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STRUCTURAL ENGINEERS – PROFESSIONAL LICENSURE IN ALL 50 STATES
PHONE: (314) 835-1224 mcginnisstructural.com

January 10, 2011

Mr. Gregg Pearlstone
Porta-King Building Systems
4133 Shoreline Drive
Earth City, MO 63045

Re: Thermal Barrier

McGinnis File Number: 18668

Based on section 2603.4 of the 2006 and 2009 International Building Code (IBC), the ½" gypsum wall board that is laminated to both sides of the polystyrene core provides the required 15 minute thermal break. In addition to the ½" gypsum wallboard providing the thermal barrier prescriptively, the Versaking stud clamps the panel together insuring that it will remain in place for the duration of the 15 minutes of fire exposure.

If you have any other questions regarding the adequacy of the wallboard satisfying the 15 minute thermal barrier, please let me know.

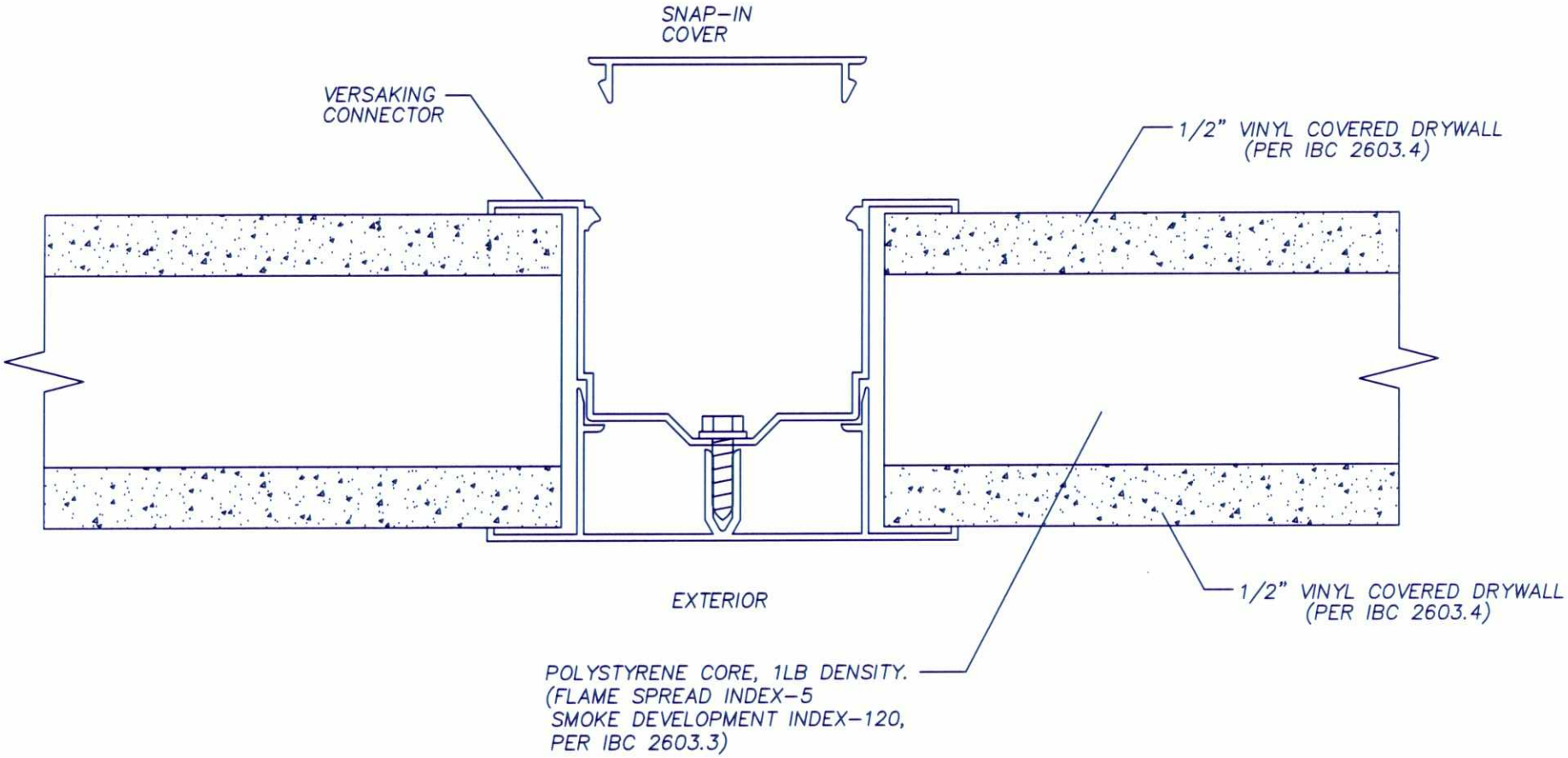
Sincerely,

McGINNIS & ASSOCIATES
CONSULTING ENGINEERS, INC.

Kenneth Vortherms

Kenneth Vortherms, P.E.
Senior Structural Engineer





1/2" V. C. DRYWALL / 1 7/8" POLYSTYRENE / 1/2" V. C. DRYWALL
TEST SAMPLE TESTED PER ASTM E84–10 TEST FOR SURFACE BURNING
CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8–1, NFPA 255).

PANEL CONSTRUCTION IN ACCORDANCE WITH IBC 2009 SECTION 2603, FOAM PLASTIC INSULATION. THERMAL PROTECTION OF FOAM PLASTIC INSULATION WITH AN APPROVED THERMAL BARRIER.

PORTA–KING BUILDING SYSTEMS
4133 SHORELINE DRIVE EARTH CITY, MISSOURI 63045
1–800–456–5464 FAX 314–291–2857 www.portaking.com

TITLE 1/2" VINYL COVERED DRYWALL / 1 7/8" POLYSTYRENE / 1/2" VINYL COVERED DRYWALL

TEST REPORT

REPORT NUMBER: 100146078SAT-001
ORIGINAL ISSUE DATE: June 29, 2010
REVISED DATE: n/a

EVALUATION CENTER
Intertek Testing Services NA Inc.
16015 Shady Falls Road
Elmendorf, TX 78112

RENDERED TO

Porta-King Building Systems
4133 Shoreline Drive
Earth City, MO 63045

Report of Testing "½ inch Vinyl Covered Drywall/ 1 7/8 inch Polystyrene/ ½ inch Vinyl Covered Drywall" for compliance with the applicable requirements of the following criteria: ASTM E84-10 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)

ABSTRACT

Specimen I. D.	**"½ inch Vinyl Covered Drywall/ 1 7/8 inch Polystyrene/ ½ inch Vinyl Covered Drywall"**
Test Standard:	ASTM E84-10 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)
Test Date:	June 28, 2010
Client:	Porta-King Building Systems
Test Results:	

FLAME SPREAD INDEX	**20**
SMOKE DEVELOPED INDEX	**15**

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Richard Larque
Tunnel Operator

June 29, 2010

Reviewed and approved:

Servando Romo
Project Manager

June 29, 2010

Intertek

I. INTRODUCTION

This report describes the results of the ASTM E84 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS a method for determining the comparative surface burning behavior of building materials. This test is applicable to exposed surfaces, such as ceilings or walls, provided that the material or assembly of materials, by its own structural quality or the manner in which it is tested and intended for use, is capable of supporting itself in position or being supported during the test period.

The purpose of the method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke density developed are reported, however, there is not necessarily a relationship between these two measurements.

"The use of supporting materials on the underside of the test specimen may lower the flame spread index from that which might be obtained if the specimen could be tested without such support... This method may not be appropriate for obtaining comparative surface burning behavior of some cellular plastic materials... Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place."

This test method is also published under the following designations:

NFPA 255
UL 723
UBC 8-1

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

II. PURPOSE

The ASTM E84 (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of mineral fiber cement board and select grade red oak flooring. The test specimen surface (18 inches wide and 24 feet long) is exposed to a flaming fire exposure during the 10 minute test duration, while flame spread over its surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials.

The furnace is considered under calibration when a 10 minute test of red oak decking will pass flame out the end of the tunnel in five minutes, 30 seconds, plus or minus 15 seconds. Mineral fiber cement board forms the zero point for both flame spread and smoke developed indexes, while the red oak flooring smoke developed index is set as 100.

III. TEST PROCEDURE

The tests were conducted in accordance with the procedures outlined in the ASTM E84. The specimens are placed directly on the tunnel ledges. As required by the standard, one or more layers of 0.25 inch thick reinforced concrete board are placed on top of the test sample between the sample and the tunnel lid. After the test, the samples are removed from the tunnel, examined and disposed of.

IV. DESCRIPTION OF TEST SPECIMENS

Date Received:	6/24/2010
Date Prepared:	6/28/2010
Conditioning (73°F & 50% R.H.):	4 days
Specimen Width (in):	24
Specimen Length (ft):	24
Specimen Thickness (in):	2.76
Material Weight:	N/A
Total Specimen Weight (lbs):	167
Adhesive or coating application rate:	N/A

Mounting Method:
The specimen was self-supporting. The sample consisted of 2 different materials on the sample. The side with the ½ Vinyl covered drywall was facing down towards the flame. The specimen was the same on the back side.

Specimen Description:
The specimen was described by the client as;"1/2" Vinyl Covered Drywall/1 7/8" Polystyrene/ ½" Vinyl Covered Drywall".

The specimen consisted of (3) 8-ft. long x 24-in. wide x 2.76-in. thick vinyl covered drywall panels with a 1 7/8 Polystyrene panel in the center and ½ vinyl drywall on the back.

The product was received by our personnel in good condition.

V. TEST RESULTS & OBSERVATIONS

The test was conducted on June 28, 2010.

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table.

Test Specimen	Flame Spread Index	Smoke Developed Index
"½ inch Vinyl Covered Drywall/ 1 7/8 inch Polystyrene/ ½ inch Vinyl Covered Drywall"	20	15

The data sheets are included in Appendix A. These sheets are actual print-outs of the computerized data system which monitors the tunnel furnace, and contain all calibration and specimen data needed to calculate the test results.

VI. OBSERVATIONS

During the test, the specimen was observed to behave in the following manner.

Time (min:sec)	Observations
0:13	Steady Ignition
6:29	Flaking

After the burners were turned off, no after flame was observed.

After the test, the specimen was observed to be damaged as follows:

Distance (FEET)	Damage Descriptions
0 - 8	Charred
8-24	Discolored

APPENDIX A
ASTM E84
DATA SHEETS

ASTM E84-10

Client: Porta-King Building Systems
Date: 6-28-10
Project Number: 100146078SAT-001
Test Number: 2
Operator: BH/DRG

Specimen Info: "1/2" Vinyl Covered Drywall/1 7/8" Polystyrene/ 1/2" Vinyl Covered Drywall" The specimen was self supporting.

TEST RESULTS

FLAMESPREAD INDEX: 20

SMOKE DEVELOPED INDEX: 15

SPECIMEN DATA . . .

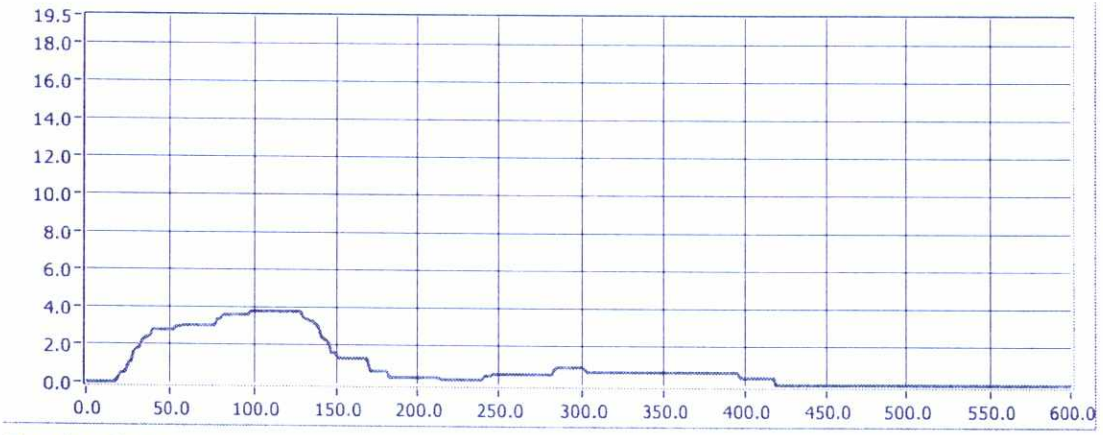
Time to Ignition (sec): 13
Time to Max FS (sec): 98
Maximum FS (feet): 3.8
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 595
Time to Max Temperature (sec): 591
Total Fuel Burned (cubic feet): 48.88

FS*Time Area (ft*min): 35.3
Smoke Area (%A*min): 14.8
Unrounded FSI: 18.2

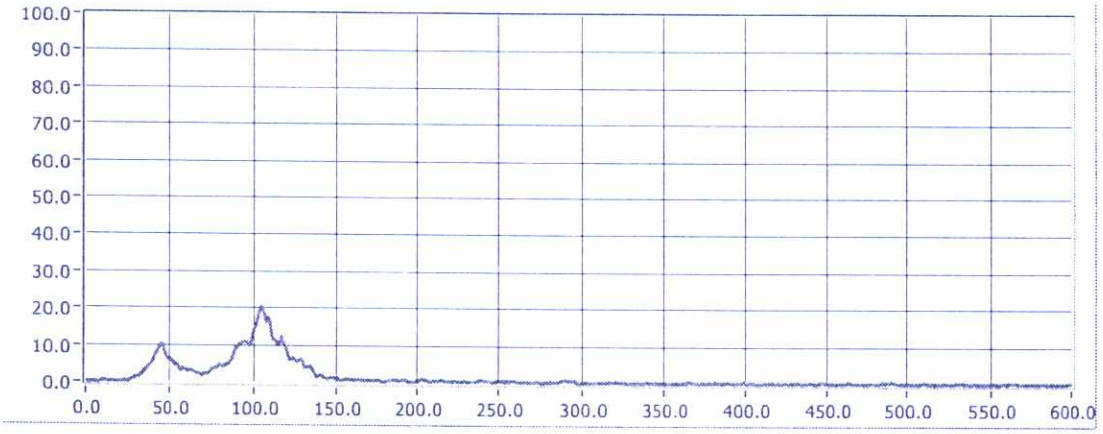
CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 37.0
Red Oak Smoke Area (%A*min): 104.2

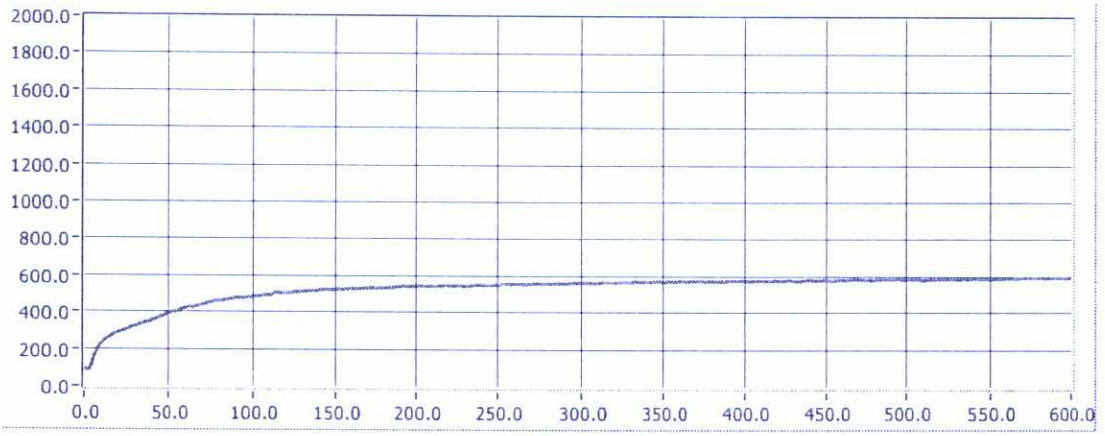
FLAME SPREAD (ft)



Smoke (%A)



Temperature (℉)



Time (sec)

600