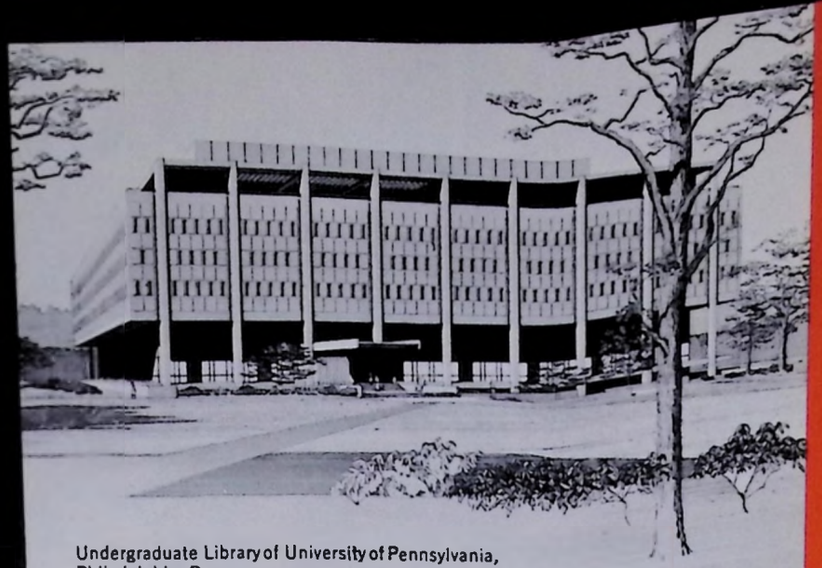
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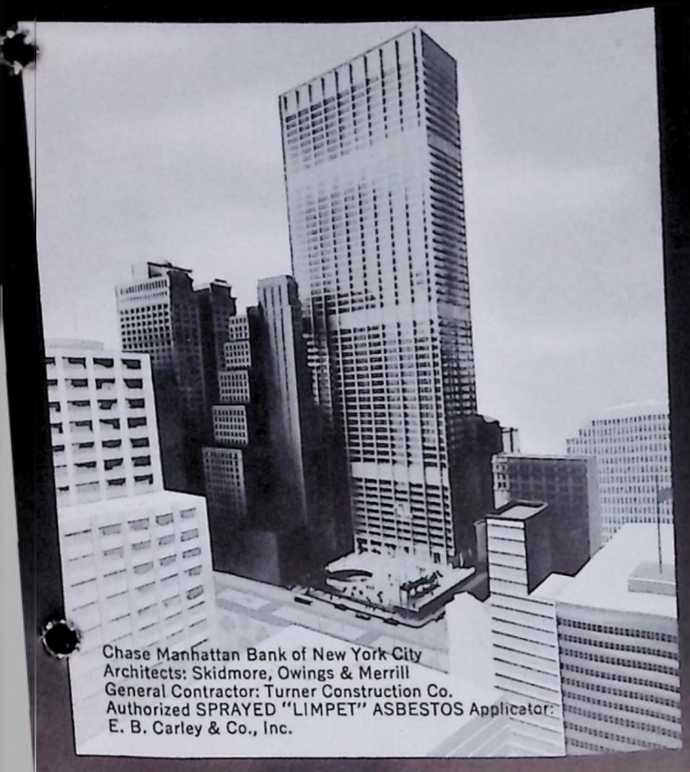
A.I.A. FILE NUMBERS 21-C-1, 39-B, 37-C-2.



Carver Gymnasium of Western Washington State College, Bellingham, Washington.
Architects: Bassetti & Morse,
General Contractor: Eiford 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 & Larson
Contractor: McCloskey & Company
Authorized SPRAYED "LIMPET" ASBESTOS Applicator: Wm. Armstrong & Sons



Chase Manhattan Bank of New York City
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.

SPRAYED "LIMPET" ASBESTOS®

the modern sprayed-on material for

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

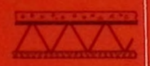
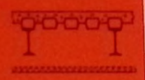
Armstrong CONTRACTING AND SUPPLY CORPORATION

LANCASTER, PENNSYLVANIA

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SPRAYED "LIMPET" ASBESTOS®

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

Assembly	Assembly Ref. #	Description	Rating (Hours)	Thickness (Inches)	Authority
	1	Floor 2½" Concrete Cell. Steel 3"	5½ 4	⅝ ½	F.O.C. 998 U.L.I. R-3705-3
	2	Floor 2½" Concrete Bar Joists, M.L.	2½ 2	1 ¾	N.B.S. 37A & 39
	3	Floor 2" Concrete Bar Joist, M.L.	1½	⅝	N.B.S. 36A
	4	Floor 2½" Concrete 3" Cell. Steel, M.L.	3	1⅛	N.B.S. 42
	5	Floor 2½" Concrete Steel Floor Units	4	11/16	U.L.I. R-3705-7
	6	Floor 2½" Concrete Steel Floor Units Flat Undersides	3 2	⅝ ½	U.L.C. C-113 U.L.C. C-107
	7	Beam Direct to Steel	4 3 2	1⅛ ⅞ ⅝	U.L.I. R-3705-7 R-3705-8 R-3705-8
	8	Beam Metal Lath	4	1½ 1¼*	U.L.I. R-3705-3
	9	Column Direct to Steel	5 3 3	3⅜ 2¼ 1¾	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 Offices Committee, Great Britain
N.B.S.	— National Bureau of Standards, Washington, D.C.
*	— SPRAYED "LIMPET" ASBESTOS was applied over metal lath 1¼" & 1½" 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 sprayed densities are from 10.5 to 12 lbs. per cu. ft.
- **Fast Drying:** Loses all free moisture and is completely dry in 24 to 30 hours at 70 degrees F. and 60% R.H.
- **Clean:** No special provisions are necessary. Surplus material can be broom cleaned or vacuumed.
- **Fast Application:** No interference with other trades, faster occupancy.
- **Non-Corrosive:** Independent laboratory tests show that field painting of steel is unnecessary. Shop paint is sufficient. 26-year-old case history of an application in a highly acidic atmosphere on request.
- **Lathing:** It can be applied directly to any beam and deck which forms a key. No lathing is necessary. One trade and double scaffolding eliminated.
- **Acoustical:** Fibers trap and smother sound . . . resilient surface reduces sound rebound. See complete tables on back page.
- **"K" Factor:** .223 with inside and outside temperatures of 32.5 degrees F. and minus 20 degrees F. respectively.
- **Light Reflectivity:** On exposed (acoustical) work WS 1 fiber (a blend of white asbestos) can be used for light reflectivity of 72%.
- **Toughening:** Material can be made grease and finger proof with overspray of TS 2 (a white resin emulsion). Also ideal for plenum chambers.
- **Hardening:** Can be covered with BD 2 to 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 paints recommended. Paints should be sprayed or rolled, never brushed.
- **Shot Fall-Out:** Fibers are 100% asbestos, so there is no grit or shot fallout . . . no cutting or flaking. On next page, under "Stability to Vibration," see test procedure to guarantee trouble-free installation.
- **Applications:** Factory trained franchised applicators from coast to coast.
- **Guaranteed Specifications:** Armstrong Contracting and Supply Corporation will write guaranteed specifications for any abnormal application on request.

GENERAL:

Fire Protection — The structural steel of buildings and/or floor and ceiling assemblies, as designated on the 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.

SURFACES:

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

MATERIALS:

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.

SURFACE TREATMENTS:

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.

WORKMANSHIP:

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.

SPECIFICATION GUIDE

APPLICATION:

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.

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.

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SPRAYED "LIMPET" ASBESTOS

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	
½"	2 coats	.08	.27	.53	.65	.71	.59	.55
¾"	Unpainted	.08	.19	.70	.89	.95	.85	.70
¾"	2 coats	.09	.23	.67	.90	.93	.87	.70
1"	Unpainted	.30	.42	.74	.96	.95	.96	.75
1½"	Unpainted	.16	.59	.98	.98	.97	.90	.90
1½"	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	
½"	Unpainted	.25	.78	.97	.81	.82	.85	.85
½"	2 coats	.27	.75	.90	.75	.80	.88	.80
¾"	Unpainted	.41	.88	.90	.88	.91	.81	.90
¾"	2 coats	.49	.90	.93	.86	.81	.82	.90
¾"	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)

MEAN TEMPERATURE F.	
0°	0.30
50°	0.315
100°	0.34
200°	0.39
300°	0.46
400°	0.53

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

VALUES ADOPTED		MATERIAL	UN-TREATED	SPRAYED "LIMPET" ASBESTOS						
"K"	"C"			½"	¾"	1"	1¼"	1½"	1¾"	2"
4.0		Asbestos Cement	.92	.39	.29	.24	.20	.17	.15	.13
	1.02	Wood Deck	.57	.29	.24	.20	.17	.15	.13	.12
0	0	Corrugated Metal	1.28	.41	.30	.24	.20	.17	.15	.14
	.90	8" Concrete Blocks	.53	.28	.23	.19	.17	.15	.13	.12
12.0		4" Concrete Deck	.65	.31	.25	.20	.18	.15	.14	.12
9.0		4" Face Brick	.49	.27	.22	.19	.16	.14	.13	.10
5.0		4" Common Brick								

Factory trained, franchised applicators in all principal cities.

Armstrong
CONTRACTING AND SUPPLY CORPORATION,
LANCASTER, PENNSYLVANIA

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