

CLIENT: **Averve**
215 Ledroit Street, Suite A
Laguna Beach, CA 92651

Report No: RJ5053P-1-Rev.1

Date: October 4, 2016
Revision Date: October 7, 2016

SAMPLE ID: Three architectural wall panels measuring 118 $\frac{1}{8}$ " high by 39 $\frac{3}{8}$ " wide by 1" deep. The wall panels were identified by the Client as: 3mm extruded porcelain with fiberglass matte laminated to $\frac{1}{4}$ " poly metal backer attached to Railset aluminum extruded framing using Railset cleats.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: October 4, 2016.

AUTHORIZATION: QAI Test Proposal Number 16SP092201 dated September 22, 2016 signed by Susan L. Montonna of Averve.

TEST REQUESTED: Impact testing on architectural wall panels per ASTM E 695-03 (Reapproved 2009), *Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading* modified to simulate infield installations.

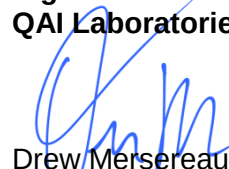
TEST RESULTS: Detailed test results and observations are provided on page 2 of this report.

Prepared By



Larry Burmer
Project Manager

Signed for and on behalf of
QAI Laboratories, Inc.



Drew Mersereau
Laboratory Supervisor

IMPACT TEST PER ASTM E695-03 MODIFIED TO SIMULATE INFIELD INSTALLATIONS

Test Procedure

The wall panel assemblies were individually mounted vertically to a test frame simulating an infield installation condition. The exterior or exposed face of the wall assembly was then impacted at the center of the wall in between the aluminum framing members to simulate a worst case impact scenario. The impact was applied through a 9-inch diameter steel shot bag weighing 100-pound suspended by a steel cable. The wall assembly was impacted beginning at a distance of 3 inches and then increased in 3 inch increments until cracking of the exterior porcelain surface or damage to the wall assemblies components was observed. Deflection readings were recorded on the back of the wall assembly directly behind the area of impact during and after each impact. Photographs of the test set-up are provided in the appendix of this report.

Test Results

Impact Distance (in)	Wall Panel No.1		Wall Panel No.2		Wall Panel No.3	
	Panel Deflection (in)		Panel Deflection (in)		Panel Deflection (in)	
	During Impact	After Impact	During Impact	After Impact	During Impact	After Impact
3	0.068	0.001	0.081	0.001	0.078	0.000
6	0.126	0.003	0.139	0.004	0.137	0.003
9	0.205	0.006	0.220	0.006	0.214	0.005
12	0.279	0.008	0.292	0.010	0.283	0.007
15	0.331	0.015	0.338	0.018	0.337	0.017
18	0.430	0.040	0.436	0.048	0.433	0.047
21	0.567	0.051	0.570	0.052	0.566	0.052
24	0.728	0.075	0.725	0.078	0.724	0.077
27	0.815	0.085	0.820	0.088	0.812	0.087
30	0.866	0.100	0.860	0.105	0.856	0.102

Observations

For each of the three wall assemblies tested, cracking of the porcelain finish occurred after being subjected to an impact force of 100 pounds at a distance of 30". This would be *approximately* the equivalent of a 100 pound object impacting the wall at a velocity of 6.5 feet per second or 4.4 miles per hour. No structural damage to the porcelain finish or aluminum framing members occurred. No separation or failure of the wall assembly's components was observed. Photographs showing the impact at a distance of 9" and the typical results after the 30" impact are provided in the appendix of this report.

Instrumentation and Calibration Data		
Asset No.	Description	Calibration Due Date
RP0066	30' Tape Measure	9/12/17
E7158	Dial Calipers	6/30/17
E7039	Mechanical Scale	6/30/16

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APPENDIX



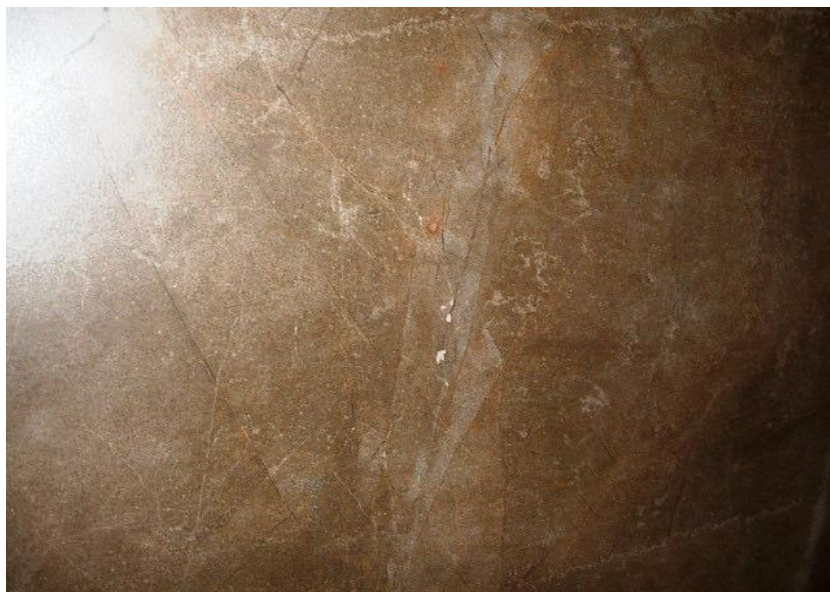
Photographs 1 and 2
Impact Test Set-up
Impact Side and Back Side

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APPENDIX



Photograph 3
Impact at a distance of 9"



Photograph 4
Typical results after 30" impact

Revision History

Revision Date: October 7, 2016.

- 1) In the SAMPLE ID Section of the Report, Page 1, the Sample ID was corrected to read 1" deep rather than 1¼" deep.
- 2) In the SAMPLE ID Section of the Report, Page 1, the Sample ID was expanded to state that the 3mm extruded porcelain with fiberglass matte laminated to ¼" poly metal backer was attached to Railset aluminum extruded framing using Railset cleats.

This report RJ5053P-1-Rev.1 supersedes and replaces any previous reports under the name RJ5053P-1.

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