



PRODUCT TESTING SERVICE

100 Clemson Research Blvd. ■ Anderson, SC 29625 ■ Tel (864) 646-TILE ■ Fax (864) 646-2821

December 7, 2015

MLT System
Attn: Mick Volponi
3550 270th Avenue
Keokuk, IA 52632

Dear Mr. Volponi,

Tile Council of North America has tested the samples you submitted. Test report TCNA-579-15 is enclosed. If you have any questions or concerns, please contact us.

Best Regards,

TILE COUNCIL OF NORTH AMERICA, INC.

Katelyn Simpson
Laboratory Manager
Enclosures



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TCNA TEST REPORT NUMBER: TCNA-579-15

PAGE: 1 OF 7

TEST REQUESTED BY: MLT System

TEST SUBJECT MATERIAL: System identified by client: "Laminam 5.6 with MLT System"

TEST DATE: November 16-17, 2015

TEST PROCEDURE: ASTM C627: "A Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester"

TEST AND MATERIAL DESCRIPTION:

As per client's request, the following materials were used for the preparation of the test pad.

Material Description			
Item #	Product name and size	Product code	Provided By:
1	Concrete base with a smooth finish Nominal Size: 48" x 48" x 2" (1219 mm x 1219 mm x 51 mm)	N/A	TCNA
2	Laticrete 254 Platinum Thin-set Mortar (grey)	914232-010	Laticrete
3	Laminam 5.6 mm Tile Nominal size: 20" x 20" x 0.22" (508 mm x 508 mm x 5.6 mm) Actual tile size: 19.685" x 19.685" x 0.21" (500 mm x 500 mm x 5.6 mm)	Collection Neve Laminam5 F003805	Crossville
4	Laticrete SpectraLOCK PRO® Grout	Part A: 735200 Part B 738769 Powder 9-2	Laticrete
5	Euro notch trowel (11")	Model 1 Y	TCNA
6	Grout Float	N/A	TCNA

TYPE OF INSTALLATION:

All the materials used were specified by the client and the tested assembly was built per the client's instructions.

The "Laminam 5.6 mm" was installed over concrete substrate. Further details about the installation are provided below.

Base:

A 48" x 48" x 2" concrete base was prepared and cured for a minimum of 28 days prior to testing.

Tile preparation:

The tiles were cut by a TCNA Representative to the nominal size of 20" x 20" x 0.22" (508 mm x 508 mm x 5.6 mm) using a rail cutter and wet saw. One corner of each tile was cut in order to accommodate for the drive shaft of the Robinson Floor tester.

Tile and Grout:

All tile installation and grouting was performed by a TCNA representative. The installation procedure is outlined below.

Testing Services: testing@tileusa.com ■ Literature Orders: literature@tileusa.com ■ Web Site: www.tcnatile.com

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Tile and Grout continued:

Laticrete 254 Platinum thin-set mortar was mixed with water per manufacturer’s instructions (mix ratio 22.9:100 by weight) and was troweled over the concrete substrate with a Euro notched trowel. The Laminam 5.6 mm tiles were back-buttered with a scratch coat then the backs were troweled with a Euro notched trowel. Special care was taken to ensure that the combed ridges on the backs of the tiles and the ridges on the test pad were running parallel to one another. The MLT System plates were used to decrease lippage. Two plates were placed directly underneath the wheelpath along grout joint 2 and 4. The maximum lippage in the wheel path of the tester measured at the time of installation was 0.008" (0.2 mm). Once set, the tiles were allowed to cure for 24 hours before grouting.

Laticrete SpectraLOCK PRO epoxy grout was mixed per manufacturer’s instructions (Part A and part B) and was forced into the 1/8" grout joints. The grout was allowed to set up for approximately 20 minutes before the installation was cleaned with a sponge and water. The grouted installation was subsequently allowed to cure for 32 days.

Figure 1: Each tile was 20" x 20" x 0.2" (508 mm x 508 mm x 5.6 mm). A notch was cut from one corner of each tile to accommodate for the ASTM C627 testing apparatus. Each grout joint is labeled below with a number which is the same grout joint number referenced throughout the rest of the report.

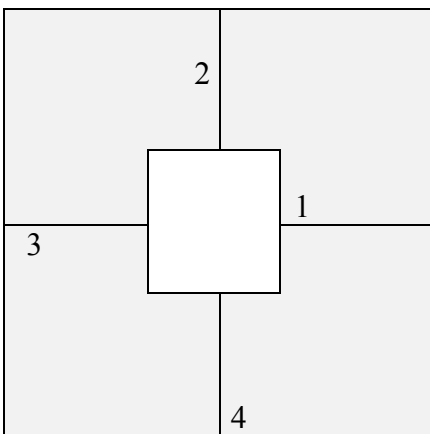


Table 1: Lippage Measurements (measured using feeler gauges)

	Initial Lippage	Lippage after 1 st Week	Lippage after 2 nd Week	Lippage after 3 rd Week	Final Lippage
Date Measured	10/14/15	10/15/15	10/22/15	10/29/15	11/4/15
Grout Joint 1	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)
Grout Joint 2	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)	0.008" (0.2 mm)
Grout Joint 3	0.002" (0.05 mm)	0.002" (0.05 mm)	0.002" (0.05 mm)	0.002" (0.05 mm)	0.002" (0.05 mm)
Grout Joint 4	0.002" (0.1 mm)	0.004" (0.1 mm)	0.004" (0.1 mm)	0.004" (0.1 mm)	0.004" (0.1 mm)

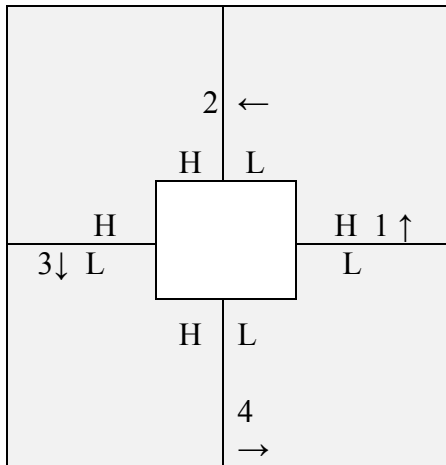
TCNA TEST REPORT NUMBER: TCNA-579-15

PAGE: 3 OF 7

Table 2: Mortar Thickness (measured using a caliper)

	At the time of application	After curing
Date Measured	10/14/15	11/4/15
Thickness	0.17" (4.27 mm)	0.17" (4.30 mm)

Figure 2: The figure below shows which tiles were higher or lower when the lippage in the wheel path was measured (as shown in table 1). The lower tile is identified with the letter “L” and the higher tile is identified with the letter “H”. The arrows represent the direction that the sled was traveling during testing.



TEST RESULTS:

The installation completed thirteen cycles with no evidence of damage to the tiles or grout joints. At the completion of cycle fourteen (steel wheels, three hundred pounds per wheel), there were two chipped tile (refer to image 2 and 3). All evaluation criteria were based on 4 tiles and 4 grout joints in the wheel path of the Robinson-Type Floor Tester.

CONCLUSION:

In accordance with the Performance-Level Requirement Guide and Selection Table of the 2015 *TCNA Handbook for Ceramic, Glass, and Stone Tile Installation* (page 41), the test pad reached the “HEAVY” classification.

TCNA TEST REPORT NUMBER: TCNA-579-15

PAGE: 4 OF 7

PHOTOS:

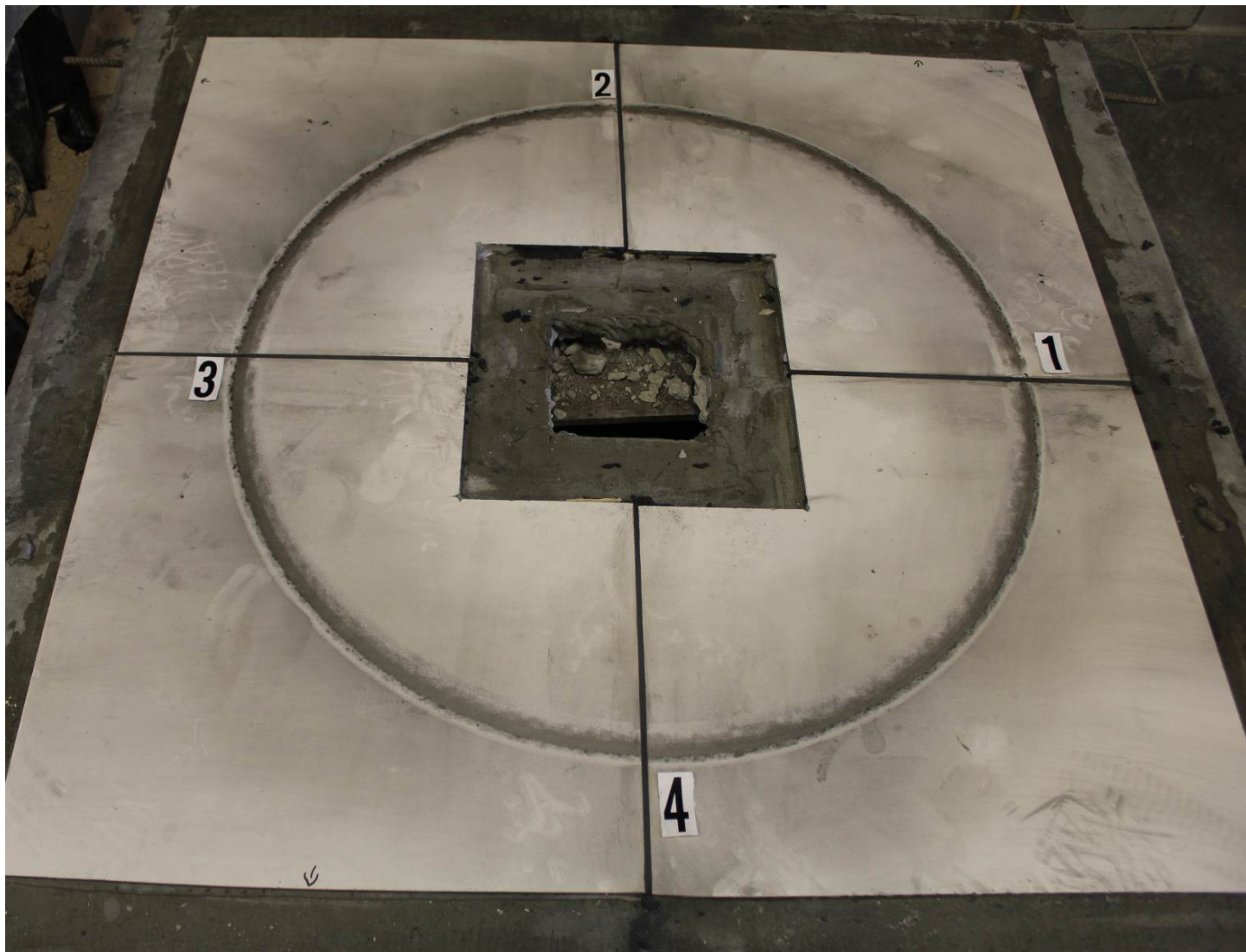


Image 1: Full assembly showing the installed Laminam 5.6 mm tile after testing. The numbers shown coincide with the numbers in Figure 1 and 2 and Table 1.



Image 2: Chipped tile at grout joint labeled “1” in figure 1. The damage took place during cycle fourteen.



Image 2: Chipped tile at grout joint labeled “2” in figure 1. The damage took place during cycle fourteen.



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TCNA TEST REPORT NUMBER: TCNA-579-15

PAGE: 7 OF 7

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Katelyn Simpson
Laboratory Manager

12/7/2015