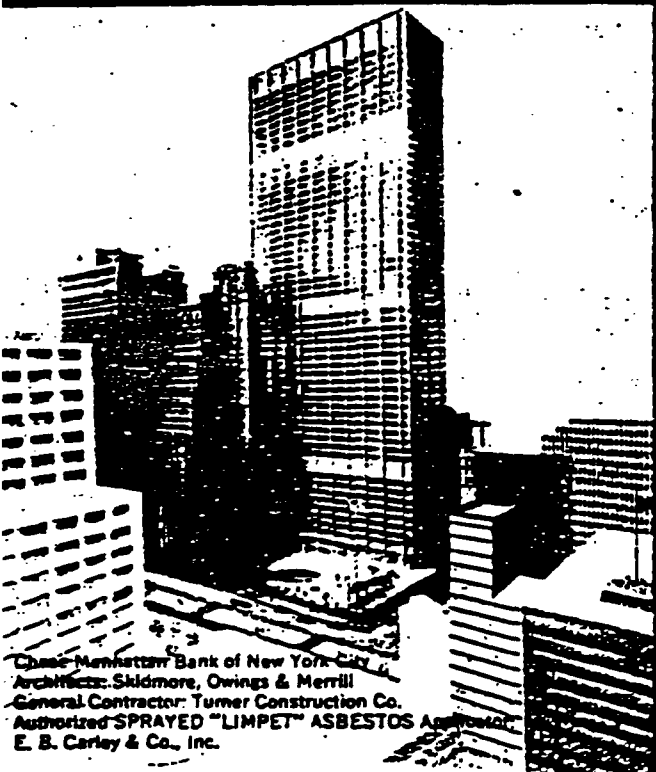




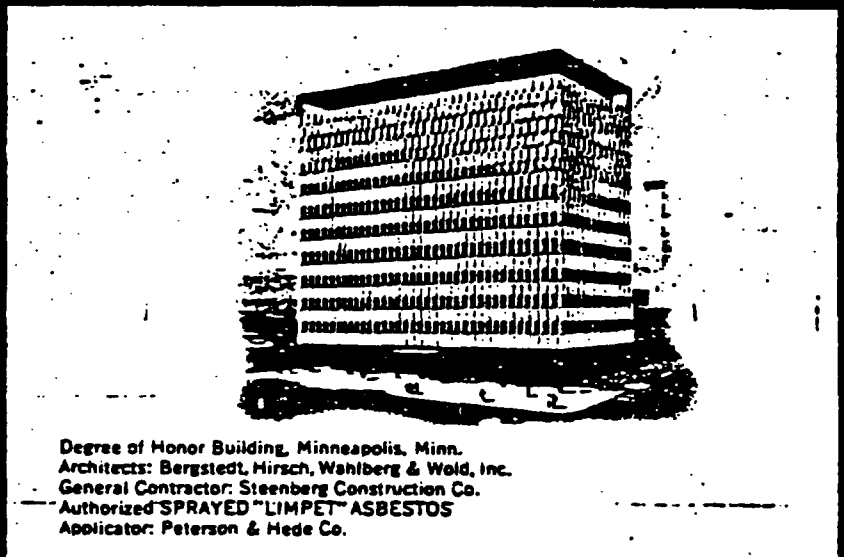
University of Washington Gymnasium, Seattle, Wash.
 Architects: Bassetti & Morse
 General Contractor: Eford Company, Inc.
 Authorized SPRAYED "LIMPET" ASBESTOS
 Applicator: Acoustical and Fireproofing Company
 Seattle, Washington.



Undergraduate Library of University of Pennsylvania,
 Philadelphia, Pa.
 Owner: General State Authority
 Architects: Harbison, Hough, Livingston & Loran
 Contractor: McCloskey & Company
 Authorized SPRAYED "LIMPET" ASBESTOS
 Applicator: Wm. Armstrong & Sons



Chase Manhattan Bank of New York
 Architects: Skidmore, Owings & Merrill
 General Contractor: Turner Construction Co.
 Authorized SPRAYED "LIMPET" ASBESTOS Applicator:
 E. B. Carley & Co., Inc.



Degree of Honor Building, Minneapolis, Minn.
 Architects: Bergstedt, Hirsch, Wahlberg & Wold, Inc.
 General Contractor: Steenberg Construction Co.
 Authorized SPRAYED "LIMPET" ASBESTOS
 Applicator: Peterson & Hede Co.

**PLAINTIFF'S
 EXHIBIT**
 TN-5343

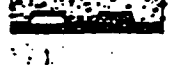
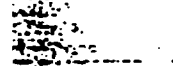
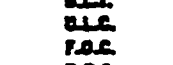
the modern sprayed-on material for

- fireproofing
- acoustical treatment
- thermal insulation
- condensation control
- corrosion prevention

Armstrong CONTRACTING AND SUPPLY CORPORATION
 LANCASTER, PENNSYLVANIA

EXHIBIT E

saves you space, weight, time, costs
... gives you many more advantages

Assembly	Assembly Ref. #	Description	Rating (Hours)	Thickness (Inches)	Authority
	1	Floor 2 1/2" Concrete Cell. Steel 3"	5 1/2 4	3/4 1/2	F.O.C. 998 U.L.I. R-3705-3
	2	Floor 2 1/2" Concrete Bar Joists, M.L.	2 1/2 2	1 3/4	N.B.S. 37A & 39
	3	Floor 2" Concrete Bar Joist, M.L.	1 1/2	3/4	N.B.S. 36A
	4	Floor 2 1/2" Concrete 3" Cell. Steel, M.L.	3	1 1/2	N.B.S. 42
	5	Floor 2 1/2" Concrete Steel Floor Units	4	1 1/2	U.L.I. R-3705-7
	6	Floor 2 1/2" Concrete Steel Floor Units Flat Undersides	3 2	3/4 1/2	U.L.C. C-113 U.L.C. C-107
	7	Beam Direct to Steel	4 3 2	1 1/2 3/4 3/4	U.L.I. R-3705-7 R-3705-8 R-3705-8
	8	Beam Metal Lath	4	1 1/2 1 1/4"	U.L.I. R-3705-3
	9	Column Direct to Steel	5 3 3	3 3/4 2 3/4 1 3/4	U.L.I. 3705-4-5 F.O.C. 1117

LEGEND:

U.L.I.	— Underwriters' Laboratories, Inc., Chicago, Ill.
U.L.C.	— Underwriters' Laboratories, Canada
F.O.C.	— Fire Office Committee, Great Britain
N.B.S.	— National Bureau of Standards, Washington, D.C.
"	— SPRAYED "LIMPET" ASBESTOS was applied over metal lath 1 1/2" & 3 1/4" thick to sides and bottom of beam respectively
M.L.	— Metal lath
Cell. Steel	— Cellular steel

This modern fireproofing material reduces structural stress... allows you more usable interior space... shrinks installation time and results in earlier occupancy. It goes on in any weather, above 40°F. Result—SPRAYED "LIMPET" ASBESTOS doesn't hold up your construction schedule.

SPRAYED "LIMPET" ASBESTOS is 100% asbestos fiber, chemically treated to give a homogeneous blanket that bonds perfectly to all surfaces. Though lightweight, its bonding strength is 100 pounds per square foot. You get a one-piece surface of total fireproofing that expands and contracts with the insulated surface, maintains its efficiency even at 2000 degrees F.

In addition, SPRAYED "LIMPET" ASBESTOS is vermin-proof, rot-proof, and corrosion-proof. It is particularly adapted to fireproofing metal decking floor construction and structural steel. No special preparation is needed... direct application can be made to steel surfaces, just as they are left by erectors. Field painting is unnecessary.

Condensation control is still another outstanding feature. The usual dead air space behind insulation is eliminated, preventing sweating and condensation. Water vapor is absorbed during peak humidity and released by evaporation when humidity is low.

With SPRAYED "LIMPET" ASBESTOS you have double sound absorption. The millions of pores between fibers trap and smother sound... the resilient surface sharply reduces rebound. This prevents sound concentrations or echoes from curved surfaces, domes, or barrel vaults.

And SPRAYED "LIMPET" ASBESTOS is attractive. It doesn't hide architectural details... frees you from restrictions in design and conception. Its natural, light surface can be painted without destroying its efficiency.

Check All These Outstanding SPRAYED "LIMPET" ASBESTOS Features

- **Lightweight:** Practical field application... weighs only 12 lbs. per sq. ft.
- **Fast Drying:** Loose off free moisture and is completely dry in 24 to 36 hours at 70 degrees F. and 60% R.H.
- **Clear:** No special provisions are necessary. Surface material can be brown cleaned or varnished.
- **Fast Application:** No interference with other trades, faster economy.
- **Non-Corrosive:** Independent laboratory tests show that field painting of steel is unnecessary. Shop paint is sufficient. 25-year-old case history of an application in a highly acidic atmosphere on request.
- **Lighting:** It can be applied directly to any beam and deck which forms a bay. No lathing is necessary. One coat and double sand-lathing eliminated.
- **Acoustically:** Fibers trap and smother sound... resilient surface reduces sound rebound. See complete tables on last page.
- **Fire Rating:** 225 with lath and outside temperatures of 82.5 degrees F. and above 20 degrees F. respectively.
- **Light Reflectivity:** On exposed (unvarnished) work 85.1 lb. in bond of white asbestos can be used for light reflectivity of 72%.
- **Toughening:** Material can be made grout and finger proof with coverage of 75 lb. in white resin (optional). Also ideal for plaster chambers.
- **Handing:** Can be covered with 80 lb. (a 100% asbestos with a higher binder content for hardness) for a plaster type hard finish.
- **Painting:** Can be painted with any type of paint when dry. Water base paint recommended. Pores should be sprayed or rolled, never brushed.
- **Shot Pull-Out:** Fibers are 100% asbestos, so there is no grit or shot pull-out... no effing or fluffing. On next page, under "Ability to Vibrate," see test procedure to guarantee trouble-free installation.
- **Asphalting:** Factory treated (asphalt) asphalting from sheet to sheet.
- **Guaranteed Specifications:** Armstrong Contracting and Supply Corporation with written guaranteed specifications for any abnormal application on request.

Fire
Protection

drawings, shall be treated for fire protection with SPRAYED "LIMPET" ASBESTOS as distributed by Armstrong Contracting and Supply Corporation, Lancaster, Pennsylvania.

Thermal
Insulation

The roofs of buildings, exterior or interior walls and/or ceilings, as designated on the drawings, shall be treated for thermal insulation with SPRAYED "LIMPET" ASBESTOS as distributed by Armstrong Contracting and Supply Corporation, Lancaster, Pennsylvania.

Noise
Reduction

The roofs of buildings, exterior or interior walls and/or ceilings or suspended ceilings, as designated on the drawings, shall be treated for noise reduction with SPRAYED "LIMPET" ASBESTOS as distributed by Armstrong Contracting and Supply Corporation, Lancaster, Pennsylvania.

Condensation
Control

The roofs of buildings, exterior or interior walls and/or ceilings, as designated on the drawings, shall be treated for condensation control with SPRAYED "LIMPET" ASBESTOS as distributed by Armstrong Contracting and Supply Corporation, Lancaster, Pennsylvania.

All surfaces to be treated shall be clean and free from any foreign matter likely to create a false bond.

SPRAYED "LIMPET" ASBESTOS: SPRAYED "LIMPET" ASBESTOS shall consist of selected asbestos fibers with an inorganic binder free from any substitute.

Adhesives: Adhesive required on 2-hr. flat deck. Welded pins required on 18" centers on 3-hr. flat deck. Assembly No. 6.

Fire
Protection

All applications of SPRAYED "LIMPET" ASBESTOS shall have a uniform Class 3 pressed back flat and/or textured fire-protective surface as per sample approved.

Thermal
Insulation
Noise
Reduction
Condensation
Control

All applications of SPRAYED "LIMPET" ASBESTOS shall have a Class..... surface finish, additionally treated with an application of..... as per sample approved.

SPRAYED "LIMPET" ASBESTOS shall be applied in accordance with specifications herein by Spray Operators instructed under the Armstrong Contracting and Supply Corporation Training School Program. Manufacturers' printed instructions shall be rigidly followed, all work being subject to inspection by Armstrong Contracting and Supply Corporation Quality Control Engineers.

WARRANTY:

The contractor applying material and the manufacturer supplying material shall be required to warrant the satisfactory performance of the SPRAYED "LIMPET" ASBESTOS when applied in accordance with the specifications herein. This warranty shall be valid for a period not exceeding twelve months following the date on which the application is completed.

STABILITY TO VIBRATION

Armstrong Contracting and Supply Corporation suggests the inclusion of the Stability to Vibration Test (see below) in all specifications for sprayed fibrous material, whether exposed or concealed. The test was derived to fill the need for some standardized method of measuring the shot content of materials. There is no appropriate ASTM or Military Specification for this purpose.

Stability to Vibration: The manufacturer shall supply a laboratory report showing less than 1.5 percent fallout of material on a sample 1'

thick and sprayed at a density of 10.5 pounds per cubic foot. The test panel shall be composed of sprayed fiber and integral binder as normally supplied in bags for job delivery. No adhesives, sealers, oversprays or hardeners are to be used.

The test procedure to be as follows:

A circular disc of panel shall be cut large enough to fit snugly, without forcing, into a sieve of a Ro-Tap Shaker. The sieve series shall consist of Tyler mesh numbers 3, 6, 10, 20, 35, and 100 and pan or equivalent. The weighed disc shall be placed face down in the 3 mesh sieve on top of a one-half inch annular

gasket which just fits in the sieve and is thick enough to prevent contact between the disc and the screen. Cardboard shims shall be used to fix the disc securely to prevent movement in the sieve during shaking. The sieve series shall be placed in the Ro-Tap Shaker and run for 15 minutes. The material on each sieve and pan shall be weighed. The percentage weight on each screen and pan shall be computed. The sum of these percentage weights shall be reported as percent fallout. The final condition of the disc which has been shaken shall be reported as being unchanged, cracked or broken up.

Fire
Protection of
Structural
Beams
and/or
Steel
Columns

1. Contoured Method.

SPRAYED "LIMPET" ASBESTOS shall be applied directly to steel beams and/or columns to a thickness of.....inches to provide a fire-resistive rating of.....hours, as tested and listed by the Underwriters' Laboratories, Inc., Chicago, Ill., and/or other recognized testing laboratories.

2. Boxed-in Method.

SPRAYED "LIMPET" ASBESTOS shall be applied directly to lath, previously fashioned to steel and/or columns, to a thickness of.....inches to provide a fire-resistive rating of.....hours, as tested and listed by the Underwriters' Laboratories, Inc., of Chicago, Ill., and/or other recognized testing laboratories.

Fire
Protection of
Floor and
Ceiling
Assemblies

The fire-protection of floor and ceiling assemblies shall be achieved by applying SPRAYED "LIMPET" ASBESTOS directly to the underside of the steel floor and/or ceiling assemblies. The application shall be to a thickness of.....inches to provide a fire-resistive rating of.....hours, as tested and listed by the Underwriters' Laboratories, Inc., Chicago, Ill., and/or other recognized testing laboratories.

Thermal
Insulation

SPRAYED "LIMPET" ASBESTOS, as defined under the heading "Materials" shall be applied to a thickness of.....inches to provide a thermal transmission of.....B.T.U./°F./hr./sq. ft.

Noise
Reduction

SPRAYED "LIMPET" ASBESTOS, as defined under the heading "Materials" shall be applied to a thickness of.....inches to provide a Noise Reduction Coefficient of.....

Condensation
Control

SPRAYED "LIMPET" ASBESTOS, as defined under the heading "Materials" shall be applied to a thickness of.....inches having a thermal transmission of.....B.T.U./°F./hr./sq. ft. sufficient to prevent surface condensation.

SOUND CONTROL—ACOUSTICAL CORRECTION **TESTS ON SOLID BACKING**

Thickness	Painting	Sound Absorption Coefficient Frequency—cycles per second						Noise Coeff.
		128	256	512	1024	2048	4096	
1/2"	2 coats	.08	.27	.53	.65	.71	.59	.53
3/4"	Unpainted	.08	.19	.70	.89	.95	.85	.70
3/4"	2 coats	.09	.23	.67	.90	.93	.87	.70
1"	Unpainted	.30	.42	.74	.96	.95	.96	.75
1 1/2"	Unpainted	.16	.59	.98	.98	.97	.90	.90
1 1/2"	2 coats	.16	.62	.94	.98	.94	.91	.85

TESTS ON METAL LATH

Thickness	Painting	Sound Absorption Coefficient Frequency—cycles per second						Noise Coeff.
		128	256	512	1024	2048	4096	
1/2"	Unpainted	.25	.78	.97	.81	.82	.85	.85
1/2"	2 coats	.27	.75	.90	.75	.80	.88	.80
3/4"	Unpainted	.41	.88	.90	.88	.91	.81	.90
3/4"	2 coats	.49	.90	.93	.86	.81	.82	.90
3/4"	10 coats	.48	.91	.91	.86	.87	.87	.90

Note—Painting was with Oil Emulsion Paint, sprayed on.

COEFFICIENT OF THERMAL
CONDUCTIVITY (K) (BTU/hr/ft²/°F/in)

COEFFICIENTS OF HEAT TRANSFER—BTU/sq ft/hr/°F (U-VALUES)

MEAN TEMPERATURE F.		VALUES ADOPTED		MATERIAL	UN-TREATED	SPRAYED "LIMPET" ASBESTOS					
		"K"	"C"			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
0°	0.30	4.0		Asbestos Cement	.92	.39	.29	.24	.20	.17	.15
50°	0.315		1.02	Wood Deck	.57	.29	.24	.20	.17	.15	.13
100°	0.34	0	0	Corrugated Metal	1.28	.41	.30	.24	.20	.17	.15
200°	0.39		.90	8" Concrete Blocks	.53	.28	.23	.19	.17	.15	.13
300°	0.46	12.0		4" Concrete Deck	.65	.31	.25	.20	.18	.15	.14
400°	0.53	9.0		4" Face Brick	.49	.27	.22	.19	.16	.14	.13
		5.0		4" Common Brick							

Factory trained, franchised applicators in all principal cities.

Armstrong
 CONTRACTING AND SUPPLY
 CORPORATION,
 LANCASTER, PENNSYLVANIA