BOWSER-MORNER, INC.

Delivery Address: 4518 Taylorsville Rd Dayton, OH 45424 **Mailing Address**: P.O. Box 51 Dayton, OH 45401

AASHTO/ISO 17025 Accredited • USACE Validated

REPORT ON TESTS OF PRECAST STONE VENEER

Report To: J & N Stone, Inc.
Attn: Jody Lengacher
905 E. Waterford Street
Wakarusa, IN 46573

Report Date: 06/07/21
Job No.: 199714
Report No.: 302999
Submitted: 3/5/2021
No. of Pages: 2

Description: Veneer Stone Product **Specification:** ASTM C 1670 **Manufactured:** 3/1/2021

COMPRESSIVE STRENGTH (CYLINDERS) - ASTM C 39							5.4 SPECIFICATIONS	
Specimen No.	1	2	3	4	5	Avg	Ind.	Avg
Date Tested	3/29/2021	3/29/2021	3/29/2021	3/29/2021	3/29/2021			
Length, 0.01 in:	8.01	8.00	8.01	8.01	8.00			
Diameter, 0.01 in:	4.02	4.02	4.02	4.02	4.02			
Cross-Sectional Area, Sq. In.	12.69	12.69	12.69	12.69	12.69			
Total Load, lbs:	83,250	81,970	84,160	91,260	86,810			
Compressive Strength, psi	**6560**	**6460**	**6630**	**7190**	**6840**	**6740**	**1800 min.**	**2100 min.**
Variance from Average, %:	**2.7**	**4.2**	**1.6**	**6.7**	**1.5**		**10 max**	
Type of Failure:	**3**	**3**	**3**	**3**	**3**			
DIMENSIONAL TOLERANCES							**9.2 SPECIFICATIONS**	
Specimen No.	6	7	8	9	10	11	Ind.	Avg
Thickness, in.	1.90	1.93	2.03	2.31	2.47	1.92	**0.25 min.**	**2.625 max**
Width, in.	3.24	3.38	3.54	8.08	7.84	8.87		
Length, in	18.10	20.10	22.24	10.75	11.09	10.45		
Maximum Dimension, in	**18.39**	**20.38**	**22.52**	**13.45**	**13.58**	**13.71**	**36 max**	
Face Area, ft^2	**0.4**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**5 max**	
Visual Defects:	**minor air bubble**	**none**	**none**	**minor air bubble**	**minor air bubble**	**minor air bubble**		
LINEAR DRYING SHRINKAGE - ASTM C 157 Modified ASTM C 1670 Sec. 9.3							**9.3.2 SPECIFICATIONS**	
Specimen No.	12	13	14			Avg	Ind.	Avg
Length @ 7-Days, in.	-0.0149	-0.0738	-0.0145					
Length @ 28-Days, in.	-0.0203	-0.0789	-0.0195					
Length Change (35-day age), %	-0.054	-0.051	-0.050			**-0.052**		**0.10 max**
BOND STRENGTH (UNIT/SETTING BED/BACKING - Design Description & Load Orientation) - Sec. 4.7/ ASTM C 482							**7.2 SPECIFICATIONS**	
Specimen No.	15	16	17	18	19	Avg	Ind.	Avg
Width, 0.01in.	3.990	3.910	4.000	3.860	4.020			
Depth, 0.01in.	4.030	4.040	4.030	4.010	4.030			
Cross-Sectional Area, Sq. In.	16.08	15.80	16.12	15.48	16.20			
Total Load, lbs:	5725	5840	5910	4980	6210			
Shear Bond Strength, psi:	**360**	**370**	**370**	**320**	**380**	**360**		**50 min.**
Location of Failure	**substrate**	**bond coat**	**substrate**	**substrate**	**bond coat**			
WATER ABSORPTION & DENSITY - ASTM C 140							**8.3.2 SPECIFICATIONS**	
Specimen No.	20	21	22	Avg	Avg Thickness	Avg lb/ft2		Avg
Saturated Weight (SSD), 0.01g.	786.00	684.60	684.30					
Immersed Weight, 0.01g.	378.70	330.90	329.70					
Saturated Density, pcf:	**32.3**	**32.2**	**32.3**	**32.3**	**2.09 inches**	**15**		**15 max**
FREEZE-THAW DURABILITY - ASTM C666A - 50 Cycles							**6.3.2 SPECIFICATIONS**	
Specimen No.	23	24	25	26	27		Ind.	Avg
Initial Dry Weight, 0.1g.	2906.3	2974.5	2961.3	2978.4	2964.3			
Final Dry Weight, 0.1g.	2953.3	2977.1	2988.2	3001.0	2952.2			
Change in Mass, %	**1.6**	**0.1**	**0.9**	**0.8**	**-0.4**	**0.6**	**1.5 max**	**n/a**
Breakage/Fracture:	**none**	**none**	**none**	**none**	**none**			

Note: Thermal Resistivity testing in accordance with ASTM D 5334 was performed for determination of R-Value and results can be found on page 2 of this report.

Should you have any questions, or if we can be of further service, please contact me at 937-236-8805, ext. 322.

Respectfully Submitted,
BOWSER-MORNER, INC.

Karl A. Fletcher

Digitally signed by Karl A. Fletcher
DN: C=US, S=Ohio, L=Dayton, O="Bowser-Morner, Inc.", CN=Karl A. Fletcher, E=kfletcher@bowser-morner.com
Reason: I am the author of this document
Location: your signing location here
Date: 2021.06.07 17:26:06-04'00'
Foxit PhantomPDF Version: 10.1.0

Karl A. Fletcher, Vice President
Assistant Director, CMT &
Geotechnical Laboratories

KAF/kaf
302999
1-File
1-jody@jnstone.com

THERMAL RESISTIVITY (ASTM Method D5334)
AND R-VALUE CALCULATION

Client: J & N Stone (19288)
Job Number: 199714
Material: Manufactured Stone / Adhered Masonry

Date Performed : 3/31/2021
Report No. : 302999

Sample ID	Moisture (wt-%)	Mean Thermal Resistivity (m*K / W)	Std Dev	As Measured Thermal Resistivity (m*K / W)		
				1	2	3
2101846	0.2	1.3119	0.0090	1.3224	1.3131	1.3004

Conversion of Thermal Conductivity to R-Value

Thermal resistance (R-value; m^2 *K / W)) is computed by dividing the thickness of material (in meters) by the measured thermal conductivity (W / m*K). (1)

Thickness of material:	2.09	inches	(average of 6 measurements)
Thickness of material:	0.0531	meters	
Thermal conductivity::	0.7623	W / m* K	
Thermal resistance (RSI-value):	0.0696	m^2 *K / W ("RSI-value")	

This thermal resistance, or R-value, is in metric (or SI - Système International) units. To convert from SI units to "Imperial units" (ft^2 F*h / BTU), multiply the RSI-value by 5.678. (2)

Thermal resistance (R-value) **0.40** **(ft^2 F*h / BTU)**

(1) Thermal resistance of concrete; *https://www.constructioncost.co/r-value-and-u-value-of-concrete-slab.html*

(2) What is R (or RSI) value of insulation?; *https://betterhomesbc.ca/products/what-is-r-or-rsi-value/*

BOWSER MORNER