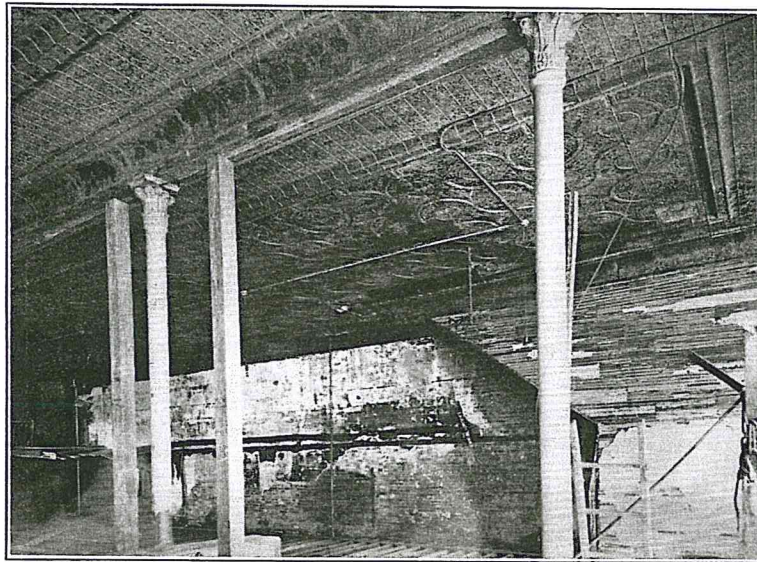


Shanker Industries
301 Suburban Ave
Deer Park, NY 11729



Steel Ceiling a Fire Retardent



This illustration is from an actual photograph of a store room after a disastrous fire, at Davenport, Iowa. Please note the effect on the plaster side walls, where the fire has exposed the lath, the metal ceiling remaining intact, confining the fire to lower floor, and saving the building from destruction.

Much has been claimed for steel ceilings as a fire retardent and to get definite authentic information on this subject, an official test was made by The Columbia University Fire Testing Station at Greenpoint, Brooklyn, New York, November 11, 1914, under the auspices of The Fire Underwriters. Steel Ceilings resisted 1,369° Fahr. for over one hour and ten minutes, the entire duration of the test. The wood and plaster ceilings collapsed in twelve minutes after the fire was started, the heat having risen only to 849°. This determined conclusively the superiority of steel ceilings and the fact that they would remain in place five or six times longer than wood lath and plaster ceilings under intense heat.

The advantages of Steel Ceilings over wood and plaster are apparent. They give almost perfect protection against fire, water, dust, vermin and rodents; they do not crack and never shrink, warp, peel or fall off.

Steel Ceilings and Side Walls completely satisfy the need for a non-combustible, decorative and durable finish for all buildings, whether public, churches, theatres, court houses, business blocks, shops, garages and especially for private residences.

The development and expansion of the Steel Ceiling industry in the past twenty years proves conclusively that the Architect, Contractors, Owners, and the Public generally have been quick to appreciate and utilize the advantages of Steel for Ceilings and Side Walls which combine ornamental features with perfection in construction and durability in service. Steel Ceilings are not only the proper protection for new buildings but are being used quite extensively to replace other types of Ceiling, such as plaster and wood, due to their superior advantages and appearance.



United States Testing Company, Inc.

Engineering Services Division

201 FAIRFIELD AVENUE • FAIRFIELD, NEW JERSEY 07006 • (201) 575 5252 / 5570

REPORT OF TEST

CLIENT:

Shanker Industries
301 Suburban Ave
Deer Park, NY 11729



NUMBER: 099194-2

October 12, 1990

SUBJECT: Surface Burning Characteristics of Building Materials

REFERENCE:

Shanker Industries Inc., letter of authorization dated September 13, 1990 per John Shanker.

TEST PERFORMED:

The submitted sample was tested for Flammability in accordance with the procedures outlined in ASTM E-84-89a.

SAMPLE IDENTIFICATION:

One (1) sample of metal ceiling panels was submitted and identified by the Client as:

Shanker Industries Inc., lay in ceiling panels, 2' x 2', stamped from 0.010 tin free steel.

Testing Supervised by:


Steve Caldarola
Senior Supervisor
Fire Technology Section

SIGNED FOR THE COMPANY

BY: 
John Lomash
Vice President

Page 1
of 6
lv

Laboratories in: New York • Chicago • Los Angeles • Richland • Tulsa • Modesto • Orlando

UNITED STATES TESTING COMPANY, INC. REPORTS AND LETTERS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEY ARE THE PROPERTY OF THE UNITED STATES TESTING COMPANY, INC. OR ITS SEALS OR INSIGNIA ARE NOT TO BE USED UNDER ANY CIRCUMSTANCES IN ADVERTISING TO THE GENERAL PUBLIC AND THEIR COMMUNICATION TO ANY OTHERS OR THE USE OF THE NAME OF UNITED STATES TESTING COMPANY, INC. MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. OUR REPORTS APPLY ONLY TO THE STANDARDS OR PROCEDURES IDENTIFIED, TO THE TESTS CONDUCTED, AND TO THE SAMPLE(S) TESTED AND/OR INSPECTIONS MADE. UNLESS OTHERWISE SPECIFIED, THE TEST AND/OR INSPECTION RESULTS ARE NOT INDICATIVE OR REPRESENTATIVE OF THE QUALITIES OF THE LOT FROM WHICH THE SAMPLE WAS TAKEN OR OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS AND NOTHING CONTAINED IN OUR REPORTS SHALL BE DEEMED TO IMPLY OR MEAN THAT UNITED STATES TESTING COMPANY, INC. CONDUCTS ANY QUALITY CONTROL PROGRAM FOR THE CLIENT TO WHOM THE REPORT IS ISSUED. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS.



United States Testing Company, Inc.
Engineering Services Division

291 FAIRFIELD AVENUE • FAIRFIELD, NEW JERSEY 07008 • (201) 575 5252 / 5570

R E P O R T O F T E S T

CLIENT: Shanker Industries
301 Suburban Ave
Deer Park, NY 11729



NUMBER: 099194-1

October 12, 1990

SUBJECT: Surface Burning Characteristics of Building Materials

REFERENCE:

Shanker Industries Inc., letter of authorization dated September 13, 1990 per John Shanker.

TEST PERFORMED:

The submitted sample was tested for Flammability in accordance with the procedures outlined in ASTM E-84-89a.

SAMPLE IDENTIFICATION:

One (1) sample of metal ceiling panels was submitted and identified by the Client as:

Shanker Industries Inc., nail-up steel ceiling panels 2' x 4', stamped from 0.010 tin free steel, nailed to wooden furring strips mounted on 5/8" fire code sheetrock.

Testing Supervised by:


Steve Caldarola
Senior Supervisor
Fire Technology Section

SIGNED FOR THE COMPANY

BY: 
John Domash
Vice President

Page 1
of 6
lv

Laboratories in: New York • Chicago • Los Angeles • Richland • Tulsa • Modesto • Orlando

UNITED STATES TESTING COMPANY, INC. REPORTS AND LETTERS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEY AND THE NAME OF THE UNITED STATES TESTING COMPANY, INC. OR ITS SEALS OR INSIGNIA ARE NOT TO BE USED UNDER ANY CIRCUMSTANCES IN ADVERTISING TO THE GENERAL PUBLIC AND THEIR COMMUNICATION TO ANY OTHERS OR THE USE OF THE NAME OF UNITED STATES TESTING COMPANY, INC. MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. OUR REPORTS APPLY ONLY TO THE STANDARDS OR PROCEDURES IDENTIFIED TO THE TESTS CONDUCTED AND TO THE SAMPLE(S) TESTED AND/OR INSPECTIONS MADE. UNLESS OTHERWISE SPECIFIED, THE TEST AND/OR INSPECTION RESULTS ARE NOT INDICATIVE OR REPRESENTATIVE OF THE QUALITIES OF THE LOT FROM WHICH THE SAMPLE WAS TAKEN OR OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS AND NOTHING CONTAINED IN OUR REPORTS SHALL BE DEEMED TO IMPLY OR REAR THAT UNITED STATES TESTING COMPANY, INC. CONDUCTS ANY QUALITY CONTROL PROGRAM FOR THE CLIENT TO WHOM THE REPORT IS ISSUED. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS.

United States Testing Company, Inc.

CLIENT: Shanker Industries Inc.

NUMBER: 099194-1

INTRODUCTION:

This report presents test results of Flame Spread and Smoke Developed Values per ASTM E-84-89a. The report also includes Material Identification, Method of Preparation, Mounting and Conditioning of the specimens.

The tests were performed in accordance with the specifications set forth in ASTM E-84-89a, "Standard Test Method for Surface Burning Characteristics of Building Materials", both as to equipment and test procedure. This test procedure is similar to UL-723, ANSI No. 2.5, NFPA No. 255 and UBC 42-1.

The test results cover two parameters: Flame Spread and Smoke Developed Values during a 10-minute fire exposure. Inorganic cement board and red oak flooring are used as comparative standards and their responses are assigned arbitrary values of 0 and 100, respectively.

The performance of each material is evaluated in relation to the performance of inorganic cement board and red oak flooring under similar fire exposure.

PREPARATION AND CONDITIONING:

Three (3) 2'0" x 8'0" panels were fitted end to end to form a 2'0" x 24'0" specimen. Since the samples were self-supporting, no further preparation was necessary. The mounting was such as to expose the decorative face side to the flame.

The panels were conditioned at $73^{\circ} \pm 5^{\circ}\text{F}$ and $50 \pm 5\%$ relative humidity.

TEST PROCEDURE:

The tunnel was thoroughly pre-heated by burning natural gas. When the brick temperature, sensed by a floor thermocouple, had reached the prescribed 105 degrees Fahrenheit \pm 5 degrees Fahrenheit level, the sample was inserted in the tunnel and test conducted in accordance with the standard ASTM E-84-89a procedures.

The operation of the tunnel was checked by performing a 10-minute test with inorganic board on the day of the test.



Shanker Industries

301 Suburban Ave
Deer Park, NY 11729



UNITED STATES TESTING COMPANY, INC.

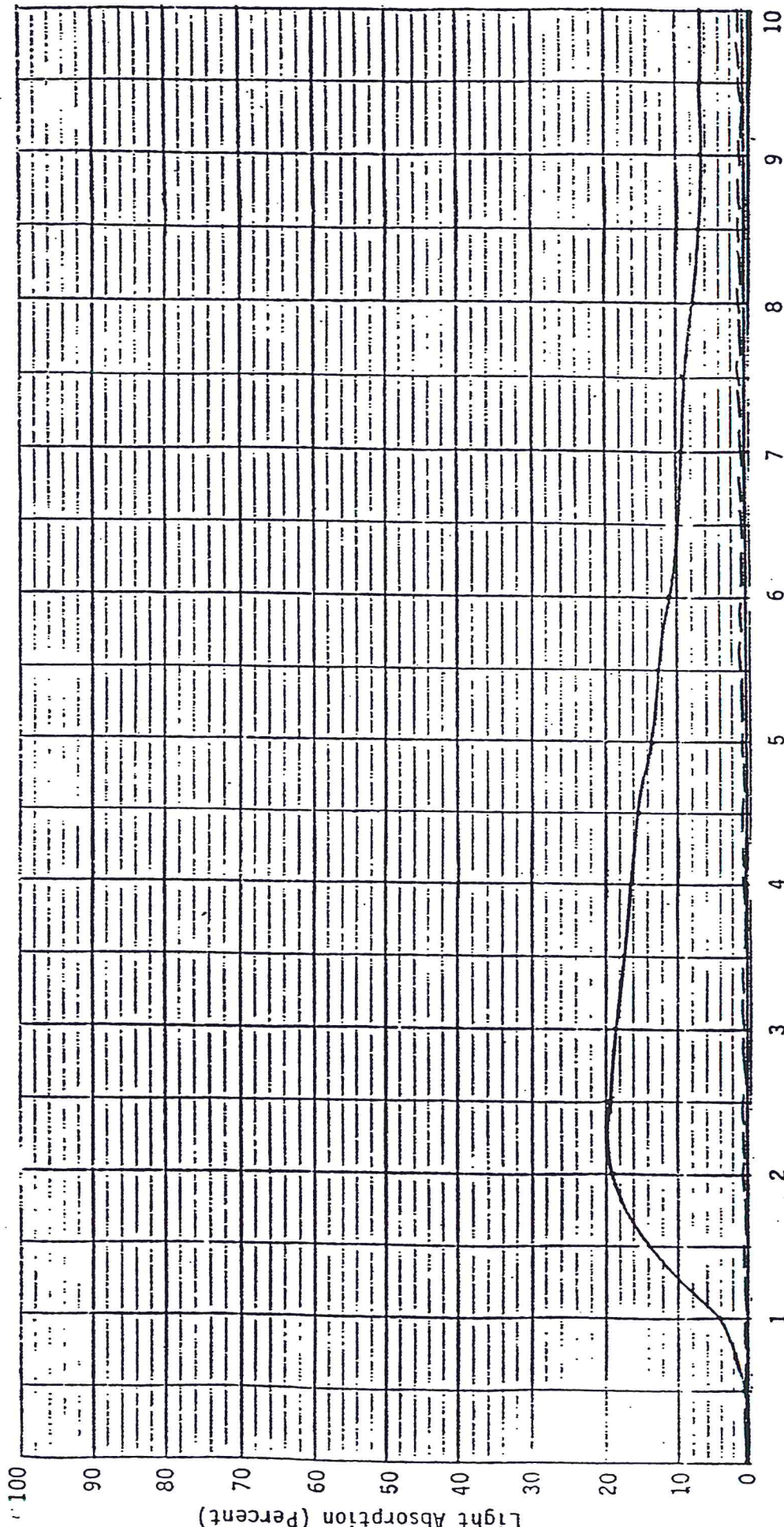
SMOKE DEVELOPED

SAMPLE Nail-Up Panels

TEST NO. 099194-1

RED OAK

TEST DATE October 4, 1990



Time (Minutes)

Figure 2

United States Testing Company, Inc.

CLIENT: Shanker Industries Inc.

NUMBER: 099194-1

TEST RESULTS:

The test results, calculated in accordance with ASTM E-84-89a for Flame Spread and Smoke Developed Values are as follows:

Test Specimen:	Nail-Up Panels
Flame Spread Index*:	0
Smoke Developed Value*:	0

*Graphs of the Flame Spread, Smoke Developed and Time-Temperature are shown in Figures 1, 2 and 3 at the end of this report.

OBSERVATIONS:

No ignition was noted in the ten minute exposure to the flame. The specimen exhibited charring and warping. There was no flamefront advancement. Afterglow was evident upon test completion.



UNITED STATES TESTING COMPANY, INC.



Shanker Industries
301 Suburban Ave
Deer Park, NY 11729

FLAME SPREAD

Sample Nail-Up Panels Test No. 099194-1
Red Oak 0 0 Test Date October 4, 1990
I.C. Board _____

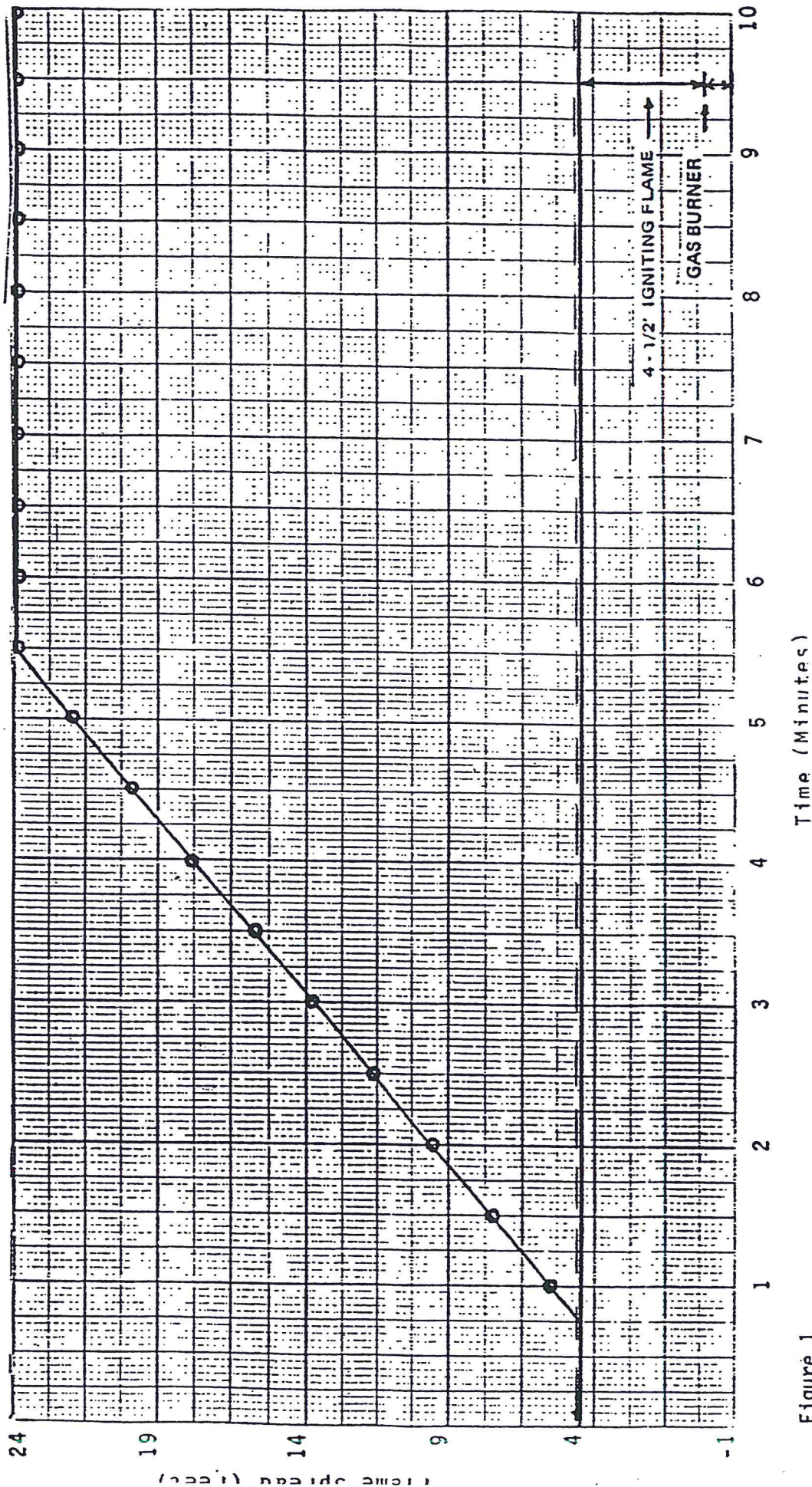


Figure 1

CLIENT:

Shanker Industries
301 Suburban Ave
Deer Park, NY 11729



Evaluation Report No: RJ1855

Date: 5/5/2012

Product ID:

The products for evaluation are identified as: Shanker Industries Inc., nail-up stamped metal ceiling panels. These products are described as 2' by 2', 2' by 4' or 2' x 8', nail-up stamped metal ceiling panels stamped from approximate 0.010" thickness metal stock. The panels are available in tin-free steel, white steel, stainless steel, copper, brass, and chrome.

For a more detailed description please see page 2.

**EVALUATION
REQUESTED:**

Engineering Evaluation of Shanker Industries nail-up steel ceiling panels, when installed to the underside of a fire-rated floor-ceiling assembly, to maintain the fire resistance rating of the floor-ceiling assembly as per the requirements in the following standards:

ASTM E119-12, *Standard Test Methods for Fire Tests of Building Construction and Materials*

RESULTS:

Based on the evaluation of supporting evidence, it is our professional judgment that the attachment of Shanker Industries nail-up steel ceiling panels, when installed to the underside of a fire-rated floor-ceiling assembly using wooden furring strips, does not compromise or reduce the fire-resistance rating of the floor-ceiling assembly.

Prepared By

Chris Scoville, M.Sc.
Senior Project Manager

**Signed for and on behalf of
QAI Laboratories Inc.**

Chris Bowness, PE, P.Eng.
Director of Engineering



EVALUATION PURPOSE

The purpose of this evaluation is to determine that Shanker Industries Inc. Nail-up steel ceiling panels, when installed to the underside of a fire-rated floor-ceiling assembly, maintain the fire resistive rating of the floor-ceiling assembly as per the original design of the fire-rated floor-ceiling assembly.

PRODUCT DESCRIPTION

Shanker Industries nail-up steel ceiling panels are made of various noncombustible metals. The specific panels for this Evaluation are tin-free steel panels with stamped design, made of 0.010" thickness steel sheet. The panels are installed directly to ½" thick by 3" wide wooden furring strips that are screwed into the pre-existing fire rated floor-ceiling assembly. Wooden furring strips are installed directly to the underside of the assembly and then the steel panels would be nailed to the furring strips.

REFERENCED STANDARDS AND REPORTS

- ASTM E119-12 *Standard Test Methods for Fire Tests of Building Construction and Materials*

ENGINEERING EVALUATION

The installation of the wooden furring strips and the stamped metal ceiling panels are applied to the underside of the ceiling assembly. This is the same side as the fire exposure during a fire rated assembly test to ASTM E119.

The E119 test is a pass-fail criteria that is based on two failure modes: fire penetration through the assembly, and temperature rise on the non-fire exposed side of the assembly.

The steel ceiling panels are non-combustible materials inherently due to their steel composition.

Since the stamped ceiling panels and air space created by the wooden furring strips are added to the fire-exposed side of the fire rated assembly, they act as additional materials that effectively increase the resistance to thermal transfer through to the assembly. This would act as a positive effect that does not detract from or negatively affect the assembly and its reaction to the fire exposure.

The wooden furring strips themselves are combustible, however since they are located on the fire-exposed side of the assembly, which during testing is exposed to very high heat and direct exposure to gas burners, the combustion from the wood furring strips would not be more severe than the raw gas burner exposure, especially considering the time-temperature curve which is followed by adjusting the gas burners constantly throughout the testing exposure to account for differences in the reaction or combustibility of the assembly to the heat exposure. This indicates that the addition of the 3" x ½" wooden furring strips would not have a negative effect on the overall resistance of the assembly.

The weight of the ceiling panels and furring strips must be taken into account to determine the total load as applicable to the ceiling/floor assembly, and is not included as part of this Evaluation.



ENGINEERING RECOMMENDATION

Based on the evaluation of supporting evidence, it is our professional judgment that the attachment of Shanker Industries nail-up steel ceiling panels, when installed to the underside of a fire-rated floor-ceiling assembly using wooden furring strips, does not compromise or reduce the fire-resistance rating of the floor-ceiling assembly.

End of Report
