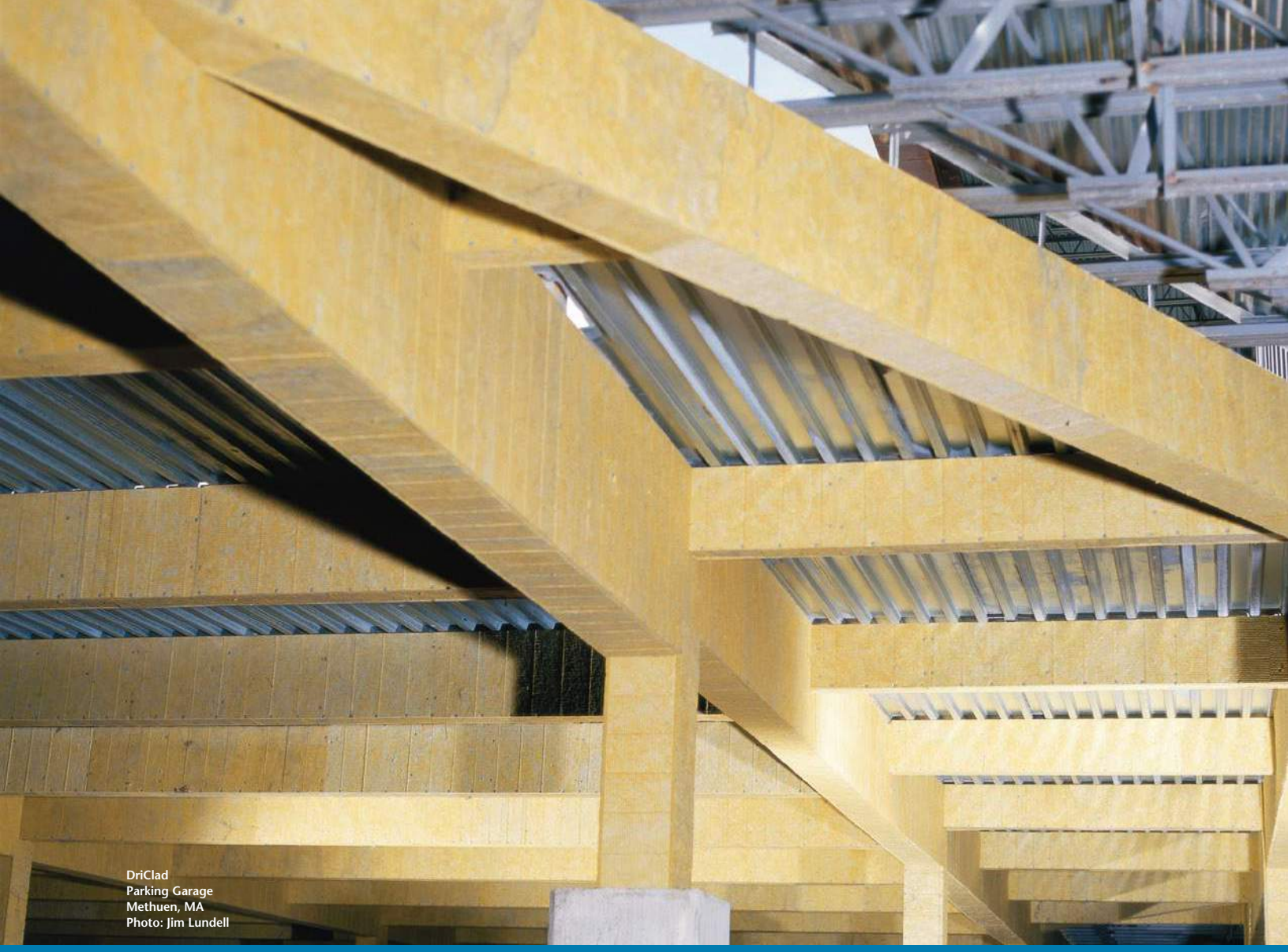
SUBMITTAL

ALBI DRICLAD



DriClad
Parking Garage
Methuen, MA
Photo: Jim Lundell

- Low-cost, uniform density & thickness mineral board
- Installs dry without disruption to other trades
- Year-round application without work-area enclosure
- UL Classified for Up to 3 hours

Albi

DriClad

DESCRIPTION

Albi DriClad is based on naturally occurring basalt volcanic rock. The patented manufacturing process transforms crushed volcanic rock into a lightweight, durable board from finely spun threads bound with a proprietary resin. For use on structural steel in lieu of conventional, soft fireproofing, this material offers excellent fire safety properties. It is supplied as 4' x 6' foot boards.

DriClad
Maine College of Arts
Portland, ME
Photo: Jeffrey Stevensen

ALBI DRICLAD ADVANTAGES

- Noncombustible
- High insulating value
- No steel surface preparation required
- High sound absorption
- No leachable chloride content
- Non-capillary and non-hygroscopic
- Completely free of asbestos, CFCs and HFCs
- Chemically inert
- Installs dry without disruption to other trades
- Applies year-round in all weather conditions
- Factory-controlled density and thickness
- Light weight and low-cost

WHERE TO SPECIFY

Specify Albi DriClad to provide fire resistance for structural steel on both new and retrofit construction. DriClad is compatible with all materials with which it is likely to be used in normal industrial and commercial applications. It can also be applied to a wide range of nonferrous metals as well as elements such as walls, ventilation ducts, doors, and conduit. DriClad is available in a range of thicknesses beginning at 7/8".

PROVEN PERFORMANCE

The superior performance of Albi DriClad fireproofing materials has been verified under a wide range of applications throughout the world. DriClad is manufactured to the most stringent quality criteria and conforms to, or exceeds, all relevant American and worldwide standards. DriClad is classified as noncombustible in accordance with ASTM E136. Since DriClad has a low binder content, it shows zero flame spread and smoke development, per ASTM E84.

ALBI DRICLAD UL FIRE-RESISTANCE LISTINGS

FIRE TEST ASTM E-119

Typical System	Size	Hourly Rating	Thickness in. (mm)	UL Design No.
Columns - Wide Flange	W10 x 49 (254 x 254 mm)	1	3/4 (19.1)	X313
		1-1/2	1-1/4 (32)	X313
		2	1-1/2 (38)	X313
		3	2-1/2 (64)	X313
	W12 x 120 (312.9 x 332.7 mm)	4	1-1/2 (38)	X313
Beams - Roof / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	S301
		1-1/2	3/4 (19.1)	S301
		2 (restrained)	1-1/2 (38)	S301
		2 (unrestrained)	1-5/8 (41)	S301
		3 (restrained)	1-5/8 (41)	S301
Beams - Floor / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	N307
		1-1/2	3/4 (19.1)	N307
		2 (restrained)	1-1/2 (38)	N307
		2 (unrestrained)	1-5/8 (41)	N307
		3 (restrained)	1-5/8 (41)	N307
Beams - Unprotected Roof / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	P930
		1-1/2	3/4 (19.1)	P930
		2 (restrained)	3/4 (19.1)	P930
		2 (unrestrained)	1-5/8 (41)	P930
Beams - Protected Roof / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	1 (25.4)	P302
Assembly - Floor / Ceiling (Restrained)[1]	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	D929
		1-1/2	3/4 (19.1)	D929
		2	3/4 (19.1)	D929
		3	1-5/8 (41)	D929
Assembly - Floor / Ceiling (Unrestrained)[1]	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	D929
		1-1/2	3/4 (19.1)	D929
		2	1-5/8 (41)	D929
Assembly - Protected Floor / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	D303
		1-1/2	3/4 (19.1)	D303
		2	3/4 (19.1)	D303
		2	1-5/8 (41)	D303
		3	1-5/8 (41)	D303
Assembly - Floor / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	3	1 (25.4)	G301
Assembly - Protected Floor / Ceiling (Restrained & Unrestrained)	W8 x 31 (203 x 203 mm)	1	3/4 (19.1)	J301
		1-1/2	3/4 (19.1)	J301
		2 (restrained)	3/4 (19.1)	J301
		2 (unrestrained)	1-5/8 (41)	J301
		3 (restrained)	1-5/8 (41)	J301

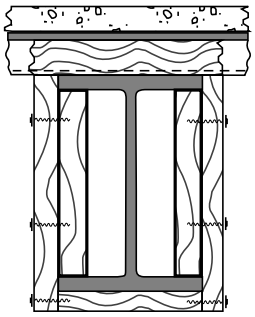
[1]Protected assembly required.

EASY APPLICATION

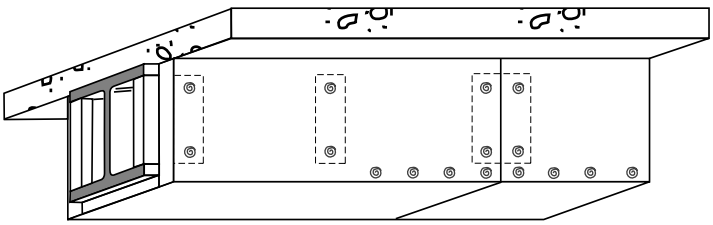
Albi DriClad installs without the adhesion and compatibility concerns associated with spray applied soft fireproofing. Although DriClad is easily cut with a knife or hand saw, the most efficient cutting device is a table saw. A knife may be used to cut around obstructions and structural members. Strips 4" wide x 1-1/2" minimum thickness are fit tightly between the top and bottom flanges 24" on center. Material is then cut and installed to box in the steel. AlbiScrews™ fasten the material 6" on center. DriClad is shipped on pallets in stretch-wrapped polyethylene for ease of handling and short term storage.

TYPICAL INSTALLATIONS

- Commercial Buildings
- Industrial Plants
- School Gymnasiums
- Warehouses
- Parking Garages
- Power Plants
- Elevator Shafts



Profiled metal deck/roof over steelwork



AlbiScrews @ 6" centers

PHYSICAL PROPERTIES

Property	ASTM Test Method	Value
Dry Applied Density (Average)	–	10.5 PCF
Compressive Strength @ 10%	ASTM C165	936 PSF
Tensile Strength	ASTM C209	155 PSF
Moisture Absorption	ASTM C209	0.50% By Volume
Moisture Adsorption	ASTM C553	0.03% By Volume
Sound Absorption	ASTM C423	NRC – 0.80
Deflection	ASTM E759	No Delamination
Thermal Performance (R Value)	ASTM C158	4.2 (per inch)
Corrosion & Fungi Resistance	ASTM C665	Non Corrosive/No Fung Growth
Leachable Chlorides	ASTM C871	No Leachable Chlorides
Air Erosion	ASTM C1071	0 @ 5800 ft/min
Fire Hazard Classification	ASTM E136	Non Combustible
Flame Spread	ASTM E84	0 (Class A)
Smoke Developed	ASTM E84	0 (Class A)

* See complete marking on package

Other Albi DriClad Literature

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

Also inquire about these fireproofing products from Albi:

Albi Clad 800
Intumescent fireproofing, withstands severe weathering and abuse

Albi Clad TF
Water-based, thin-film intumescent fireproofing for exposed interior structural steel

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

ALBI DRICLAD
(Product Data Information)

Albi DriClad is a semi rigid board manufactured from molten volcanic rock which is spun into fine threads, impregnated with a special resin and compressed to form a durable, yet easy to use material which has superior fire resistance properties. Albi DriClad is used to fireproof structural steel and is installed using Albi DriClad screws.

RECOMMENDED USES:

Albi DriClad is listed by Underwriter's Laboratories, Inc. and is designed for rapid installation to columns, beams, floor/ceiling, and roof/ceiling assemblies for fire ratings up to 3 hours. Due to its high moisture resistance Albi DriClad is suitable for application to both interior and exterior surfaces which are initially exposed to the weather during construction. Albi DriClad can also be used in semi exposed conditions such as parking garages.

FEATURES:

- UL listed for 1 to 3 hours to ASTM E-119.
- Albi DriClad is a dry applied system which is unaffected by the condition of the steel substrate.
- DriClad is a dry fix system eliminating the requirement to mask or protect adjacent structures.
- DriClad can be applied on open construction site in wet or freezing conditions no winter hold ups.
- Accepted by building codes and insurance carriers.
- Manufactured to the highest factory standards. resulting in easier and faster site inspections.

APPLICATION:

Albi DriClad is supplied in standard board sizes 48'' x 72'' with a minimum 3/4'' thickness, palletized and shrink-wrapped. The board can be cut using a table saw of broad knife. Strips 4'' wide x 1 1/2'' minimum thickness are cut to fit tightly between the top and bottom flanges 24'' on center. Albi DriClad is then cut and installed to box the steel and is held in place with Albi DriClad screws at a minimum 6'' on center. Refer to the ULI Fire Resistance directory for the ULI Designs and details for each listing. Please refer to our field Installation manual for specific design and application details.

PHYSICAL PROPERTIES:

PROPERTY	TEST METHOD	VALUE
Dry Applied Density	—	10.5 PCF (average)
Tensile Strength	ASTM C 209	155 PSF
Compressive Strength @ 10%	ASTM C165	936 PSF
Moisture Absorption	ASTM C209	less than 0.50 % (by volume)
Moisture Adsorption	ASTM C553	less than 0.30 % (by volume)
Deflection	ASTM E 759	No Delamination
Corrosion & Fungi Resistance	ASTM C665	Non Corrosive/ No Fungi Growth
Leachable Chlorides	ASTM C871	No Leachable Chlorides
Thermal Conductivity (R Value)	ASTM C158	4.2 per inch
Sound Adsorption	ASTM C423	NRC 0.80
Fire hazard Classification	ASTM E 136	Non Combustible
Flame Spread	ASTM E84	Class A
Smoke Developed	ASTM E84	Class A

Rev: 12/00

WARRANTY

Material Safety Data Sheet

Albi DriClad

Albi Manufacturing
Division of StanChem, Inc.
401 Berlin St., East Berlin, CT 06023
Emergency Telephone Number: CHEMTREC 1-800/424-9300
Information Telephone Number: 860/828-0571
Date of Preparation: 3/5/12

Section I – Product Identification

Product Number:	18x6000 (Series)
Product Name:	Albi DriClad
Product Class:	Man Made Mineral Fiber (MMMF)

Section II - Health Hazard Data

Effects of Overexposure:

Inhalation:	Temporary mechanical irritation of the upper respiratory tract (scratchy throat, coughing, congestion) may result from exposures to dusts and fibers in excess of applicable exposure limits
Skin:	Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the skin
Eyes:	Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the eyes
Ingestion:	May cause gastrointestinal irritation

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)
Mineral Fiber CAS #[13463-67-7]	94-99%	3 (respirable) 1 fiber/cc	5 1 fiber/cc	NE	NE	NE	N/A
Cured Urea Extended Phenolic Formaldehyde Binder CAS #[25104-55-6]	1-6%	NE	NE				N/A

NE - Not Established N/A - Not Applicable

Section IV - First Aid Measures

Effects of Overexposure:

Inhalation:	If irritation occurs, remove the affected person to fresh air. Drink water, and blow nose, to clear dusts and fibers from throat and nose. If irritation persists, consult a physician
Skin:	If irritation occurs, do not rub or scratch. Rinse under running water prior to washing with mild soap and water. Use a washcloth to help remove fibers. If irritation persists, consult a physician
Eyes:	If irritation occurs, flush eyes with plenty of water for at least 15 minutes. Do not rub the eyes. Consult a physician if irritation persists
Ingestion:	Ingestion of this product is unlikely and not intended under normal conditions of use. If it does occur, rinse mouth with plenty of water to help remove dust and fibers, and drink plenty of water to help reduce potential gastrointestinal irritation. Do not induce vomiting unless directed to do so by a physician

Section V - Fire and Explosion Hazard Data

Flammability Classification:

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

Section V - Fire and Explosion Hazard Data - Cont.

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:	Pick up large pieces and scoop up dusts and fibers after they have settled out of air. These Material is Released or materials will disperse and settle along the bottom of waterways and ponds. It cannot easily be removed once it is waterborne, but is considered non-hazardous in water

Section VII - Safe Handling and Storage

Handling:	Unpack material at application site to avoid unnecessary handling of product. Keep work areas clean. Avoid unnecessary handling of scrap material and debris by placing such materials in suitable containers, which should be kept as close to the work area as possible. Ensure good ventilation. Local exhaust ventilation may be required if the method of use produces dust levels which exceed applicable exposure limits (see Section 8 of this Material Safety Data Sheet). Avoid excessive eye and skin contact with dusts and fibers. Use recommended cleanup procedures to avoid buildup of dusts and fibers in the work area
Storage:	Keep material in original packaging until it is to be used. Store material to protect against adverse conditions including precipitation

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

Melting Point:	~2150° F
Weight per Gallon:	N/A
Percent Volatility:	N/A
Solids:	N/A
VOC Content:	N/A
pH:	N/A
Appearance:	Grey. Green fibrous board or batt
Odor:	May have slight resin odor

Section X - Stability and Reactivity

Stability:	Stable
Hazardous Polymerization:	Will Not Occur
Hazardous Decomposition	Primary combustion products of the cured urea extended phenolic formaldehyde binder, when heated above 390o F (200o C), are carbon monoxide, carbon dioxide, ammonia, water and trace amounts of formaldehyde. Other undetermined compounds could be released in trace quantities. Emission usually only occurs during the first heating. The released gases may be irritating to the eyes, nose and throat during initial heat-up. Use appropriate respirators (air supplied) particularly in tightly confined or poorly ventilated areas during initial heat-up
Conditions To Avoid:	N/A
Incompatibility [Materials to avoid]:	This product reacts with hydrofluoric acid

Section XI - Toxicological Information

Acute Toxicity: Fibers and dust from mineral wool can cause temporary mechanical irritation of the eyes and upper respiratory tract. Inhalation may cause coughing and nose and throat irritation

Chronic Toxicity In October 2001 the International Agency for Research on Cancer (IARC) concluded its reevaluation of the carcinogenic risk of mineral wool fibers. The result was a reclassification of the fibers from Group 2B (possibly carcinogenic to humans) to Group 3 (not classifiable as to the carcinogenicity to humans). Epidemiological studies published during the 15 years prior to the 2001 IARC review provide no evidence of increased risk of cancer from occupational exposure during manufacture or use of mineral wool fiber

Evaluation of Potential Carcinogenicity:

Source	Classification	Description
IARC Monographs	Group 3	Not Classifiable as a human carcinogen
ACGIH	Group A3	Animal carcinogen with unknown relevance to humans

Section XII - Ecological Information

Ecotoxicity: No data available for the products. The products are stable, are not expected to cause harm to animals, plants or fish, and have no other known adverse environmental effects

Environmental Fate: No data available for this product

Section XIII - Disposal Considerations

Waste Disposal Methods: Product is not considered a hazardous waste. Disposal should be in accordance with local, state and federal regulations

Section XIV - Transportation

Proper Shipping Name: Albi DriClad
Technical Name: Man Made Mineral Fiber
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**
Personal Protection:		**E**

Key: **0 = Insignificant** **1 = Slight** **2 = Moderate** **3 = High** **4 = Extreme** **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

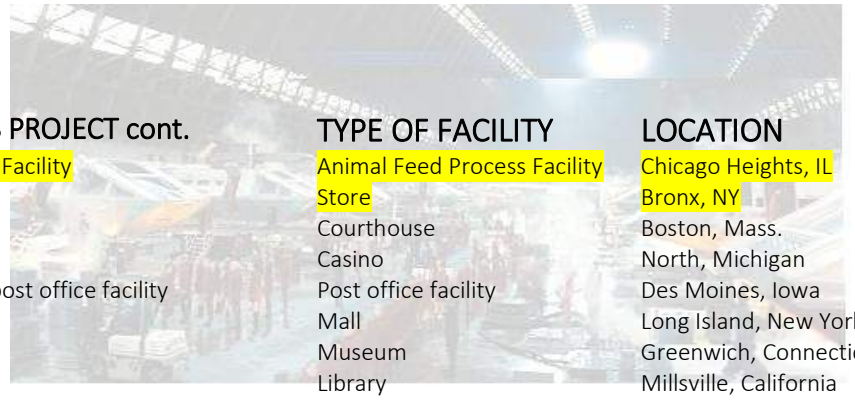
OFFICE COMPLEXES PROJECT	TYPE OF FACILITY	LOCATION	YEAR
Ingersoll Square	Commercial Retail & Condominium complex	Des Moines,IA	2014
GSA Office	Office building	Chicago, Illinois	2005,2006
Phoenix Federal Courthouse	Federal courthouse	Phoenix, AZ	2001
Kraft Foods	Corporate headquarters	Glenview, Illinois	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

Stars Management DMCC

Tel : *00971-4-457-2383*
Email : *info@starsmanagementjlt.com*
P.O.Box : *25867, Dubai, UAE*
Website : *www.starsmanagementdmcc.com*

Material Safety Data Sheet

DriClad Adhesive

Albi Manufacturing
Division of StanChem, Inc.
401 Berlin St., East Berlin, CT 06023
Emergency Telephone Number: CHEMTREC 1-800/424-9300
Information Telephone Number: 860/828-0571
Date of Preparation: 2/4/08

Section I – Product Identification

Product Number:	95X0093
Product Name:	DriClad Adhesive
Product Class:	Sodium Silicate

Section II-Hazardous Ingredients

This product contains no hazardous ingredients as defined under the criteria of the Feceral OSHA Hazard Communication Standard 29 CFR 1910.1200.

Section III – Physical Data

Boiling Range:	212° F
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Butyl Acetate
VOC Content (g/l):	0
Weight per Gallon:	13.7 - 14.7 lb/gal

Section IV – 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 Water Fog

Unusual Fire and Explosion Hazards: Elevated temperatures

Special Firefighting Procedures: Fire-fighters should wear NIOSH/MSHA approved self-contained breathing apparatus.

Section V – Health Hazard Data

Effects of Overexposure: Inhalation: May be irritating to the respiratory tract and may produce symptoms of headache and nausea. Skin: Prolonged or repeated contact with coating may cause irritation. Eyes: Primary irritation. Ingestion: Primary irritation. Possible ulcers.

Medical Conditions Prone to Aggravation by Exposure: Sinus and Dermatitis

Primary Route(s) of Entry: Dermal Inhalation Ingestion

Section V – Health Hazard Data (cont.)

Carcinogenicity:

NTP?	No
IARC Monographs?	No
OSHA Regulated?	No

Emergency and First Aid Procedures:

Inhalation: Remove individual to fresh air.

Skin: Wash thoroughly with soap and water. Remove contaminated clothing.
Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. If irritation continues, consult a physician.
Ingestion: Dilute immediately with clear fluid. Do not induce vomiting. Call a physician immediately.

Section VI – Reactivity Data

Stability: Stable

Hazardous Polymerization: Will Not Occur

Hazardous Decomposition Products: Combustion may produce carbon monoxide, carbon dioxide, and/or various hydrocarbons.

Conditions To Avoid: Long term storage above 140° F.

Incompatibility (materials to avoid): Oxidizing agents.

Section VII – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material. Transfer spilled material to containers.

Waste Disposal Method: Dispose of in accordance with local, state and federal regulations.

Section VIII – Safe Handling and Use Information

Respiratory Protection: Approved chemical filters designed to remove organic vapors.

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: Neoprene

Eye Protection: Use safety eyewear with splash guards or side shields.

Other Protective Equipment: Wear Protective Clothing

Hygienic Practices: Eyewash and shower 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. Do not breathe vapors, do not contact eyes, skin, or clothing.

Section IX – Special Precautions

Precautions To Be Taken in Handling and Storing: Keep from freezing or long term storage at elevated temperatures (Above 140° F).

Other Precautions:

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

ALBI DRICLAD

Underwriters' Laboratories Listings

COLUMNS: Wide Flange — FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W10 x 49	X-313	1 hr.	3/4 in.
	X-313	1-1/2 hrs.	1-1/4 in.
	X-313	2 hrs.	1-1/2 in.
	X-313	3 hrs.	2-1/2 in.
W12 x 120	X-313	4 hrs.	1-1/2 in.

BEAMS: Roof / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	S-301	1 hr.	3/4 in.
	S-301	1-1/2 hrs.	3/4 in.
	S-301	2 hrs. (restrained)	3/4 in.
	S-301	2 hrs. (unrestrained)	1-5/8 in.
	S-301	3 hrs. (restrained)	1-5/8 in.

BEAMS: Floor / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	N-307	1 hr.	3/4 in.
	N-307	1-1/2 hr.	3/4 in.
	N-307	2 hrs. (restrained)	3/4 in.
	N-307	2 hrs. (unrestrained)	1-5/8 in.
	N-307	3 hrs. (restrained)	1-5/8 in.

BEAMS: Unprotected Roof/Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	P-930	1 hr.	3/4 in.
	P-930	1-1/2 hrs.	3/4 in.
	P-930	2 hrs. (restrained)	3/4 in.
	P-930	2 hrs. (unrestrained)	1-5/8 in.

BEAMS: Protected Roof / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	P-302	1 hr.	1 in.

ASSEMBLY: Floor / Ceiling (restrained) — FIRE TEST: ASTM E-119

COLUMN SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	D-929	1 hr.	3/4 in.
	D-929	1-1/2 hr.	3/4 in.
	D-929	2 hrs.	3/4 in.
	D-929	3 hrs.	1-5/8 in.

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

ALBI DRICLAD

Underwriters' Laboratories Listings

ASSEMBLY: Floor / Ceiling (unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	D-929	1 hr.	3/4 in.
	D-929	1-1/2 hr.	3/4 in.
	D-929	2 hrs.	1-5/8 in.

ASSEMBLY: Protected Floor / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	D-303	1 hr.	3/4 in.
	D-303	1-1/2 hr.	3/4 in.
	D-303	2 hr. (restrained)	3/4 in.
	D-303	2 hr. (unrestrained)	1-5/8 in.
	D-303	3 hr. (restrained)	1-5/8 in.

ASSEMBLY: Floor / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	G-301	3 hr.	1 in.

ASSEMBLY: Protected Floor / Ceiling (restrained & unrestrained) — FIRE TEST: ASTM E-119

BEAM SIZE	U.L. DESIGN NO.	HOURLY RATING	MATERIAL THICKNESS
W8 x 31	J-301	1 hr.	3/4 in.
	J-301	1-1/2 hr.	3/4 in.
	J-301	2 hr. (restrained)	3/4 in.
	J-301	2 hr. (unrestrained)	1-5/8 in.
	J-301	3 hr. (restrained)	1-5/8 in.

Design No. N307
BXUV.N307
Fire-resistance Ratings - ANSI/UL 263

Page Bottom

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

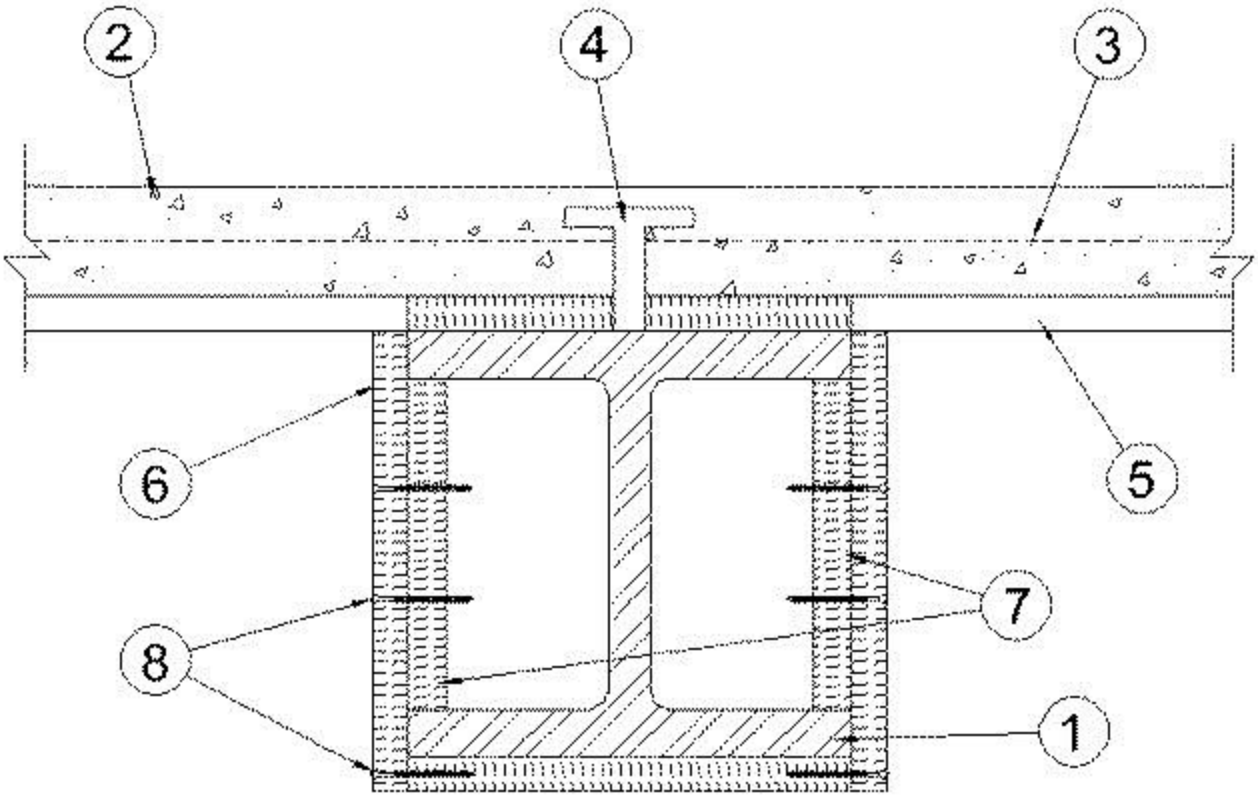
Design No. N307
February 07, 2003

Restrained Beam Ratings — 1, 1-1/2, 2, or 3 Hr (See Item 6)

Unrestrained Beam Ratings — 1, 1-1/2 & 2 Hr (See Item 6)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Beam —** W8x28, min size.

2. **Normal Weight or Lightweight Concrete —** Normal weight concrete, carbonate or siliceous aggregate, 150 (+ or -) 3 pcf unit weight, 4500 psi compressive strength. Lightweight concrete, expanded shale, clay or slate aggregate by Rotary-Kiln method, 120 (+ or -) 3 pcf unit weight, 4500 psi compressive strength, vibrated.

3. **Welded Wire Fabric —** 6 by 6 in., No. 10/10 SWG.

4. **Shear Connectors —** (Optional) — Studs, 3/4 in. diam by 3-3/8 in. long, headed type or equivalent per AISC specification. Welded to top flange of beam through the deck.

5. **Steel Floor and Form Units* —** Composite or noncomposite 1-1/2 in. deep fluted types min No. 22 MSG welded to beam.

6. **Mineral and Fiber Boards —** Boards cut in various widths to be compatible with the size of beam being protected. Boards placed parallel with the flange of the beams are cut the width of the flange. Boards placed parallel with the web of the beams are cut the width of the beam (web side) plus twice the board thickness. The voids created by the flutes above the beam to be filled with mineral wool batts having a nom density of 4 lb per cu ft.

Restrained Beam Ratings, Hr	Min. Thickness, In.
1	3/4
1-1/2	3/4
2	3/4
3	1-5/8

Unrestrained Beam Rating Hr	Min Thkns In.
1	3/4

1-1/2	3/4
2	1-5/8

ALBI MFG, DIV OF STANCHEM INC — Type Dri-Clad

7. **Noggings —** Min 1-1/2 in. thick, pieces of mineral and fiber board (See Item 6). Cut to friction fit between beam flanges; located at horizontal butted joints of adjacent mineral and fiber board sections (Item 6) on the web sides of the beam.

8. **Fasteners —** The boards are fastened to the noggings and to each other by means of spiral screw type fasteners, spaced a max of 4-6 in. OC. The fasteners are installed on both sides of horizontal joints.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2003-02-07

Design No. X313
BXUV.X313
Fire-resistance Ratings - ANSI/UL 263

Page Bottom

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

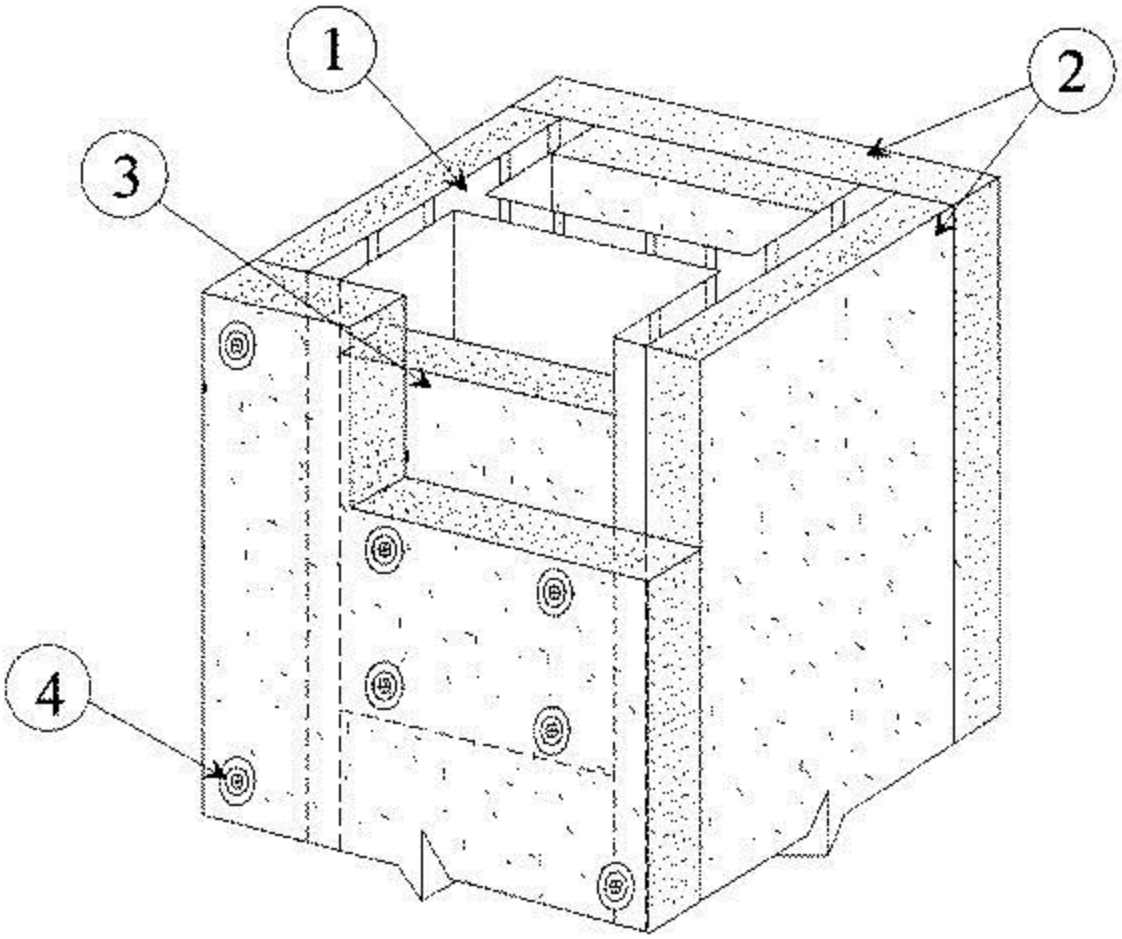
See General Information for Fire-resistance Ratings - ANSI/UL 263

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

Design No. X313
December 07, 2001

Ratings — 1, 1-1/2, 2, 3 and 4 Hr (See Item 2)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Steel Column —** See table below for minimum sizes.

2. **Mineral and Fiber Boards —** Boards cut in various widths to be compatible with the size column being protected. Boards placed parallel with the flange of the columns are cut the width of the flange. Boards placed parallel with the web of the columns are cut the width of the column (web side) plus twice the board thickness.

Min. Nominal Thickness in.					
Column Size	**1 HR**	**1-1/2 HR**	**2 HR**	**3 HR**	**4 HR**
W10x49	3/4	1-1/4	1-1/2	2-1/2	NR
W12x120	3/4	1-1/4	1-1/2	1-1/2	1-1/2

NR- Not Rated

ALBI MFG, DIV OF STANCHEM INC — Type Dri-Clad

3. **Noggings —** Min 1-1/2 in. thick, pieces of mineral and fiber board (see Item 2). Cut to friction fit between column flanges; located at top and bottom of column and at horizontal butted joints of adjacent mineral and fiber board sections (Item 2) on the web sides of the column. Joints staggered 6 in. min.

4. **Fasteners —** The boards are fastened to the noggings and to each other by means of cork screw-like fixings, spaced a max of 6 in. OC. The fasteners are installed on both sides of horizontal joints.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2001-12-07