LEE'S SUMMIT
MISSOURI

CODE MODIFICATION REQUEST
(PLAN REVIEW)

BUILDING/STRUCTURE NAME: Hartley Block Garage

PREMISE ADDRESS: 301 - 319 SE Douglas Street

PERMIT NUMBER (if applicable):

OWNER'S NAME: CML - MO HAF, LLC

TO: Director of Planning & Codes Administration

In accordance with the Lee's Summit Building Code, I wish to apply for a modification to one or more provisions of the code as I feel that the spirit and intent of the Lee's Summit Building Code are observed the public health, welfare and safety are assured. The following articulates my request for your review and action. (NOTE: ATTACH ANY ADDITIONAL INFORMATION NECESSARY)

Request approval to utilize Fiber Reinforced Polymers (FRP) to reinforce the perimeter concrete walls of the garage as noted in the attached narrative.

SUBMITTED BY:

NAME: David M. McNaghten, P.E. S.E. ( ) OWNER (x) OWNER'S AGENT

ADDRESS: 4330 Shawnee Mission Parkway, Ste 375 Tel.# 913 831 1262

CITY, STATE, ZIP: Fairway, KS 66205 SIGNATURE: Digitally signed by David McNaghten Date: 2014.09.28 08:31:20 -05'00'

TRACY DEISTER – ASST. DIRECTOR CODES ADMINISTRATION: (X) APPROVAL ( ) DENIAL

SIGNATURE: DATE: 10-7-14

ROBERT MCKAY - DIRECTOR OF PLANNING & CODES ADMIN: (X) APPROVED ( ) DENIED

SIGNATURE: DATE: 10-14-14

COMMENTS: All interior finish materials must be a class "C" minimum. RTR 10/13/14

A COPY MUST BE ATTACHED TO THE APPROVED PLANS ON THE JOB SITE

Planning & Codes Administration | 220 SE Green Street, Lee's Summit, MO 64063
P: 816.969.1200 | F: 916. 969.1201 | cityofls.net

Lee's Summit, Missouri

Hartley Block Garage
301 – 319 SE Douglas Street

Code Modification Request
Supplemental Information

FRP Reinforcing

September 29, 2014

One of the deficiencies discovered in our analysis of the Hartley Block Parking Structure was the ability of the perimeter concrete walls to resist the lateral earth pressure loading on them. In addition to not meeting the strength requirements of the Building Code, they also do not contain the minimum reinforcing required by the American Concrete Institute (ACI) code, adopted by the 2012 International Building Code. One potential method of reinforcing these walls would be to apply fiber reinforced polymers (FRP) on the inside face of the wall. FRP is essentially externally applied reinforcing that supplements the reinforcing currently in the wall. The ACI code provides provisions for FRP in the same manner it provides provisions for utilizing conventional reinforcing.

We have submitted the Flame Spread and Smoke Development test results of this product to Mr. Jim Eden, Assistant Chief of Fire Prevention and are awaiting a response. A copy of the product and the referenced testing is attached.

4330 Shawnee Mission Parkway | Suite 375 | Fairway, KS 66205 | 913-831-1262 | Fax 913-831-0148 pmaengineering.com

Albi Manufacturing
Division of StanChem Inc.
401 Berlin St., East Berlin, CT 06023
860/828-0571 Fax: 860/828-3297
http://www.albi.com

ALBI COTE FRL
(Product Data Information)

PRODUCT DESCRIPTION:

Albi Cote FRL is a water-based, co-polymer intumescent coating, which provides excellent fire retardant properties. Albi Cote FRL is odor-free and offers the advantages of easy application and cleanup. This durable fire retardant coating provides a serviceable, wash-resistant flat finish for a wide variety of interior applications.

Designed for interior use, Albi Cote FRL is a quick drying special coating that reacts to flame or heat at 300° F (149° C) by expanding into a thick multicellular insulating blanket. This intumescent carbonaceous foam sharply limits the spread of flame and insulates the surface to which it is applied. Albi Cote FRL provides a decorative, washable and mar-resistant finish like conventional paint, with the added advantages of a Class A fire retardant coating.

RECOMMENDED USES:

Albi Cote FRL is recommended as a decorative interior finish for the protection of combustible wall and ceiling surfaces such as wood, fiberboard, plywood, particle board, etc. and as supplementary low flame spread and low smoke density protection when applied to plaster, gypsum wallboard, cinder block, etc. Albi Cote FRL is specially designed for application to combustible areas of public assembly such as restaurants, nursing homes, schools, corridors, stairwells, etc., where odor-free, quick drying features are desired.

TEST DATA & APPROVALS:

Albi Cote FRL has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E-84 test procedures and is classified by UL, Inc. as providing Class A (0-25 flame spread) when applied to Douglas Fir. As such, it is accepted by major building codes and insurance ratings organizations as an approved interior finish coating where such classification is required.

U.L., INC. TEST DATA:

Surface	Douglas Fir	
Coverage (sq. ft. per gal.)	175	225
Flame Spread	5	5
Smoke Development	45	40

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ALBI COTE FRL
(Product Data Information)

PHYSICAL PROPERTIES

DRYING TIME:	Air Dry – 30 minutes.	**FLASH POINT:**	Closed Cup - no flash.
RECOAT:	Two hours between coats.	**SOLIDS BY WEIGHT:**	60% ± 5%
PACKAGING:	1 gallon, 5 gallon and 55-gallon containers.	**SOLIDS BY VOLUME:**	48% ± 5%
		WEIGHT/GALLON:	10.89 to 10.99 lbs.
COLORS:	White and standard colors	**WET FILM THICKNESS:**	7.2 to 9.2 Mils
TINTING:	Universal Colorants not to exceed 2 oz per gallon.	**DRY FILM THICKNESS:**	3.4 to 4.4 Mils
		VISCOSITY:	83 - 90 Kreb Units
COVERAGE:	225 - 175 sq. ft. per gallon.	**CLASSIFICATION:**	Class A
THINNER:	Water		

ARCHITECTURAL SPECIFICATIONS:

SURFACE PREPARATION: All surfaces must be clean, dry, and free of grease or any surface contamination that will impair or prevent proper adhesion. Repair cracks or gouges with spackling compounds or wood putty. Sand Smooth and remove all dust. On glossy surfaces, sand lightly to provide "tooth." For new wood or porous surfaces, prime with Albi 490W. For metal surfaces, clean and prime with rest preventative metal primer such as Albi 490W.

MATERIAL: Fire retardant coating shall be Albi Cote FRL as manufactured by Albi Manufacturing, Division of StanChem, Inc. or approved equal. Fire retardant coating shall be tested and classified by Underwriters' Laboratories, Inc. offering evidence of Class A rating. Material shall be applied at the listed rate of coverage to conform to the UL classification and to the intent of this specification.

APPLICATION: Apply Albi Cote FRL in one or multiple coats to achieve specific coverage rate, assuring compliance with intent of specifications. Albi Cote FRL can be applied by conventional air, airless spray, brush or roller. For spraying consistency, thin with water not to exceed one half pint per gallon. Where there is a specified need for a deep tone decorator finish or wash ability, specify UL classified fire inert topcoat – Albi Cote TC Latex Semi Gloss.

Write for further test information on Albi-Cote FRL or our complete line of fire retardant coatings and fireproofing systems. Or you may visit our web site: www.albi.com.

SAFETY PRECAUTIONS:

Avoid contact with eyes and skin. Use with adequate ventilation. Do not apply at temperatures below 50 degrees F. Keep material from freezing. For safety information on Albi Cote FRL please request the current Material Safety Data Sheet.

Rev: 12/00

TEST REPORT

Intertek

REPORT NUMBER: 100465891SAT-001A
ORIGINAL ISSUE DATE: August 8, 2011
REVISED DATE:

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

RENDERED TO

Structural Group, Inc.
6955 San Thomas Road
Elkridge, MD 21075

Report of Testing "V-Wrap C200/700 Albi Cote" for compliance with the applicable requirements of the following criteria: ASTM E84-11a TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)

ABSTRACT

Specimen I. D.	"V-Wrap C200/700 Albi Cote"
Test Standard:	ASTM E84-11a TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)
Test Date:	August 8, 2011
Client:	Structural Group, Inc.
Test Results:	

FLAME SPREAD INDEX	**0**
SMOKE DEVELOPED INDEX	**60**

Darrell Gonzales
Technician 2

August 8, 2011

Reviewed and approved:

Servando Romo
Project Manager

August 8, 2011

Intertek

I. INTRODUCTION

This report describes the results of the ASTM E84-11a 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. REVISION SUMMARY

DATE	SUMMARY
August 8, 2011	Original

V. DESCRIPTION OF TEST SPECIMENS

Date Received:	8/5/11
Date placed in the conditioning room:	8/5/11
Conditioning (73°F & 50% R.H.):	3 days
Specimen Width (in):	24
Specimen Length (ft):	24
Specimen Thickness (in):	0.58 (thickness of the cement board/coating/V-Wrap - system)
Total Specimen Weight (lbs):	121

Mounting Method:
The specimen was self-supporting. The coated side was exposed to the flames.

Specimen Description:
The specimen was described by the client as "The system consists of: 5/8" cement board and 2 piles of V-wrap C200 Carbon Fiber composite system applied using V-Wrap 700 epoxy adhesive and top coated with two coats of Albi Cote FRL intumescent paint".

The 24-ft. long test specimen consisted of four 5-ft. long x 24-in. wide x 0.58-in. thick cement board/coating/V-Wrap - system and one 4-ft. long x 24-in. wide x 0.58-in. thick cement board/coating/V-Wrap - system.

The product was received by our personnel in good condition.

VI. TEST RESULTS & OBSERVATIONS

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
"V-Wrap C200/700 Albi Cote"	0	60

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.

VII. OBSERVATIONS

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

Time (min:sec)	Observations
0:35	The specimen begins to blister.
0:51	A transient ignition is observed.
1:01	A steady ignition is observed.
8:39	Cracking is observed.

After the burners were turned off, a 17 second after flame was observed.

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

Distance (FEET)	Damage Descriptions
0 - 7	The coating and V-Wrap was heavily charred and charred pieces were on the tunnel floor.
7 - 10	The coating and V-Wrap were blistered and heavily discolored
10 - 16	The specimen was heavily discolored.
16 - 24	The specimen was lightly discolored.

APPENDIX A
ASTM E84
DATA SHEETS

TEST RESULTS

FLAMESPREAD INDEX: 0

SMOKE DEVELOPED INDEX: 60

SPECIMEN DATA . . .

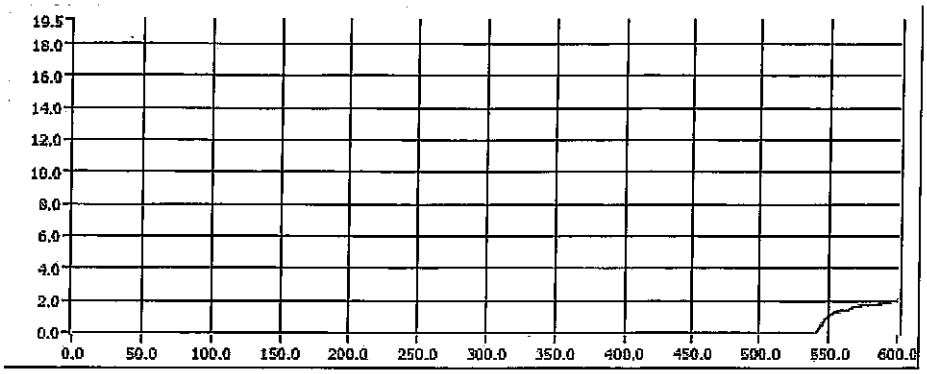
Time to Ignition (sec): 61
Time to Max FS (sec): 595
Maximum FS (feet): 1.9
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 579
Time to Max Temperature (sec): 597
Total Fuel Burned (cubic feet): 50.42

FS*Time Area (ft*min): 1.4
Smoke Area (%A*min): 61.4
Unrounded FSI: 0.7

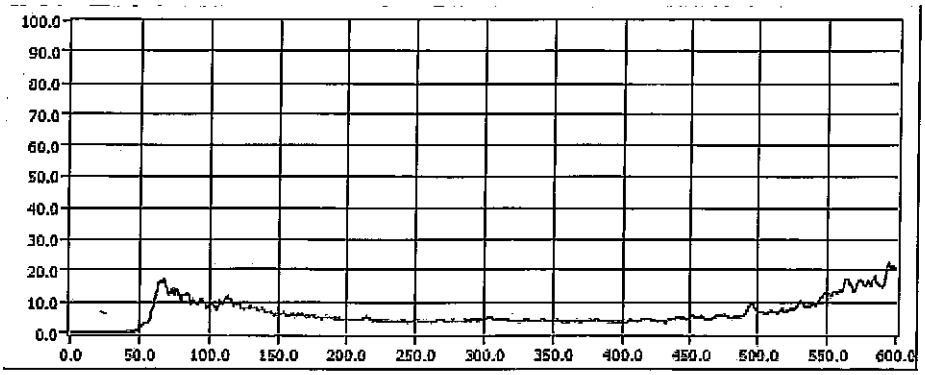
CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 39.0
Red Oak Smoke Area (%A*min): 104.9

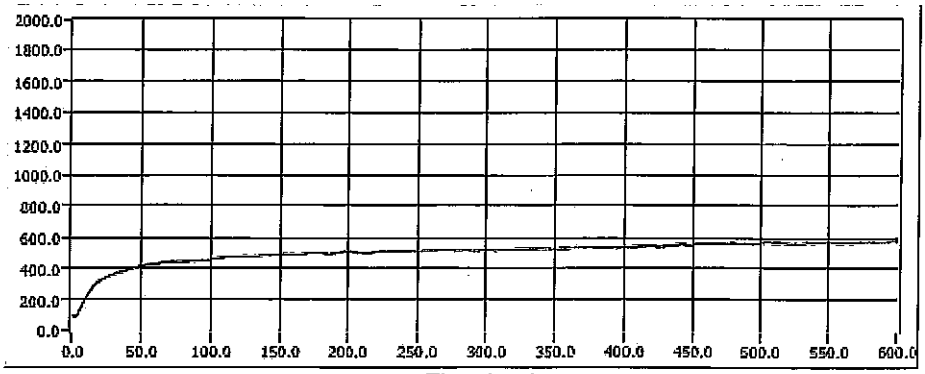
FLAME SPREAD (ft)



Smoke (%A)



Temperature (F)



Time (sec)

600