

November 19, 2020

Mr. Kristian Loevlie
Shotcrete Technologies, Inc.
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Subject: **Report of Fire Testing**
Project Name: STI Fire Stop Mortar
TEC Project No.: 10-0860
TEC Laboratory No.: 20-1454-2

Dear Mr. Loevlie,

Testing Engineering and Consulting Services, Inc. (TEC Services) is an AASHTO R18 and ISO 17025 accredited, independent laboratory and is also approved by the Army Corp of Engineers. TEC Services is pleased to present this report on the testing of the submitted mortar panel received in November of 2020. The panel was circular with a diameter of approximately 5.5 inches and a thickness of 0.732 inches at the center. The specific date the sample was cast and corresponding age at the time of testing is unknown. Testing was performed at SGS TEC Services located in Lawrenceville, GA. This work was carried out in accordance with our Service Agreement (TEC-PRO-10-0860). The test results presented only pertain to the samples tested.

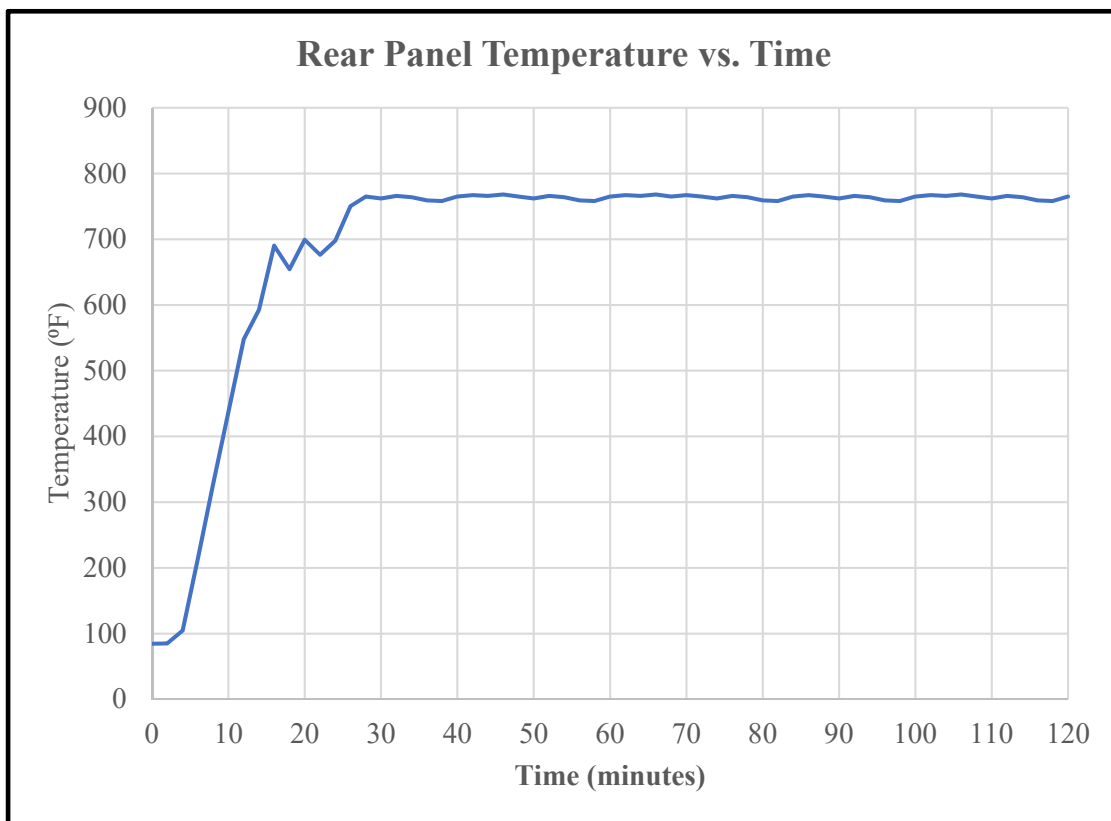
The purpose of the testing was to subject each panel to a flame heat source with an approximate intensity of 2200-2300°F for a duration of 2 hours and record the temperatures on the rear of the panels using a high temperature Type K thermocouple in conjunction with a Graphtec data acquisition system. Plots for each panel are attached to this report. The heat source utilized was a portable torch (Benzomatic TS4000) fueled by a MAP-Pro gas cylinder (manufactured by Benzomatic). The portable torch was horizontally restrained and manually positioned so that the flame of the torch was approximately located 1” away from the panel center. The front panel temperature was monitored throughout each test using a BT-1500 Infrared Thermometer.

The sample exhibited signs of cracking early on in the test at approximately 4-5 minutes. The ¾” round panel did exhibit a single small crack that extended from the top to the center of the panel on the front surface. The crack did not extend through the entire depth of the panel. Details pertaining to the panels are reported in Table 1. Select photos of testing are attached to this report.

Table 1 – Summary Test Details

| Sample ID | Round Panel |
|---|---------------|
| Approximate Size | 5.5" Diameter |
| Average Thickness at Center of Panel (in.) | 0.732 |
| Nominal Temperature at Front of Panel For Test Duration | 2243°F |
| Average Temperature at Rear of Panel for Test Duration | 763°F |
| Test Duration | 2 hrs |

Figure 1 – ¾” Round Panel



We appreciate the opportunity to provide our services to you on this project. Please do not hesitate to contact us at your convenience if you have any questions about this report or if we may be of further assistance.

TESTING, ENGINEERING & CONSULTING SERVICES, INC.

Michael Lyon
Project Manager

James G. McCants III
Laboratory Manager, Chemist

Attachments: Photos 1-4

Photo 1 – Thermocouple Bonded to Rear of Panel

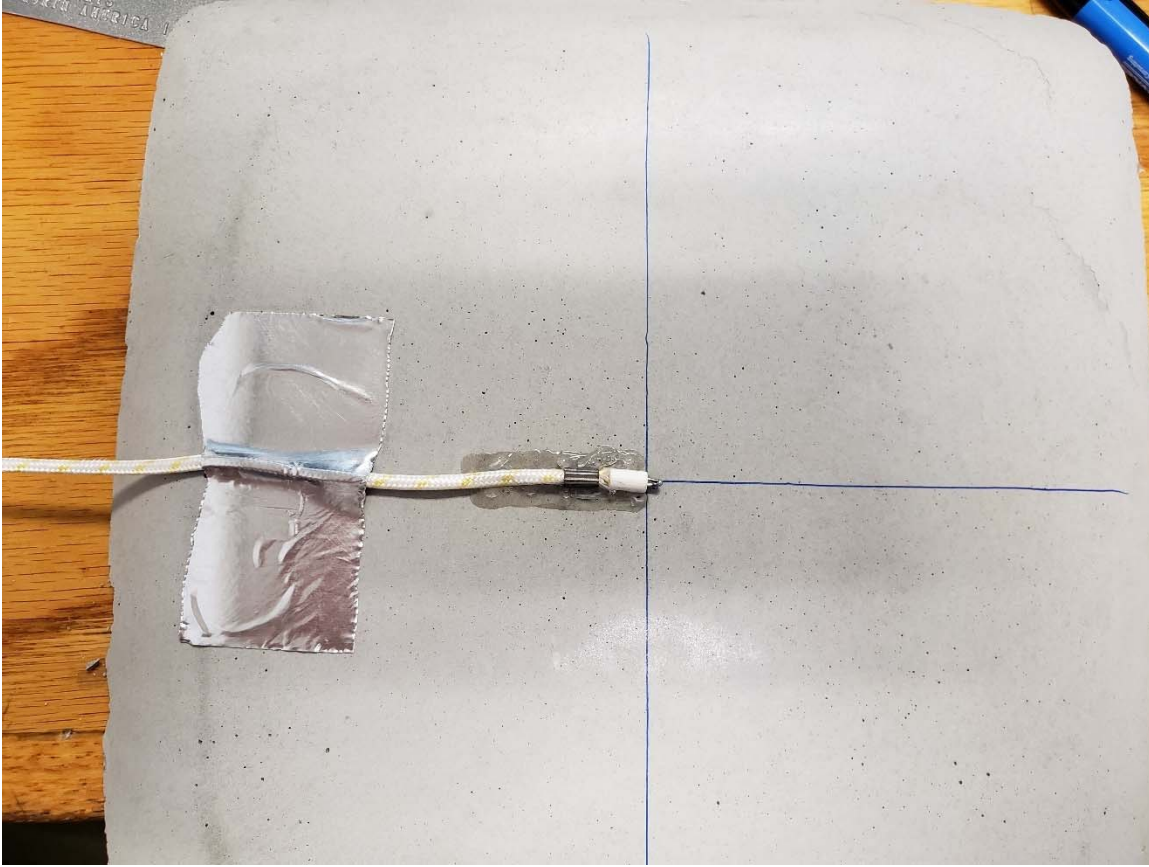


Photo 2 – Test Configuration for 3/4" Round Panel

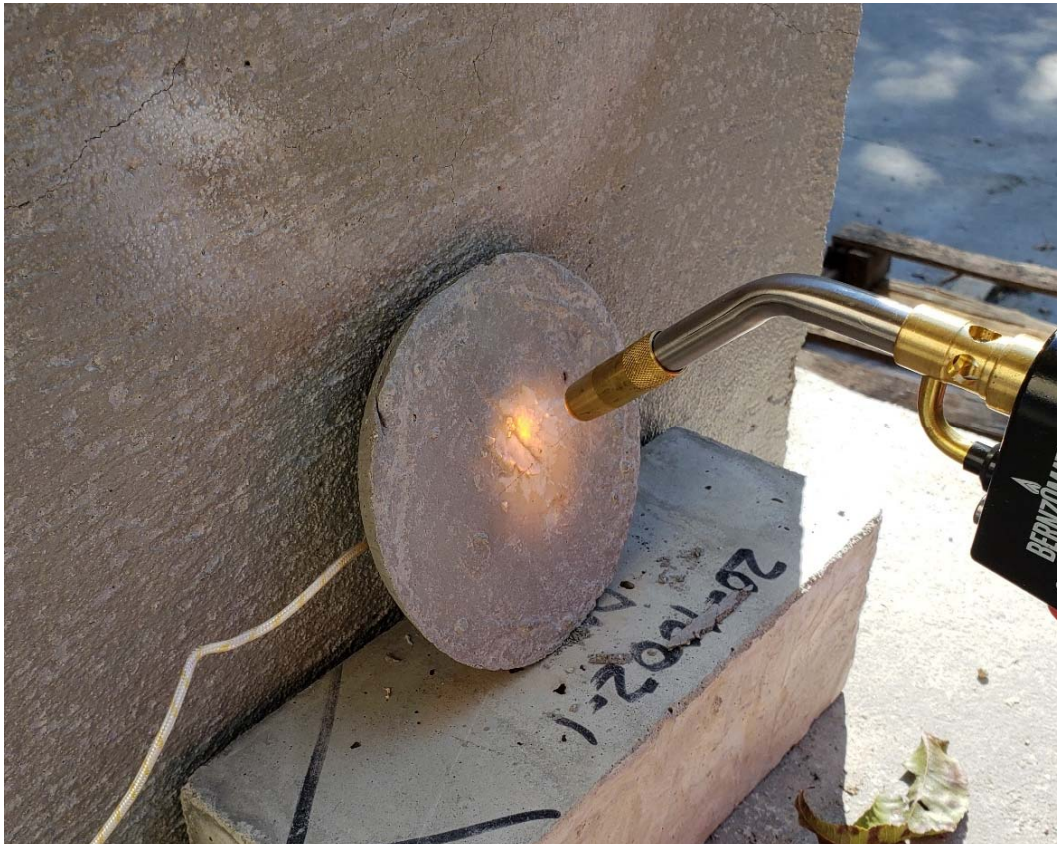


Photo 3 – ¾” Round Panel at 2 hrs



Photo 4 – Front of ¾” Round Panel once Cooled

