15 October 2007

RE: Permit Review 468-470 Fore Street
Comments by Mike Nugent, Consulting Plans Examiner, City of Portland

Response in RED by Archetype, P.A.

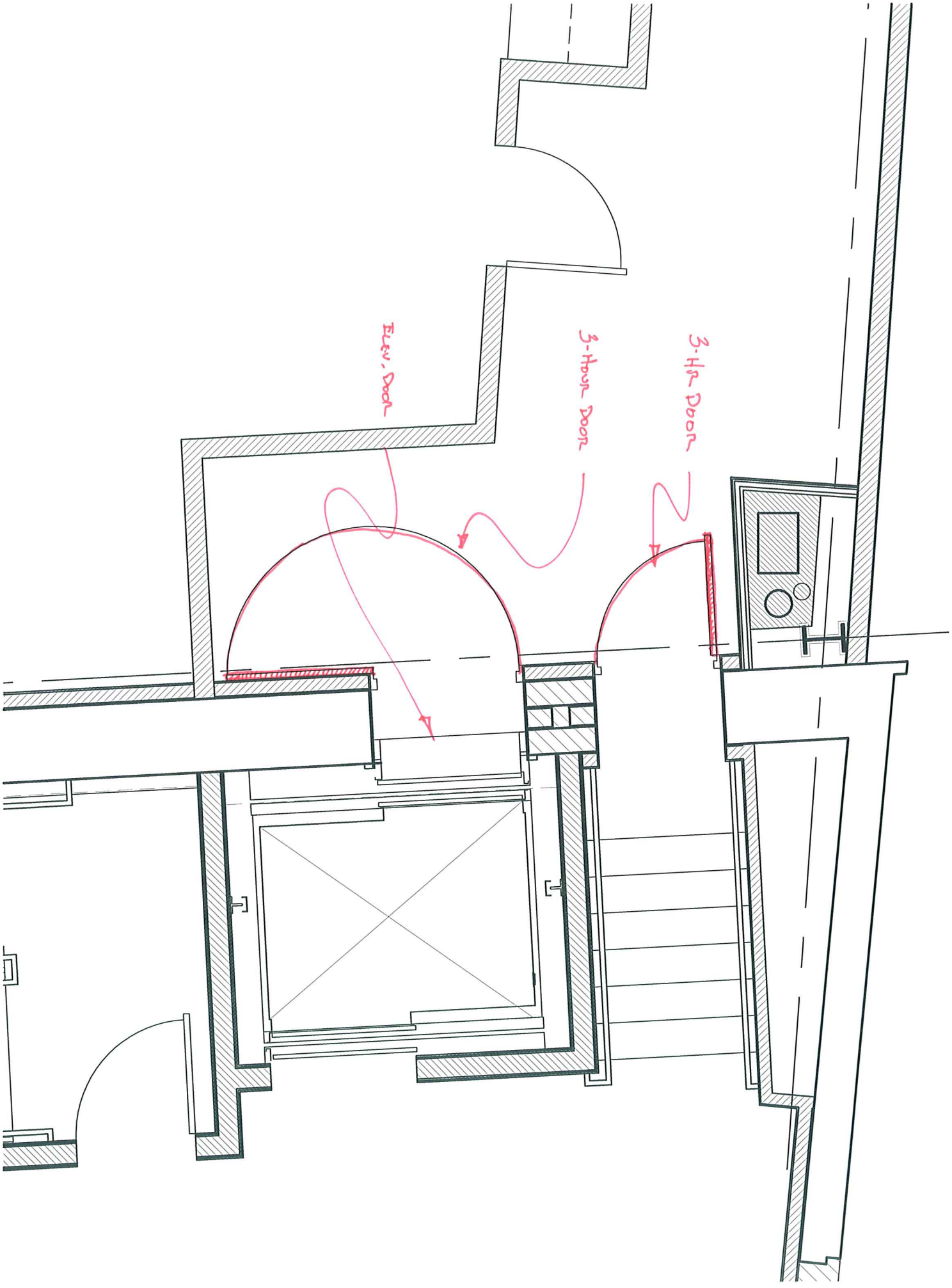
1) Item number 4: This seems to be a potential problem. Without opening protectives that meet table 715.3 we have no firewall. Please research this further and either come up with an alternative design or a code justification that supports your design. Response: The doors we are using in the 3-hour fire wall (highlighted in red on the attached drawing) are typical 3-hour rated doors – hollow metal doors, with passage hardware, on magnetic holdback (door to elevator opening only), and will be smoke-sealed with gaskets. This is all part of the door hardware supplier's scope of work. Our consultant is presently writing this all up in a letter that I will forward to you upon receipt.

2) Item 10: Please provide that documentation from Dave Tetreault. Response: See attached structural analysis calculations.

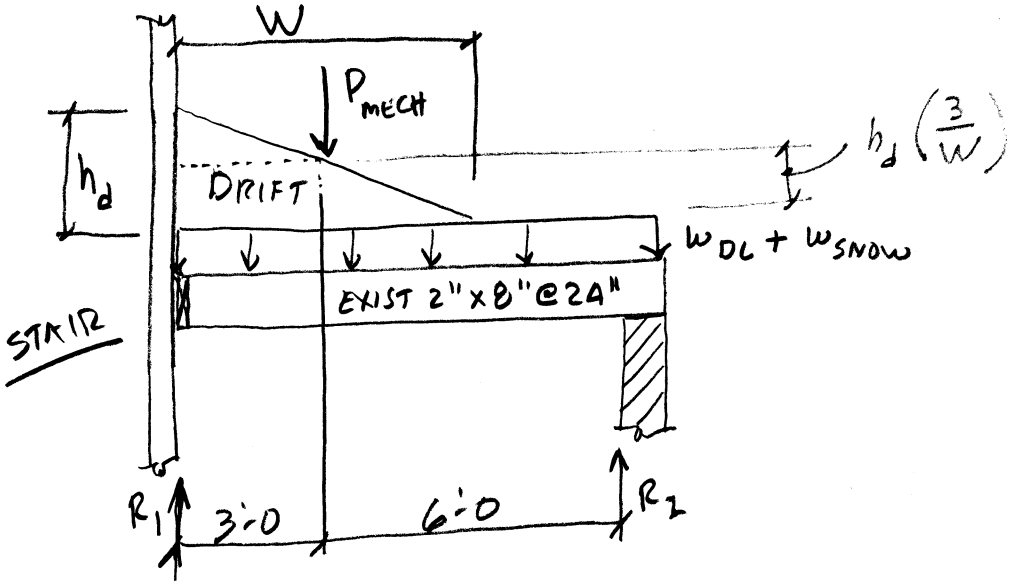
3) Item 12: Please provide product information for the intumescent paint that includes documentation that establishes compliance with Section 721.5.2 or another code justification for its use. Response: See attached specification 07816 and product information. All intumescent paint applications will meet fire resistance ratings based upon UL Test X-625.

4) Item 13: Unfortunately, we (us and MSHA) had two different opinions from IBC on this so we asked for a formal. It turned out to be a contrary opinion for this specific situation for the building that fronts on Oxford St. near Pearl. The final ruling from the IBC was that because there is a required accessible floor that if four stories above "a level of exit discharge" the additional equipment is required. I'll ask City Hall staff to provide a copy for you. Response: Regarding accessible means of egress by elevator, we have again reviewed the code requirements and have the following comments:

1. The proposed renovation and addition of an elevator to 470 Fore Street is in a 3 story building with a daylight basement. The code requirement for required accessibility is for buildings four or more stories above the level of exit discharge. The level of exit discharge through the stairway is on the 1st floor only. The person in distress is carried down three stories or up one story. There is no egress from the 1st floor through the basement. There is direct access from the basement to the exterior. I conferred with IBC and they agreed with our analysis.
2. Furthermore, the proposed renovation meets Section 1007.2.1 Ex 1 as it would be both sprinkled and provided with a horizontal exit into 468 Fore Street. I conferred with IBC and they agree with our analysis.
3. My observation of the Pearl Street building is that it is a 4 to 5 story building both by definition and use and is not an accurate comparison.


Elev. Door
3-Hour Door
3-Hr Door

470 FORE ST EXIST ROOF FRAMING



EXIST FULL 2X8 @ 24"

$A = (2)(8) = 16\ in^2$

$S = \frac{1}{6}(2)(8)^2 = 21.3\ in^3$

$I = \frac{1}{12}(2)(8)^3 = 85.3\ in^4$

EXIST JOISTS OBSERVED KNOT-FREE, CHECK FREE

ASSUM D.F. SELECT STRUCT $F_b = 1300\ PSI$

$F_v = 95\ PSI$

$E = 1.9 \times 10^6\ PSI$

w_{DL}

MEMBRANE	1 PSF
2½" WOOD DECK	8 PSF
2X8 @ 24"	5 PSF
(2) 5/8 GYP	5 PSF
w_{DL} =	19 PSF

$w_{SNOW} = 42$ PSF

DRIFT

$\gamma = (0.13)(60) + 14 = 21.8$ PCF

$\ell_u = 12'\text{-}0$

$h_d = (0.43)(12)^{1/3}(60+10)^{1/4} - 1.5 = 1.35$ FT

MAX DRIFT INTENSITY $= (1.35)(21.8) = 29.4$ PSF

DRIFT WIDTH, $w = (4)(1.35) = 5.4$ FT

$$P_{MECH} = \frac{15300\text{ lb}}{(2\text{ SIDES})(16\text{ FT})}(2\text{ FT}) = 956\text{ lb PER JOIST}$$

LOAD CASE 1 D.L.

$$R_{1\,DL} = (19PSF)(2FT)\left(\frac{9}{2}FT\right) + (956lb)\left(\frac{6FT}{9FT}\right)$$

$$= 808\,lb$$

$$F'_v = (95PSI)(2.0_{C_v}) = 190PSI$$

$$f_v = \frac{808\,lb}{16\,IN^2} = 50PSI < 190PSI \text{ OKAY}$$

$$F'_b = (1300PSI)(1.15_{C_r})(1.2_{C_F}) = 1794PSI$$

$$M_{MAX} = (808\,lb)(3FT) - (19PSF)(2FT)(3FT)(1.5FT)$$

$$= 2253\,FT\text{-}lb$$

$$f_b = \frac{(2253FT\text{-}lb)(12\,IN/FT)}{21.3IN^3} = 1269PSI < 1794PSI$$

OK.

LOAD CASE 2 D.L + SNOW LOAD

$$R_{1\,T.L.} = 808lb + (42PSF)(2FT)\left(\frac{9}{2}FT\right) + (29.4PSF)(2FT)(5.42FT)\left(\frac{1}{2}\right)\left(\frac{7.19}{9}FT\right)$$

$$R_{1TL} = 1313PSI$$

$$f_v = \frac{1313\,lb}{16IN^2} = 82PSI < 190PSI \text{ OKAY}$$

$$F'_b = (1300\,PSI)(1.15_{C_r})(1.2_{C_F})(1.15_{C_D}) = 2063\,PSI$$

$$h_d\left(\frac{3}{w}\right) = 29.4\left(\frac{3}{5.9}\right) = 16.3\,PSF$$

$$M_{MAX} = (1313\,lb)(3\,FT) - (19\,PSF + 42\,PSF + 16.3\,PSF)(3\,FT)(1.5\,FT) - \tfrac{1}{2}(13.1\,PSF)(3\,FT)(2\,FT)(2\,FT)$$

$$M_{max} = 3512\,FT\text{-}lb$$

$$f_b = \frac{(3512\,FT\text{-}lb)(12\,IN/FT)}{21.3\,IN^3} = 1978\,PSI < 2063\,PSI$$

ok

SECTION 07816

INTERIOR INTUMESCENT FIREPROOFING

PART 1 - GENERAL

1.01 PERFORMANCE REQUIREMENTS

A. Intumescent fireproofing system to provide a fire rating of two hours.

PART 2 - MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

A. Albi Manufacturing, East Berlin, CT (860) 828-0571; “ALBI CLAD TF.”

2.02 MATERIALS

A. Primer: Albi 487S, 490W, or type recommended or approved by fireproofing manufacturer.

END OF SECTION

DESCRIPTION

Albi Clad TF (Thin Film) is a water-based intumescent material for interior structural steel. Unlike ordinary fireproofing, Albi Clad TF is applied at minimum thickness for a smooth, architectural finish. It represents a breakthrough in interior fire protection. Albi Clad TF is spray-applied and offers up to 3-1/2 hours fire protection. Architects and other specifiers can use Albi Clad TF as an attractive interior finish, but still conform to building codes and insurance requirements.

Reading Terminal Market
Philadelphia, PA
Photo: C. Geoffrey Berkin

ALBI CLAD TF ADVANTAGES

- UL Classified for 1 to 3-1/2 hours to ASTM E119
- Water based: solvent and asbestos free
- Lightweight, thin-film application
- Maintains contour of substrate
- Architectural, decorative finish
- Factory formulated, single component
- UL tested for resistance to high humidity, aging, industrial atmosphere (CO_2/SO_2), chlorine and washing

WHERE TO SPECIFY

Albi Clad TF is applied in commercial buildings where architectural designs call for an aesthetic, thin, decorative finish. Albi Clad TF is ideal for interior steel columns, beams, tubes, trusses and other exposed structural members.

PROVEN PERFORMANCE

For over four decades, Albi fireproofing materials have demonstrated superior performance worldwide in a range of extreme environments. Lightweight, ultrathin Albi Clad TF delivers long-term protection with outstanding hardness and durability. Albi Clad TF is the first water-based, thin film intumescent fireproofing material classified by Underwriters Laboratories, Inc. UL's rigorous environmental and laboratory testing procedures assure you of a durable, high-performance intumescent fireproofing product.

EASY APPLICATION

Apply Albi Clad TF directly from the shipping container by means of standard or airless spray equipment. The fire endurance rating specification determines the thickness of the coating. Alibi Clad TF must be applied by qualified, factory-trained applicators in accordance with the manufacturer's printed instructions, and in compliance with specific test requirements. As a water-based compound, Albi Clad TF must be protected from freezing during shipping, storage, application and curing. Contact the manufacturer for specific application parameters.

ALBI CLAD TF UL FIRE-RESISTANCE LISTINGS

FIRE TEST ASTM E-119

Typical System	Hourly Rating	Material Thickness	UL Design No.
Beam (Wide Flange) W8 x 31	1 (unrestrained)	.090 in. dft	N-607
	1-1/2 (restrained)	.090 in. dft	N-607
	2 (restrained)	.140 in. dft	N-607
Beam W10 x 88	1-1/2 (unrestrained)	.149 in. dft	N-607
	3 (restrained)	.400 in. dft	UL 11-29-99
Column (Wide Flange) W8 x 24	2	.313 in. dft	X-625
W10 x 49	1	.055 in. dft	X-625
	1-1/2	.132 in. dft	X-625
	2	.310 in. dft	X-625
	2-1/2	.430 in. dft	X-625
	3	.550 in. dft	X-625
	3-1/2	.670 in. dft	X-625
W12 x 120	1-1/2	.108 in. dft	X-625
	2	.192 in. dft	X-625
Column (Hollow Section) 8-Inch pipe	1	.120 in. dft	X-628
(schedule 60)	1-1/2	.230 in. dft	X-628
	2	.370 in. dft	X-628
	2-1/2	.520 in. dft	X-628
	3	.660 in. dft	X-628
(schedule 100)	3	.625 in. dft	X-628
4 x 4 x 3/8"	2	.431 in. dft	X-638
8 x 8 x 3/8"	1	.119 in. dft	X-638
8 x 8 x 1/2"	2	.334 in. dft	X-638
10 x 10 x 5/8"	1	.065 in. dft	X-638
	2	.265 in. dft	X-638
16 x 16 x1/2"	1	.065 in. dft	X-638
	2	.334 in. dft	X-638
16 x 16 x 5/8"	1	.065 in. dft	X-638
	2	.265 in. dft	X-638

Hill Career School
New Haven, CT
Photo: Robert Perron

TYPICAL INSTALLATIONS

- Hospitals
- Hotel Atriums
- Warehouses
- Parking Garages
- School Gymnasiums
- Clean Rooms
- Convention Centers

PHYSICAL PROPERTIES

PROPERTY	VALUE
Dry Applied Density	85 PCF
Hardness	45-50
Compressive Strength	300 psi
Cohesive/Adhesion Strength	190 psi (cohesive failure)
Abrasion Resistance	0 grams loss
Impact	0.77-ft lbs./inch of notch
Weight per Gallon	11.90 + 0.20 lbs./gals
% Solids by Weight	70% + 2.0%
Flame Spread	2 - Class A
Smoke Developed	5 - Class A

* See complete marking on package

Made in the USA

Other Albi TF Literature

- Albi Clad TF Long Form Guide Specification
- Albi Fireproofing Catalog
- Albi Clad TF Field Application Manual
- Albi Clad TF CSI SPEC-DATA®
- Albi Clad TF CSI MANU-SPEC®

Also inquire about these fireproofing products from Albi:

Albi Clad 800
Intumescent fireproofing, withstands severe weathering and abuse

Albi DriClad
Low-cost, uniform density mineral board that installs dry year-round

See us in Sweet's

ALBI MANUFACTURING

For more than four decades, Albi fireproofing materials have demonstrated superior performance and reliability under a range of extreme environments worldwide. These proprietary formulations also meet global building codes and insurance requirements. Lightweight Albi materials provide long-term protection, outstanding durability, aesthetic properties and are completely free from asbestos.

Albi

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East Berlin, Connecticut 06023 U.S.A.
Tel: (860) 828-0571
Fax: (860) 828-3297
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[1] A wholly-owned subsidiary of StanChem, Inc.

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ALBI CLAD TF
(Product Data Information)

Albi Clad TF is a water-base intumescent thin film fireproofing material for use wherever interior fireproofing will be exposed to view or be subject to potential damage from external sources. This hard, durable, abrasion resistant product has a smooth, aesthetic finish. Albi Clad TF is ideal for application in occupied areas or other locations where solvent-base fireproofing materials cannot be used. Because of its water-base formulation Albi Clad TF is fully compliant with EPA VOC limits and regulations.

RECOMMENDED USES:

Albi Clad TF is recommended for interior use on structural steel columns and beams in areas such as:

- Industrial plants
- Atriums
- Hospitals
- Parking Garages
- Food Processing Plants
- Convention Centers
- Correctional Facilities
- Power Generating Facilities
- Warehouses
- School Gymnasiums
- Computer Chip Manufacturing
- Sports Stadiums

FEATURES:

- Factory formulated, single component.
- UL tested for resistance to high humidity, heat aging, CO_2/SO_2 industrial atmosphere, chlorine and washing.
- Thin film application.
- Lightweight & hammer-hard.
- UL listed for 1 through 3-1/2 hours to ASTM E-119.
- Water-based.
- Attractive off-white finish.
- 100% Asbestos Free.
- Will not dust, flake, nor delaminate.

APPLICATION:

Albi Clad TF is spray applied directly from the shipping container. It is important to specify metal primers that are compatible with Albi Clad TF. For application sites subjected to chemical fumes or spills, the use of a topcoat is required. Contact Albi Manufacturing for recommended primers and topcoats. Do not apply Albi Clad TF below 50 degrees F. Care must be taken to protect the material from direct rainfall. Please refer to the Albi Clad TF Fireproofing Application Manual and Field Guide for further details. Thickness of the application will depend upon the fire endurance rating specified. Albi Clad TF must be applied by qualified, factory-trained applicators, utilizing standard, heavy-duty, pneumatic or airless, spray equipment. Installation must be in accordance with manufacturer's printed instructions, and in compliance with specific test requirements.

PHYSICAL PROPERTIES:

PROPERTY	TEST METHOD	VALUE
Dry Applied Density		85 PCF
Hardness	Shore D	45-50
Compressive Strength	ASTM D695-91	300 psi
Bond Strength	ASTM D952-90	40 psi
Abrasion Resistance	ASTM D1044-90	0 grams loss
Impact	ASTM D256-90b	0.77-ft lbs./inch of notch
Weight per Gallon		11.90 ± 0.20 lbs./gals
% Solids by Weight		70% ± 2.0%
Flame Spread	ASTM E 84	2 - Class A
Smoke Developed	ASTM E 84	5 - Class A

WARRANTY

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

SUGGESTED SPECIFICATION

1.0 SCOPE This specification covers requirements for materials, equipment and application of intumescent mastic to provide fire protection to steel structures and supports as indicated on the design drawings, and in accordance with applicable requirements of contract documents. Further, this specification shall be supplemented by the applicable requirements of building codes, insurance rating organizations and all other authorities having jurisdiction.

1.1 QUALIFICATION OF SUBCONTRACTORS Application of Albi Clad TF fireproofing shall be performed by qualified, factory-trained applicators having proper equipment and training to complete the installation in accordance with manufacturer's recommendations. Proof of such qualification shall be submitted with bid documents.

1.2 SURFACE ACCEPTABILITY

1.2.1 Albi Clad TF intumescent mastic shall be directly applied to surfaces that have been properly prepared to receive this fireproof coating. The surfaces must be clean and dry, free from rust, grease, dust or other contaminants that will interfere with proper bonding.

1.2.2 All steel surfaces shall be primed with compatible metal primer prior to fireproofing application. Phenolic modified alkyd primer (Albi 487S) or acrylic (Albi 490W) or approved equal.

1.2.3 Where existing painted steel is to be fireproofed with intumescent mastic, existing paint surface must be checked for compatibility with intumescent coating prior to fireproofing application. Follow mastic fireproofing manufacturer's instructions for compatibility check.

1.3 COORDINATION WITH OTHER TRADES

Albi Clad TF shall be installed after all steel is in place, but before ducts, pipe work, equipment or other obstructions are installed so that fireproofing can be applied to all exposed steel.

1.4 DELIVER & STORAGE

Albi Clad TF shall be delivered to the jobsite in factory sealed containers.

2.0 FIREPROOFING

Fireproofing shall be applied in accordance with drawings or specifications, and shall conform to fire protective ratings as outlined by ASTM E-119 and listed by Underwriter's Laboratories, Inc.

2.1 COATING

Intumescent mastic fireproof coating for interior use shall be Albi Clad TF as manufactured by Albi Manufacturing, Division of StanChem, Inc. 401 Berlin Street, East Berlin, Connecticut, USA, 06023.

2.2 TOPCOATING

Overcoating is not required with Albi Clad TF. However, if a topcoat is required for color-coding, aesthetics or additional surface protection against spills, a suitable topcoat shall be used. For unusually severe environments consult the fireproofing manufacturer for recommendations of appropriate topcoats.

3.0 INSTALLATION & WORKMANSHIP

3.1 AIRLESS SPRAY EQUIPMENT - PUMPS

Due to the properties of Albi Clad TF, we recommend application with airless spray equipment. This equipment is manufactured and distributed by leading pump manufacturers including:

Brand / Model

Speeflo - Titan 5500 gas or electric operated
Speeflo - Titan Epic Series 1200 HPG Gas
Graco - Gmax 5900, 7900, or 10000 Gas Operated

HOSES

Material lines for airless application must be rated at a minimum 3,000+ psi working pressure with a 3/8 inch inside diameter. Hose length should not exceed 150 feet without consulting Albi Manufacturing.

SPRAY GUNS / SPRAY TIPS

Brand / Model	**Brand / Model**
Binks - 1M Airless	ASM - Zip Tips
Graco - Contractors Airless	Graco - Airless Tips
Titan - SGX-20 Airless	Titan - Airless Tips
Wagner - G-10N Airless	

You should always have a range of tip sizes on hand at a job site since steel sizes, hose length, vertical lift, and job site conditions all impact spray patterns. We recommend a range of tip sizes from 419-423 & 519-523.

3.2 Final dry film thickness application must conform to manufacturer's listed design or to recommendations for specified rating.

3.3 Small patchwork or damaged areas may be hand-trowelled or gloved. When hand trowelling, tools must be kept wet with water to avoid sticking.

3.4 THICKNESS OF APPLICATION

Albi Clad TF shall be applied to the thickness required in accordance with the acceptable test data. Thickness shall be measured on the basis of wet film thickness taken by frequent random probe measurements during application. All test data measurements are taken on dry film thickness, supervision of application must be undertaken while material is being installed, since final, cured, dry film thickness will reflect shrinkage due to evaporation of water.

3.5 SAMPLE APPLICATION

Before proceeding with the work, the applicator shall apply a section of approximately 100-sq. ft. (9.3 sq. meters) area. This section shall be witnessed by architect or owner's representative and shall be subject to their approval to be used as guide for texture and thickness of the finished work.

3.6 CLEAN UP

Work area shall be maintained in an orderly condition with good housekeeping conditions prevailing. Upon completion of installation, all debris shall be cleared and removed from jobsite.

3.7 GUARANTEE

3.7.1 Manufacturer shall warrant material to conform to its specification, and be free of manufacturing defects for a period of six months.

3.7.2 Applicator shall guarantee that the installation of material conforms to manufacturer's recommendations and project specifications, and shall further guarantee the workmanship connected with the installation for a period of one year from date of installation

Rev: 12/00

Albi

1. Product Name
ALBI CLAD Intumescent Fireproofing Systems

2. Manufacturer
Albi Manufacturing
Division of StanChem, Inc.
401 Berlin Street
East Berlin, CT 06023
USA
(860) 828-0571
Fax: (860) 828-3297
E-mail: info@albi.com
www.albi.com

3. Product Description
ALBI CLAD systems are intumescent coatings applied directly to structural steel, concrete and other construction materials for purposes of fire protection.

BASIC USE
ALBI CLAD is used wherever long-lasting, durable, abrasion-resistant fireproofing is required. It provides maximum fire protection with minimum thickness application.

ALBI CLAD is specified in many institutional and industrial buildings because of its hammer hard surface and ability to withstand heavy abuse and vibration. Such installations include manufacturing facilities, warehouses, gymnasiums, auditoriums and vocational training areas.

ALBI CLAD has been widely used for fire protection of pipe rack supports, structural framing and vessel skirts in the petroleum and petrochemical industries. It has withstood exposure to all types of extreme climactic conditions on facilities around the world.

ALBI CLAD is used on commercial buildings where the design calls for a thin, smooth finished fireproofing which maintains the contours of the substrate. It has been used on exposed steel in atriums, on tubular trusses, historic cast iron columns and glazed escape stairways. It is also specified for fire protection in areas where there are severe space limitations.

COMPOSITION & MATERIALS
ALBI CLAD systems are proprietary formulations consisting of heavy bodied resins, binders, intumescent agents and reinforcing inorganic fibers. ALBI CLAD systems contain no asbestos.

ALBI CLAD solvent based and water-based systems are offered in 2 formulations to suit the end-use desired:

- ALBI CLAD 800 - Solvent based; intended for interior or exterior application to exposed structural steel in demanding environments. ALBI CLAD 800 provides an attractive smooth white surface which can be easily topcoated.
- ALBI CLAD TF - Water based; intended for interior application wherever fireproofing material is to be left exposed. Use where thin film, smooth surfaced, architectural finish is required.

ALBI 487S phenolic modified alkyd primer and 490W rust inhibiting acrylic primer are recommended for use with ALBI CLAD materials under most conditions.

PACKAGING
ALBI CLAD systems are shipped to the job site ready to apply directly from the container. ALBI CLAD systems and ALBI primers are shipped in 55 U.S. gallon (208 L) drums or 5 U.S. gallon (19 L) pails.

TEXTURES & FINISHES
Spray application of ALBI CLAD TF results in a smooth finish. Spray application of ALBI CLAD 800 results in a slightly textured finish. Manufacturer recommends that ALBI CLAD 800 be lightly rolled prior to the drying of surface film in order to remove unsightly sags or surface irregularity.

COLORS
ALBI CLAD comes in a natural off-white finish. For special color finish ALBI CLAD can be top coated with a wide range of coatings. ALBI Manufacturing produces several compatible fire inert top coats in a range of colors. Consult manufacturer for recommendations.

LIMITATIONS
ALBI CLAD 800 systems is a solvent based system. The solvents in ALBI CLAD 800 systems will attack some primers, resulting in poor adhesion. It is important to specify metal primers that are compatible with ALBI CLAD 800. On previously painted or primed surfaces, it is necessary to check for compatibility prior to the application of ALBI CLAD 800.

Observe standard red label precautions when using ALBI CLAD 800 solvent based systems. The product contains solvent mixtures and must be protected from open flame. Fire extinguishing equipment should be available during installation. Adequate ventilation must be provided to prevent buildup of vapor concentrations in confined locations. Fresh air hoods or blowers must be provided during application to insure safe operating conditions.

ALBI CLAD 800 systems should not be applied inside occupied buildings. For such conditions consider the use of ALBI CLAD TF.

4. Technical Data

APPLICABLE STANDARD
American Society for Testing & Materials (ASTM)

- ASTM D256 Standard Test Method for Determining the Izod Pendulum Impact Resistance of Plastics
- ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics
- ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials

British Standards (BS) - BS 476 Fire Tests on Building Materials & Structures

Underwriters Laboratories, Inc. (UL)

- UL 1709 Rapid Rise Fire Test of Protection Materials for Structural Steel
- UL *Fire Resistance Directory*

FIRE RATINGS
ALBI CLAD systems have been tested extensively by agencies worldwide, including UL, Factory Mutual (FM), FIRTO, and Warrington. ALBI CLAD systems have been tested to a variety of different fire exposures including the ASTM E119 and BS 476 curves, as well as high intensity tests such as the Mobil Hydrocarbon test and UL 1709.

ALBI CLAD systems are listed in the UL Fire Resistance Directory. ALBI CLAD systems are listed for up to 3 hour protection of columns under design numbers X601, X602, X604,

X606, X615, X625, X626, X628, XR607, XR608 and XR609. ALBI CLAD systems are also listed for up to 2 hour protection of beams under design numbers N601, N602, N603 and N604. Certain of these UL design numbers allow the use of direct contour application or boxed configurations for both columns and beams. Consult manufacturer for latest UL column, beam and floor assembly ratings.

Research papers published by the Portland Cement Association indicate that the application of ALBI CLAD to the undersurface of concrete slabs will extend the fire rating of the composite system up to an additional 2 hours.

BUILDING CODES

Approval of ALBI CLAD has been granted by authorities in areas governed by building codes. In addition, ALBI CLAD has been accepted by major insurance rating organizations.

FIRE HAZARD CLASSIFICATION

ASTM E84 Test - Class A rating

- Flamespread - <25
- Smoke developed - <50

PHYSICAL PROPERTIES

ALBI CLAD systems exhibit similar physical properties as outlined below. Specific figures given for ALBI CLAD 800.

- Dry applied density - 68 pcf (1103 kg/m^3)
- Bond strength to steel - ASTM D4541; >375 psi (2.6 MPa)
- Compressive strength - ASTM D695; 2100 psi (14.5 MPa)
- Impact resistance - ASTM D256; 0.54 ft-lb/in of notch (2.4 N/mm)

PHYSICAL CHARACTERISTICS

ALBI CLAD resists impact, abrasion, vibration, flexure and similar physical abuse. It cures to a hard dense film which will not dust, spell or flake, and is resilient enough to permit expansion and contraction of substrate without cracking or spalling.

ALBI CLAD has been subjected to LNG spills and has not shown any deleterious effect due to cryogenic shock. ALBI CLAD has also been subjected to high intensity hydrocarbon spill fire exposure and has withstood the severe high temperature thermal shock without cracking or spalling.

CHEMICAL RESISTANCE

ALBI CLAD has been exposed under actual field conditions to varied chemical and fuel spill environments throughout the petrochemical industry and has demonstrated outstanding resistance to chemical fume attack.

DRYING/CURING TIME

ALBI CLAD products typically dry to the touch within 15 – 30 minutes. Curing time to completely disperse occluded solvents or water is determined by thickness of application and environmental conditions.

5. Installation

ALBI CLAD is applied only by qualified, factory trained applicators. Installation shall be in accordance with manufacturer's printed instructions and in compliance with specific test requirements. Contact manufacturer for a list of recommended qualified applicators.

SURFACE PREPARATION

Surfaces to receive ALBI CLAD must be clean, dry and free of mill scale, loose rust, dirt, grease and oil. Priming is recommended for all environments. The primer must be compatible with ALBI CLAD. Use ALBI 487S, 490W or other compatible primers possessing equal protective properties.

On new or existing work, where substrate is already primed, check compatibility of ALBI CLAD by installing a sample area to determine interface bonding characteristics. Contact manufacturer for test procedure.

METHOD

ALBI CLAD 800 is spray applied directly from the shipping container utilizing standard, heavy duty, pneumatic spray equipment. ALBI CLAD TF utilizes airless spray equipment. Thickness of the application will depend upon the fire endurance rating specified.

Architect's or Owner's approval of an applied sample, large enough to provide a guide to the acceptability of the finished work, should be part of the specifications and contract documents. The completed project must match the thickness and texture of the approved sample.

6. Availability & Cost

AVAILABILITY

Available throughout the U.S. from ALBI Manufacturing, in East Berlin, CT, ALBI CLAD is marketed throughout the world. In some countries, including the U.K. and Germany, the material is sold under the trademark CITEX CLAD through the wholly-owned subsidiary Citex, Ltd.

COST

For cost information, published price lists and approved applicators, contact Albi Manufacturing.

7. Warranty

ALBI offers a limited warranty providing for replacement of defective material, limited to the cost of the material. Copies of the warranty are available for review.

Approved ALBI applicators provide a 1 year limited material and workmanship warranty.

8. Maintenance

Cracks, nicks or dents caused by human or machine abuse can be repaired easily by hand using a putty knife.

When used to upgrade existing fire rating requirements or in plant additions, ALBI CLAD can be applied directly to existing ALBI CLAD surfaces, or to new additional structures.

9. Technical Services

Complete technical information, test reports and literature are available from manufacturer. For design assistance, code and insurance information and specific technical services, contact Albi Manufacturing Technical Department.

10. Filing Systems

- First Source for Products
- Sweet's General Building & Renovation Catalog File
- Sweet's International Catalog File
- SweetSource
- Additional product information is available from the manufacturer.