SUBMITTAL

ALBI CLAD TF

(1- 3 1/2 Hours Fireproofing)

Ontario Airport
Ontario, CA
Photo: Ed Thomas

- Water-based, Thin-film Intumescent Fireproofing
- Architectural Finish for Exposed Interior Structural Steel
- Complies with All VOC Air Quality Standards
- UL Classified for Up to 3-1/2 Hours

Albi

ALBI CLAD TF

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

[1] A wholly-owned subsidiary of StanChem, Inc.

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

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 Albi Manugacturing'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 Albi Manufacturing'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.

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, CT, 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 Albi Mfg. 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 / ModelBrand / Model
Binks - 1M AirlessASM - Zip Tips
Graco - Contractors AirlessGraco - Airless Tips
Titan - SGX-20 AirlessTitan - 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 Albi Mfg'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 Albi Manufacturing 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 Albi Mfg'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

Material Safety Data Sheet

Albi Clad TF

Section I - Product Identification

Product Number:	16X0024
Product Name:	Albi Clad TF
Product Class:	Thin Film Mastic

Section II - Health Hazard Data

Effects of Overexposure:

Inhalation:	May cause headaches
Skin:	Possible primary irritation
Eyes:	Primary irritation
Ingestion:	May cause gastrointestinal irritation, nausea, vomiting and diarrhea

Section III - Hazardous Ingredients

		Occupational Exposure Limits					
		ACGIH		OSHA			Vapor Pressure
Ingredient	Percent Wt.	TLV (ppm)	TWA (ppm)	STEL (ppm)	Ceiling (ppm)	Skin (ppm)	@20°C (mmHg)
Titanium Dioxide CAS #[13463-67-7]	<5.0%	10	10	NE	NE	NE	N/A

NE - Not Established N/A - Not Applicable

Section IV - First Aid Measures

Effects of Overexposure:

Inhalation:	Remove individual to fresh air. Call a physician
Skin:	Wash thoroughly with soap and water. Remove contaminated clothing
Eyes:	Immediately flush eyes with plenty of water for at least 5 minutes. If irritation persists, consult a physician
Ingestion:	Dilute with clear fluid, then immediately call a physician or the Poison Control Center

Section V - Fire and Explosion Hazard Data

Flammability Classification:

OSHA	Not Flammable
DOT	Not Flammable
Flash Point	N/A
LEL	N/A

Extinguishing Media: Foam Alcohol Foam CO_2 Dry Chemical Fog

Unusual Fire & Explosion Hazards: N/A

Section VI - Accidental Release Measures

Steps to be Taken in Case Material is Released or Spilled: Contain and remove with inert absorbent

Section VII - Safe Handling and Storage

Handling:	Empty containers may still have product residue; follow MSDS and label warnings even after the container has been emptied
Storage:	Keep from freezing

Section VIII - Exposure Controls and Personal Protection

Respiratory Protection:	Use approved mechanical filters designed to remove airborne particulate
Ventilation:	Local exhaust as required by job conditions to keep TLV below acceptable limits. Refer to OSHA regulations 29 CFR Part 1910.94
Protective Gloves:	Recommended
Eye Protection:	Use safety eyewear with spash guards or side shields
Other Protective Equipment:	Wear protective clothing
Hygienic Practices:	Eye wash should be available. Use under well ventilated conditions. Personnel should wash thoroughly after handling product. Always wash-up before eating, smoking or using the toilet facilities
Other Precautions:	Avoid contact with eyes and skin

Section IX - Physical Data

Boiling Range:	212° F
Weight per Gallon:	11.2 - 11.8 lb/gal
Percent Volatility:	25.0 - 27.0%
Solids:	73.0 - 75.0%
VOC Content:	15.6 g/L
pH:	7.5-8.5

Section X - Stability and Reactivity

Stability:	Stable
Hazardous Polymerization:	Will Not Occur
Hazardous Decomposition Products:	Combustion may produce carbon dioxide and/or carbon monoxide
Conditions To Avoid:	N/A
Incompatibility [Materials to avoid]:	Strong oxidizing agents

Section XI - Toxicological Information

Primary Routes of Exposure:	Skin Contact	Inhalation
Medical Conditions Prone to Aggravation by Exposure:	Sinus	Dermatitis
Product Toxicology		
Carcinogenicity:	NTP?	No
	IARC Monographs?	No
	OSHA Regulated?	No

Section XII - Ecological Information

Potential to Bioaccumulate:	Unknown
Aquatic Toxicity:	No data available for this product

Section XIII - Disposal Considerations

Waste Disposal Methods:	Disposal should be in accordance with local, state and federal regulations

Section XIV - Transportation

Proper Shipping Name:	Albi Clad TF
Technical Name:	Latex Paint
Identification Number:	Not Regulated
Hazard Class/Division:	NA
Packing Group:	NA

The information provided herein may not include the impact of additional regulatory requirements (e.g. for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/or marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

Section XV - Regulatory Information

TSCA

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements

Section XVI - Other Information

Hazard Rating Systems

	NFPA 704*	HMIS**
Health:	1	1
Flammability:	0	0
Reactivity:	0	0
Reactivity:	0	0
Personal Protection:		E

Key: **0 = Insignificant**
1 = Slight **2 = Moderate**
3 = High **4 = Extreme**
B = Eye Protection and gloves
E = Eye Protection, gloves, dust mask

* National Fire Protection Association rating identifies the severity of hazards of material during a fire emergency (i.e., "on fire")

** Hazardous Materials Identification System, National Paint and Coatings Association rating applies to product "as packaged" (i.e., ambient temperature)

Notice

ALBI PROJECT REFERENCES

REFINERY/PETROCHEM PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Lubrizol	Petrochemical	Louisville,KY	2014
Pemex	Oil Refinery	Mexico	2014
American Styrenics	Petrochemical	Marietta,OH	2013
CVR Refining	Petrochemical	Wynnewood,OK	2013
Phillips66	Petrochemical	Wood River, IL	2013
Jim Beam Refinery	Refinery	Louisville, KY	2013
Valero	Petrochemical	Memphis, TN	2012
Memphis Light, Gas & Water LNG plant	Petrochemical	Memphis, TN	2012
Phillips66	Petrochemical	Wood River, IL	2012
Phillips66	Petrochemical	Sweeney, TX	2012
Phillips66	Petrochemical	Wood River, IL	2011
Valero	Petrochemical	Memphis, TN	2011
Phillips66	Petrochemical	Wood River, IL	2010
Department of Defense	Nerve gas incinerator	Newport, Indiana	2001
Department of Defense	Nerve gas incinerator	Pine Bluff, Arkansas	2000-2001
Department of Defense	Nerve gas incinerator	Anniston, Alabama	1999
Department of Defense	Nerve gas incinerator	Umatilla, Washington	1999
Marathon / Ashland	Petrochemical	Cattlesburg, Kentucky	1996-1999
Rubicon	Petrochemical	Geismer, Louisiana	1994-1999
Borden Chemical	Petrochemical	Illiopolis, Illinois	1989-1999
Dow Chemical	Petrochemical	Plaqamine, Louisiana	1972-1999
CITGO	Petrochemical	Chicago, Illinois	1997
E.I. Dupont	Petrochemical	Orange, Texas	1972-1996
Hinkle Chemical	Petrochemical	Kankakee, Illinois	1993
Sun Chemical	Petrochemical	North Lake, Illinois	1993
Witco	Petrochemical	New Orleans, Louisiana	1993
Department of Defense	Nerve gas incinerator	Tooele, Utah	1992
Breslube	Oil reclamation facility	East Chicago, Illinois	1992
Clark Oil	Refinery	Blue Island, Illinois	1992
Northern Natural Gas	LNG facility	Duluth, Minnesota	1992
Greater Pittsburgh Airport	Airport	Clinton, Pennsylvania	1992
Aramco	Petrochemical	Saudi Arabia	1991
Honam Oil	Refinery	Korea	1990
Fina Oil	Refinery	Big Springs, Texas	1989
Kuk Dong	Refinery	Ulsan, Korea	1989
PetroCanada	Refinery	Montreal, Canada	1988
Ultramar	Refinery	St. Romauld, Canada	1988
Boston Gas	Gas Storage tanks	Various locations	1987
Natural Gas Pipeline	Gas trans. Site	Searcy, Arkansas	1987
Shell Oil Company	Oil company	Various locations	1985
DAS Island ADNOC	Refinery	Abu Dhabi, UAE	1983
Pertamina	Refinery	Indonesia	1981
Arco	Refinery	Watson, California	1980's
Exxon	Refinery	Various locations	1980's
Philadelphia Gas	LNG facility	Philadelphia, Pennsylvania	1980's
Kuwait National Petroleum	Refinery	Kuwait	1980's
Union Oil	Refinery	Rodeo, California	1980
Conoco Murchison	Offshore oil rig	North Sea, United Kingdom	1979
Georgia-Pacific	Petrochemical	Plaquemine, Louisiana	1974
Dow Chemical	Petrochemical	Kings Lynn, England	1973
Getty Oil	Refinery	Delaware City	1972
Mobil	Refinery	Beaumont, Texas	1972
Mobil	Refinery	Joliet, Illinois	1972
Shell Oil	Reformer	Anacortes, Washington	1972
Quaker State	Refinery	Congo, West Virginia	1971

NUCLEAR POWER STATION	TYPE OF FACILITY	LOCATION	YEAR
EMAL Factory	Power Plant	Abu Dhabi, UAE	2015
Savannah River	Nuclear	Aiken, South Carolina	1999
TVA	Nuclear power plant	Alabama	1980's
Trojan Plant	Nuclear power plant	Portland, Oregon	1979
Beaver Valley Nuclear	Nuclear power plant	Shipping Port, Penn	1972
Northeast Utilities	Nuclear power plant	Waterford, Connecticut	1972
Commonwealth Edison	Nuclear power plant	Zion, Illinois	1971

AIRPORT FACILITY & HANGAR	TYPE OF FACILITY	LOCATION	YEAR
Worcester Airport 1	Airport	Worcester, MA	2014
Logan Airport	Airport	Boston, MA	2014
Worcester Airport 2	Airport	Worcester, MA	2014
US Airways	Hangar	Charlotte, North Carolina	1999
Army Aviation	Airport hangar	South Windsor, Conn.	1998
Kansas City Int'l Airport	Airport	Kansas City, Missouri	1994
Boeing	Aircraft manufacturer	Seattle, Washington	1992
National Airport	Airport	Washington, D.C.	1992
TWA	Hangar	Los Angeles, California	1989
Logan Airport	Terminal	Boston, Massachusetts	1973
U.S. Navy	Hanger	Prudoe Bay, Alaska	1970
TWA	Maintenance hangar	Los Angeles, California	1970

ARMY AND NAVY PROJECTS	TYPE OF FACILITY	LOCATION	YEAR
Bluegrass Chemical Agent	Deconstruction pilot plant-DOD	Richmond, KY	2012
Defense Mapping Agency	Military facility	Arnold, Missouri	1998
China Lake	US Naval facility	China Lake, California	1992
Portsmouth Naval Shipyard	Shipyard	Porthsmouth, NH	1992
US Navy	Navy	Various locations	1990
Military Cantonment	Military facility	Saudi Arabia	1981
US Navy	Shipyard	Bremerton, Washington	1972
Vandenberg Air Base	Launch complex	California	1970's

MEDICAL FACILITIES PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Case Univ. Hospitals-Seidman Cancer Center	Hospital	Cleveland, OH	2010
Altru Health	Hospital	Grand Forks, North Dakota	2006
NW Vet Home	Government	Shrevesport, Louisiana	2006
VA Clinic	Hospital	Indianapolis, Indiana	2005
Hopkin's Research Center	Hospital	Baltimore, Maryland	1999
St. Vincent's	Hospital	Worchester, Mass.	1999
St. Vincent's Hospital	Hospital	Toledo, Ohio	1999
Cook County Hospital	Hospital	Chicago, Illinois	1998
University Hospital	Hospital	Cleveland, Ohio	1998
Great River Medical	Medical center	Burlington, Iowa	1998
Mamoidaies Hospital	Hospital	Brooklyn, New York	1997
Fed. Medical Center, Carswell AFB	Medical center	Fort Worth, Texas	1996
Our Lady of the Lake Hospital	Hospital	Baton Rouge, Louisiana	1996
Ind. Univ. Cancer Research Center	University	Indianapolis, Indiana	1994
RI Children's Hospital	Hospital	Providence, Rhode Island	1992
Deaconess Medical Center	Medical center	Billings, Montana	1992

MEDICAL FACILITIES PROJECT cont.	TYPE OF FACILITY	LOCATION	YEAR
Greenwich Hospital	Hospital	Greenwich, Connecticut	1987
Martin Luther King Hospital	Hospital	Los Angeles, California	1986
Memorial Medical Center	Medical center	Springfield, Illinois	1986
St. Elizabeth Hospital	Hospital	Youngstown, Ohio	1980
Osteopathic Hospital	Hospital	Tulsa, Oklahoma	1973

MANUFACTURING PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Capital Resins	Manufacturing	Columbus, OH	2012
Pfizer	Pharmaceutical plant	Terre Haute, Indiana	2000,2007
Lock & Dam #10	Industrial	Iowa	2006
Mid Am Power	Industrial	Omaha, Nebraska	2005
Eli Lilly	Pharmaceutical plant	Indianapolis, Indiana	2004
Bayer Chemical	Industrial	Kansas City, Kansas	2003
Kellogg	Food processing	Omaha, Nebraska	1992-1999
UpJohn	Pharmaceutical plant	Kalamazoo, Michigan	1992,1999
Folgers Coffee	Manufacturing	Kansas City, Missouri	1999
Shackley Drugs	Manufacturing	Norman, Oklahoma	1999
Monsanto Labs	Manufacturing	St. Louis, Missouri	1998
Motorola	Manufacturing	Austin, Texas	1998
Pfizer, UK124	Manufacturing	Lee's Summit, Missouri	1998
Proctor & Gamble	Manufacturing	Ajax, Ontario, Canada	1998
Ford Motor Company	Manufacturing	Dearborn, Michigan	1998
Pfizer, UK124	Manufacturing	Lee's Summit, Missouri	1998
Proctor & Gamble	Manufacturing	Ajax, Ontario, Canada	1998
United Defense	Manufacturing	Minneapolis, Connecticut	1997
BASF	Chemical manufacturing	Various locations	1992
Astra Pharmaceutical	Pharmaceutical plant	Boston, Massachusetts	1992
Lubrizol	Motor oil manufacturer	Painesville, Ohio	1992
Sartomer	Chemical manufacturing	Various locations	1992
Ramesses	Manufacturing	Cairo, Egypt	1992
Sony	Chip manufacturer	San Jose, California	1992
Rohm & Haas	Chemical manufacturing	Various locations	1991
Borden Chemical	Chemical manufacturing	Iliopoulos, Illinois	1991
Numi	Auto manufacturing	California	1991
Mitsui Mining & Smelting	Manufacturing	New York, New York	1991
Hoechst Celanese	Chemical manufacturing	Various locations	1990
Durham Herald Sun	Newspaper printing	Durham, North Carolina	1990
Pfizer	Pharmaceutical plant	Groton, Connecticut	1974-1990
Quantum Chemical	Chemical manufacturing	Morris, Illinois	1989
Safety Kleen	Chemical manufacturing	Various locations	1989
Symtech	Clean room manufacturing	Austin, Texas	1989
Celanese	Fibers plant	Cumberland, Maryland	1989
Aristech Chemical	Chemical manufacturing	Neville Island, Pennsylvania	1988
Koppers Company	Manufacturing	Follansbee, West Virginia	1987
Toyota Motors	Auto manufacturing	Georgetown, Kentucky	1986
Uniroyal	Chemical manufacturing	Naugatuck, Connecticut	1986
Michelin Company	Tire manufacturer	South Carolina	1981
Steel Case	Metal manufacturer	Grand rapids, Michigan	1970,1980
Searle Corporation	Pharmaceutical plant	Augusta, Georgia	1980
General Motors	Auto manufacturing	Various locations	1980's
Hallmark Cards	Paper processing	Kansas	1980's

MANUFACTURING PROJECT cont.	TYPE OF FACILITY	LOCATION	YEAR
Intel	Clean room manufacturing	Detroit, Michigan	1980's
Hexagon-Lee	Pharmaceutical plant	Petersburg, Virginia	1979
Travenol Labs	Pharmaceutical plant	North Carolina	1976
Borg Warner	Manufacturing	Grangemar, Scotland	1974
Chrysler Corporation	Stamping plant	Detroit, Michigan	1974
PPG Industries	Paint manufacturing	Oak Creek, Wisconsin	1974
Eli Lilly	Pharmaceutical plant	Basingstoke, England	1973
Smith, Kline & French	Pharmaceutical plant	Philadelphia, Pennsylvania	1973
Detroit Press	Printing plant	Detroit, Michigan	1972
General Motors	Oldsmobile plant	Lansing, Michigan	1972
Hoechst International	Fibers plant	Spartanburg, SC	1972
Celanese	Fibers plant	Cucumber land, Maryland	1971
General Motors	Cadillac Plant	Detroit, Michigan	1971
Hoffman-LaRoche	Pharmaceutical plant	Belvidere, New Jersey	1971
BASF	Fibers plant	So, Kearny, New Jersey	1970
Sterling Drug	Pharmaceutical plant	Bell Mead, New Jersey	1970
Ford Motors	Stamping plant	Buffalo, New York	1970
General Dynamics	Manufacturing	Sterling Heights, Michigan	1970
Olin-Matheson	Chemical manufacturing	Trexlertown, Pennsylvania	1970
Dow Chemical	Chemical manufacturing	Various locations	1970's
Dow Corning	Chemical manufacturing	Various locations	1970's

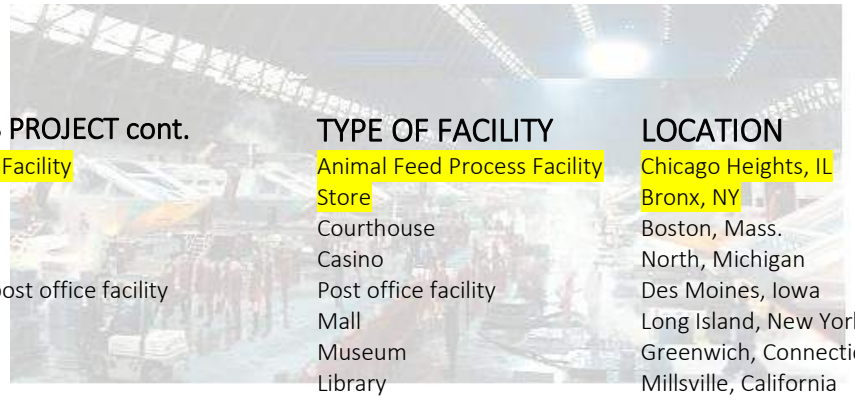
OFFICE COMPLEXES PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Ingersoll Square	Commercial Retail & Condominium complex	Des Moines,IA	2014
GSA Office	Office building	Chicago, Illinois	2005,2006
Phoenix Federal Courthouse	Federal courthouse	Phoenix, AZ	2001
Kraft Foods	Corporate headquarters	Glenview, Illinois	1979,1999
Ocquin Management	Office	Orlando, Florida	1999
Reebok World Headquarters	Office complex	Canton, Mass	1999
USDA	Office	Washington, DC	1999
Staples	Office	Burlington, Mass.	1998
LeValle Brensinger	Architectural office	Burlington, New Hampshire	1997
Federal Reserve Bldg.	Office	Minneapolis, Minnesota	1995
24 West 39th Street	Office building	New York, New York	1993
911 Building	Office	Chicago, Illinois	1993
1301 Pennsylvania Avenue	Office complex	Washington, DC	1992
79 Elm Street	Office complex	Hartford, Connecticut	1992
Mine Safety Building	Office complex	Pittsburg, Pennsylvania	1992
Prudential Center	Hi-rise	Chicago Illinois	1992
Rimland Pacific	Office atrium	Bellingham, Washington	1992
Postal Square	Office complex	Washington, DC	1991
Bectin Dickinson	Corporate headquarters	Franklin Lakes, New Jersey	1990
Lucky Twin Towers	Office building atrium	Seoul, Korea	1983
Hong Kong & Shanghai Bank	Corporate headquarters	Hong Kong	1983-1984
Canadian Revenue Service	Office complex	Nova Scotia, Canada	1975

ATHLETIC FACILITIES PROJECT	TYPE OF FACILITY	LOCATION	YEAR
New Haven Coliseum	Coliseum	New Haven, Connecticut	1991
Weaver High School	Swimming pool	Hartford, Connecticut	1988
Arlington Race Track	race track	Chicago, Illinois	1988
Harvard University	Athletic facility	Cambridge, Massachusetts	1988
Glenview Club	Tennis club	Glenview, Illinois	1987
Joe Louis Arena	Sports complex	Detroit, Michigan	1982

EDUCATIONAL FACILITIES PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Brooklyn & Queens schools	School	Brooklyn, NY	2014
Duxbury High School	High school	Duxbury, MA	2009
Bay West Campus	School	Iron Mountain, Michigan	2007
University of Michigan, SS Lab	University	Ann Arbor, Michigan	2007
St. Francis Gym	School	Louisville, Kentucky	2005
Purdue University	University	Lafayette, Indiana	2004
Winona State	University	Winona, Minnesota	2004
Center High School	School	Kansas City, Kansas	2004
University of Iowa, Hoover Hall	University	Ames, Iowa	2004
University of Evansville	University	Evansville, Indiana	2000
University of Minnesota, Biology Lab	University	St. Paul, Minnesota	2000
Medical College of Ohio	School	Toledo, Ohio	1999
Klein High School	School	Houston, Texas	1999
Yale University	Art school	New Haven, Conn.	1999
Merry Acres	Middle school	Atlanta, Georgia	1999
Middlesex School	Middle school	Westport, Conn.	1999
Riverside Aviation	School	Tulsa, Oklahoma	1999
St. James Academy	High school	Maryland	1999
University of Illinois @ Chicago	School	Chicago, Illinois	1998
Purdue University	University Bay	Lafayette, Indiana	1998
University of Nebraska @ Omaha	School	Omaha, Nebraska	1998
Cambridge High School	School	Cambridge , Minnesota	1998
Middlebury College	College	Middlebury, Vermont	1997
Hill Career	Middle School	New haven, Conn.	1997
Indiana Univ. Medical Science	University	Indianapolis	1996
N.J.I.T	University	Newark, New Jersey	1996
Layola University	University	Chicago, Illinois	1995
Greenville High School	School	Greenville, Texas	1995
Red Deer School (Notre Dame)	School	Red Deer, Alberta, Canada	1995
Southern Illinois University	University	Illinois	1995
West Portsmouth High School	University	West Portsmouth, Ohio	1995
Woodridge Library	School library	Chicago, Illinois	1995
Hudson Middle School	School	Minneapolis, Minnesota	1994
Melrose Elementary	School	Melrose, Minnesota	1993
Dakota High School	High school	Romero, Minnesota	1993
University Michigan, Angel Hall	University	Ann Arbor, Michigan	1993
University of Chicago	University	Chicago, Illinois	1993
Allegheny College	College	Erie, Pennsylvania	1992
Cheney State College	College	Glassboro, New Jersey	1992
Drake University	College	Des Moines, Iowa	1992
Griswold High School	School	Griswold, Connecticut	1992
Glassboro	College	Glassboro, New Jersey	1992
Imlay City	High school	Imlay City, Minnesota	1992

EDUCATIONAL FACILITIES PROJECT cont	TYPE OF FACILITY	LOCATION	YEAR
Japanese Education Center	Elevator shaft	Greenwich, Connecticut	1992
Centennial Junior High School	School	Minnesota	1991
Clayton High School	School	Indiana	1991
Long Beach Polytechnical	School	Long Beach, California	1991
Stanford University	Furst Hall expansion	Palo, Alto, California	1988
Community College	Educational facilities	Greenfield, Massachusetts	1976
Taft High School	School	Chicago, Illinois	1974
Harvard University	School of design	Cambridge, Mass	1972

MISCELLANEOUS PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Muirfield Village Golf Clubhouse	Golf	Dublin, OH	2013
Lyric Opera	Auditorium	Kansas City, MO	2012
Northeastern Ohio Regional Sewer District	Renewable energy /wastewater treatment	Cleveland, OH	2012
629 Euclid Apartment Conversation		Cleveland , OH	2012
Aloft Hotel	Hotel	Cleveland , OH	2012
Ocean Breeze		Staten Island, NY	2011
PSAC Project 911 call center		Bronx, NY	2009
JI Case	Residential	Kansas City, Kansas	2007
Carmichael/Lynch	Office building	Minneapolis, Minnesota	2006
UpShear/Smith	Office building	Minneapolis, Minnesota 2	2006
Burlington Library	Library	Burlington, Iowa	2005
Nelson Art Museum	Museum	Kansas City, Kansas	2005
Art Museum	Government	Rochester, Minnesota	2004
Leows	Home center	Chicago, Illinois	2004
Leows	Home center	Chicago, Illinois	2004
Chamberlain Lofts	Residential	Ames, Iowa	2004
Urban Outfitters	Commercial	Minneapolis, Minnesota	2004
Leows	Home center	Chicago, Illinois	2004
Harbor View Condos	Residential	Petoskey, Michigan	2003
Judicial Building	Courthouse	Des Moines, Iowa	2001
121 South Street Jazz Club	Night club	Pittsburgh, Pennsylvania	1999
Amer. Museum of Natural History	Museum	New York, New York	1999
Anthropologie	Retail store	Chestnut, Mass.	1999
Bally's	Casino	Atlantic City, New Jersey	1999
St. Patrick's Parish	Church	Hartford, Conn.	1999
Whole Foods	Food center	Coral Springs, Florida	1999
Charleston Court	Court house	Charleston, West Virginia	1999
Loews	Home center	Coral Springs, Florida	1999
Wachovia	Bank	Charlotte, North Carolina	1999
Loews	Home center	Middletown, New York	1999
Howland Hook	Fruit storage	Staten Island, New York	1999
Mercer County Convention Center	Convention center	Trenton, New Jersey	1999
Universal Studios	Dr. Seuss Landing	Orlando, Florida	1999
Old Navy	Retail	New York, New York	1998
Hilton Garden Center	Hotel	Philadelphia, Pennsylvania	1998
Sun Micro Systems	Headquarters	Burlington, Mass.	1998
Entertainer Center	Theme park	Chicago, Illinois	1998
New Britain Court	Court house	New Britain, Connecticut	1998
Circuit City	Retail	Pearl River, New Jersey	1997



MISCELLANEOUS PROJECT cont.	TYPE OF FACILITY	LOCATION	YEAR
Animal Feed Process Facility	Animal Feed Process Facility	Chicago Heights, IL	2014
Riverdale BJ's Store	Store	Bronx, NY	2014
Boston City Court	Courthouse	Boston, Mass.	1996
Soaring Eagle Casino	Casino	North, Michigan	1995
U.S. Postal addition post office facility	Post office facility	Des Moines, Iowa	1995
Roosevelt Field Mall	Mall	Long Island, New York	1993
Bruce Museum	Museum	Greenwich, Connecticut	1992
Millsville Project	Library	Millsville, California	1992
Bellvue library	Library	Bellvue, Washington	1992
Champion International	Warehouse	Stamford, Connecticut	1992
Hagen #43 Shopping Center	Shipping complex	Edmonds, Washington	1992
Erie Insurance Company	Insurance company	Erie, Pennsylvania	1992
K-Mart Distribution Center	Distribution center	Canton, Michigan	1992
Kaiser Data Center	Computer center	Corona, California	1992
Safeway 1300	Grocery store	McLead, Virginia	1992
Trenton Federal Courthouse	Courthouse	Trenton, New Jersey	1992
U.S. Surgical research	Research	New Haven, Connecticut	1992
Santos Warehouse	Warehouse	Newark, New Jersey	1992
Northern State Power	Power company	Minnesota	1992
Reading Terminal	Mall	Reading, Pennsylvania	1992
Montgomery Wards	Retail store	Fairfax, Virginia	1992
Westgate	Pedestrian walkway	Chicago, Illinois	1992
Amway Warehouse	warehouse	Ada, Michigan	1991
North Pier Terminal	Retail/residential	Chicago, Illinois	1991
Hamilton Standard	Laboratory	Connecticut	1991
Moscone Center	Exhibition hall	San Francisco, California	1991
MWCC	Waste water treatment	Eagen, Minnesota	1990
National Geography	Warehouse	Gaithersburg, Maryland	1990
Southern California Edison	Remote telephone poles	California	1990
Lynn Waste Water Treatment	Waste water treatment	Lynn, Massachusetts	1989
Compaq Computers	Distribution center	Houston, Texas	1989
National Distillers	Distillery	Frankfort, Kentucky	1987
Piedmont Airlines	Overwing loading docks	Newark, New Jersey	1987
Central Wharf	Condo's	Portland, Maine	1986
McCormick Place	Exhibition hall	Chicago, Illinois	1986
Anheuser-Busch	Brewery	Los Angeles, California	1982
IBM	Data center	Tuscon, Arizona	1981
Sears-Roebuck	Distribution center	Columbus, Ohio	1979
St. Katherine by the Tower	Dock restoration	London, England	1978
Allied Stores	Warehouse	Quincy, Massachusetts	1975
Marine Midland bank	Shopping mall	Syracuse, New York	1975
City of Scottsdale	Waste water treatment	Scottsdale, Arizona	1974
Box Factory	Restaurant	Rochester, New York	1973
Federal Reserve	Archives center	Chicago, Illinois	1973
Krauss-Thompson	Warehouse	Millwood, New York	1971
Disney Quest Virtual Reality			

PRISONS PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Prison	Prison	Dayton, Ohio	1993
Green Bay project	Prison	Fort Worth, Texas	1993
Lovelock Prison	Prison	Carson City, Nevada	1993
Adult Correctional Institute	Prison	Cranson, Rhode Island	1992
Fulton Country Judicial Center	Prison	Atlanta, Georgia	1992

PRISONS PROJECT cont	TYPE OF FACILITY	LOCATION	YEAR
Cheshire Prison	Prison	Cheshire, Connecticut	1991
Northern Nevada Correctional Ctr	Prison	Carson, Nevada	1991
Suffield Correctional Facility	Prison	Suffield, Connecticut	1991
Alameda Country Correctional Inst.	Prison	California	1990
Minorsville Prison	Prison	Minorsville, Pennsylvania	1990
Enfield Prison	Prison	Somers, Connecticut	1988
Federal Penitentiary	Prison	Bradford, Pennsylvania	1988
City of Bridgeport	Penal institution	Bridgeport, Connecticut	1975

TRANSPORTATION	TYPE OF FACILITY	LOCATION	YEAR
Long Island Railroad Overpass	Transportation	Queens, NY	2014
Pinnacle Apartment Parking Garage	Parking garage	Cleveland, OH	2013
Dobbs Ferry Parking	Garage ADC	Dobbs Ferry, NY	2012
Mother Clara Barton	Bus depot	New York, NY	2010
Palisades Parking Garage	Parking garage	West Nyack, NY	2008
Metro North	Train station	New York, New York	1997
Quincy Adams	Parking garage	Braintree, Mass	1997
Cicero Rapid Transit	Transportation	Chicago, Illinois	1996
Cicero Rapid Transit	Transportation	Chicago, Illinois	1996
Fresh Pond Transportation	Bus maintenance facility	Queens, New York	1996
Kansas-DOT	Bridge	Johnson City, Kansas	1992
Kings Bridge Bus Depot	Bus depot	New York, New York	1992
MBTA	Subway station	Various locations	1990
Union Station	Railroad station renovation	New London, Connecticut	1989
Reunion Arena	Parking garage	Dallas, Texas	1985
New Haven Coliseum	Parking garage	New Haven, Connecticut	1971

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ALBI CLAD TF

Underwriters' Laboratories Listings

COLUMNS: Wide Flange (Contour Application)

FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS	REINFORCEMENT
W8 x 24	X-625	1 hr.	.100 in. dft	none
	X-625	2 hr.	.313 in. dft	none
W10 x 49	X-625	1 hr.	.055 in. dft	none
	X-625	1-1/2 hrs.	.132 in. dft	none
	X-625	2 hrs.	.310 in. dft	none
	X-625	2-1/2 hrs.	.430 in. dft	none
	X-625	3 hrs.	.550 in. dft	fiberglass ribbon
	X-625	3-1/2 hrs.	.670 in. dft	fiberglass ribbon
W12 x 120	X-625	1 hr.	.037 in. dft	none
	X-625	1-1/2 hrs.	.108 in. dft	none
	X-625	2 hrs.	.192 in. dft	none

COLUMNS: Hollow Sections

FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS	REINFORCEMENT
8-Inch pipe	X-628	1 hr.	.120 in. dft	none
(schedule 60)	X-628	1-1/2 hrs.	.230 in. dft	fiberglass ribbon
	X-628	2 hrs.	.370 in. dft	fiberglass ribbon
	X-628	2-1/2 hrs.	.520 in. dft	fiberglass ribbon
	X-628	3 hrs.	.660 in. dft	fiberglass ribbon
(schedule 100)	X-628	3 hrs.	.625 in. dft	fiberglass ribbon
4 x 4 x 3/8"	X-638	2 hrs.	.431 in. dft	fiberglass ribbon
8 x 8 x 3/8"	X-638	1 hrs.	.119 in. dft	none
8 x 8 x 1/2"	X-638	2 hrs.	.334 in. dft	fiberglass ribbon
10 x 10 x 5/8"	X-638	1 hr	.065 in. dft	none
	X-638	2 hr	.265 in. dft	fiberglass ribbon
16 x 16 x 1/2"	X-638	1 hr	.065 in. dft	none
	X-638	2 hr	.334 in. dft	fiberglass ribbon
16 x 16 x 5/8"	X-638	1hr	.065 in. dft	none
	X-638	2 hrs.	.265 in. dft	fiberglass ribbon

BEAMS: Wide Flange

FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS	REINFORCEMENT
W8 x 31	N-607	1 hr. (unrestrained)	.090 in. dft	none
W8 x 31	N-607	1-1/2 hr. (restrained)	.090 in. dft	none
W8 x 31	N-607	2 hr. (restrained)	.140 in. dft	none
W10 x 88	N-607	1 1/2 hr.(unrestrained)	.149 in. dft	none
W10 x 88	N-607	2 hr.(unrestrained)	.149 in. dft	none
W10 x 88	UL 11-29-99	3 hr. (restrained)	.400 in. dft	fiberglass ribbon

WARRANTY

LIMITED WARRANTY/LIMITATION OF LIABILITY: Seller warrants that its products will meet the specifications which it sets for them. Seller's responsibility under this warranty will be limited solely to replacing the products which prove defective, provided that Buyer gives Seller prompt notice in writing of said defect and satisfactory proof thereof. Products may be returned to Seller only after written authorization has been obtained from Seller. The foregoing warranty is in lieu of all other warranties, whether oral, written, express, implied or statutory. IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WILL NOT APPLY. Technical or other advice is furnished by us solely as an accommodation and shall not increase the scope of our responsibilities or liability. Seller's warranty obligations and Buyer's remedies hereunder are solely and exclusively as stated herein: In no event will Seller be liable either for the labor and other associated costs incurred in replacing the product, including, but not limited to, its removal and application, or for other incidental or consequential damages.