QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

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CLIENT: **Hacker Industries Inc.**
1600 Newport Center Drive, Suite 275
Newport Beach, CA 92660

Test Report No: TJ1713-5	Date: March 24, 2014

SAMPLE ID: **1/4" SCM-250**.

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: Samples were received at QAI on November 15, 2013.

TESTING PERIOD: January 27 – March 24, 2014.

AUTHORIZATION: Signed Work Order by Dean Hacker of Hacker Industries Inc, dated October 28, 2013.

TEST PROCEDURE: ASTM C627-10, *Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester.*

TEST RESULTS: Detailed test results are presented in the subsequent pages of this report.

CONCLUSION: This product meets the 2013 TNCA Handbook for Ceramic, Glass and Stone Tile Installation Guidelines for a rating of "Extra Heavy Duty Commercial Application".

Prepared By

Rocky Hale
Materials Testing Technician

Signed for and on behalf of QAI Laboratories, Inc.

Jarred Johnson
Project Manager

ASTM C627-10, Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester

Test Procedure: The two concrete substrates were prepared in accordance with Section 6.1.1 of ASTM C627 and allowed to cure for seven (7) days. The sound barrier identified as **1/4" SCM-250** was applied over the substrates with ANSI approved mortar and covered with a Gypsum Concrete mixture per client specifications. Once cured, the substrates were then prepared according to Section 7, with ANSI A118.4 approved mortar, grout and porcelain tile with a 6" x 6" dimension were applied and allowed to cure for twenty-eight (28) days prior to testing. The grout joint thickness used for installation was 1/8". Upon testing, the appropriate wheels were attached to the machine from the softest to hardest and loaded according to Table 1 of ASTM C627. The machine was ran for a total of 9900 revolutions (14 cycles) for each specimen, with the various wheels and weights, results were recorded and can be seen below in Table 1 and Table 2.

Table 1 – Substrate # 1 Results:

Cycle	Type of Wheels	Total Weight (lbs)	Duration of Test (hrs)	Total Number of Revolutions	Damages Noted Per Cycle	Pass/Fail
1	Soft Rubber	300	1	900	No Visible Signs of Damage	**PASS**
2	Soft Rubber	600	1	900	No Visible Signs of Damage	**PASS**
3	Soft Rubber	900	1	900	No Visible Signs of Damage	**PASS**
4	Soft Rubber	900	1	900	No Visible Signs of Damage	**PASS**
5	Hard Rubber	300	1	900	No Visible Signs of Damage	**PASS**
6	Hard Rubber	600	1	900	No Visible Signs of Damage	**PASS**
7	Hard Rubber	900	1	900	No Visible Signs of Damage	**PASS**
8	Hard Rubber	900	1	900	No Visible Signs of Damage	**PASS**
9	Steel	150	0.5	450	No Visible Signs of Damage	**PASS**
10	Steel	300	0.5	450	No Visible Signs of Damage	**PASS**
11	Steel	450	0.5	450	No Visible Signs of Damage	**PASS**
12	Steel	600	0.5	450	No Visible Signs of Damage	**PASS**
13	Steel	750	0.5	450	No Visible Signs of Damage	**PASS**
14	Steel	900	0.5	450	1 Chipped Tile	**PASS**
				Total Damages:	1 Chipped Tile	**PASS**
				Type of Base Construction:	Concrete Base for Thin-Bed Installations	
				Type of Tile Used and Type of Mounting:	6" Porcelain Tile, Mortar-Fabric-Mortar Installation	
				Bonding Medium and Grout:	ANSI A118.4 and .11 Approved Mortar and Grout	

Recommendations: Installation shall be considered to have failed to pass any cycle in which the cumulative total number of failures to tile or grout in any one of the following categories exceeds the amount stated: Chipped Tile – 5% of the tile in the wheel path, Broken Tile – 3% of the tile in the wheel path, Loose Tile – 3% of the tile in the wheel path, Popped-Up Grout Joint – 5% of the joints in the wheel path, Cracked Grout Joints – 5% of the joints in the wheel path and Powdered Grout Joints – 5% of the joints in the wheel path.

Observations: Total number of damages included: 1 Chipped Tile

Table 1 – Substrate # 2 Results:

Cycle	Type of Wheels	Total Weight (lbs)	Duration of Test (hrs)	Total Number of Revolutions	Damages Noted Per Cycle	Pass/Fail
1	Soft Rubber	300	1	900	No Visible Signs of Damage	**PASS**
2	Soft Rubber	600	1	900	No Visible Signs of Damage	**PASS**
3	Soft Rubber	900	1	900	No Visible Signs of Damage	**PASS**
4	Soft Rubber	900	1	900	No Visible Signs of Damage	**PASS**
5	Hard Rubber	300	1	900	No Visible Signs of Damage	**PASS**
6	Hard Rubber	600	1	900	No Visible Signs of Damage	**PASS**
7	Hard Rubber	900	1	900	No Visible Signs of Damage	**PASS**
8	Hard Rubber	900	1	900	No Visible Signs of Damage	**PASS**
9	Steel	150	0.5	450	No Visible Signs of Damage	**PASS**
10	Steel	300	0.5	450	No Visible Signs of Damage	**PASS**
11	Steel	450	0.5	450	No Visible Signs of Damage	**PASS**
12	Steel	600	0.5	450	No Visible Signs of Damage	**PASS**
13	Steel	750	0.5	450	1 Chipped Tile	**PASS**
14	Steel	900	0.5	450	No Additional Failures	**PASS**
				Total Damages:	1 Chipped Tile	**PASS**
				Type of Base Construction:	Concrete Base for Thin-Bed Installations	
				Type of Tile Used and Type of Mounting:	6” Porcelain Tile, Mortar-Fabric-Mortar Installation	
				Bonding Medium and Grout:	ANSI A118.4 and .11 Approved Mortar and Grout	

Recommendations: Installation shall be considered to have failed to pass any cycle in which the cumulative total number of failures to tile or grout in any one of the following categories exceeds the amount stated: Chipped Tile – 5% of the tile in the wheel path, Broken Tile – 3% of the tile in the wheel path, Loose Tile – 3% of the tile in the wheel path, Popped-Up Grout Joint – 5% of the joints in the wheel path, Cracked Grout Joints – 5% of the joints in the wheel path and Powdered Grout Joints – 5% of the joints in the wheel path.

Observations: Total number of damages included: 1 Chipped Tile

*** END OF TEST REPORT ***