fortified thin-set mortar (brand name used was Versabond) was utilized as the bonding agent between a concrete backing material and stone specimens.