EXHIBITS TO

DEPOSITION OF

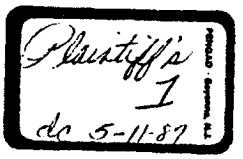
RICHARDSON, ANDREW

MAY 11, 1987

THOMAS CANNON vs OWI

Mr. Richardson, Please note that Branch Manager should read Product Manager in the second last paragraph, as indicated.

M.S.



January 19, 1967

To: All Concerned

From: N.L. Barr

Sprayed LIMPET Asbestos

Arrangements have been completed with J.W. Roberts Ltd., Norwich, England, and Armstrong Contracting & Supply Corporation, Lancaster, Pa., whereby Atlas Asbestos Company will become head licencee for the manufacture and distribution of Sprayed LIMPET Asbestos in the United States of America and its territories. It is anticipated that Atlas will assume the licence from Armstrong Contracting & Supply on or about March 1, 1967.

Manufacture of LIMPET for the United States market will be at Atlas's Montreal factory. Distribution of LIMPET in the United States for its many applications will be through existing sub-licencees including many of the branches of Armstrong Contracting & Supply in the United States.

Effective February 1, Mr. Andrew C. Richardson, 500 Valley Road, Lancaster, Pa., Phone A.C. 717, 569-9561, formerly Commodity Manager, Sprayed LIMPET Asbestos, Armstrong Contracting & Supply, will become Atlas's U.S.A. Branch Sales Manager for Sprayed LIMPET Asbestos and Insulations.

Mr. L.R. Paslin will continue in his present position, but will concentrate his activities exclusively to Atlas Building Materials, and certain other products. Mr. Richardson will report to the Vice-President, Marketing, and Mr. Paslin will continue to do so as has been the practice in the past.

Mr. Richardson comes to us with a great deal of experience in the Sprayed LIMPET Asbestos field having been Product Manager for LIMPET with Keasbey & Mattison Company prior to the U.S.A. licence being transferred to Armstrong Contracting & Supply in 1962.

Tentative arrangements have been made for Mr. Richardson to visit us in Montreal for the week of February 6, and a schedule of his activities will be arranged and distributed in the near future.

For those Canadian branches covering portions of the continental United States, the decision on the responsibility for LIMPET in those areas must be reserved for future discussion. Comments from those Branch Managers affected would be welcome prior to Mr. Richardson's visit.

Mr. Richardson will be working very closely with Mr. Dreimanis and Mr. Norton. Copies of any correspondence from Canadian Branch Managers to Mr. Richardson should be directed to the ~~Branch~~ Product Manager concerned, with another copy for the Vice-President, Marketing.

For those of you who have not yet met Mr. Richardson, I am happy to say you will have the opportunity of welcoming him to our organization at the time of our General Sales Meeting the end of April.

N.L. Barr

N.L. Barr

NLB:ms

c: Mr. A.C. Richardson
" J.R. Reichel

Division of Bell Asbestos Mines, Ltd.

HEAD OFFICE AND FACTORY: 5600 HOCHELAGA ST., MONTREAL 5, QUEBEC

TELEPHONE: AREA CODE 514: 259-2531 TELEX: 01-2193

ATLAS ASBESTOS COMPANY

January 20, 1967

Mr. A.C. Richardson,
500 Valley Road,
Lancaster, Pa.

Dear Andy:

I am happy to say that today I received a cable from Sandy Marshall confirming that Turner & Newall have approved the new arrangements for LIMPET.

It is to be hoped that these new arrangements will become effective March 1, but this has not yet been confirmed. I know that Jim Liddell is hoping that this will be the effective date, as I was able to talk with him today since he and Doug Ainslie were both in Montreal.

We have made hotel reservations for a single room for you in Montreal at The Royal Embassy Hotel beginning Sunday evening, February 5, until Friday, February 10.

We will send you your air line tickets which arrange for your leaving Baltimore February 5 via Eastern Flt. 174 at 7:15 p.m., and returning to Baltimore on February 10 via Eastern Flt. 173 leaving Montreal at 8:35 a.m.

As you will be starting with us on February 1, I think it desirable that you arrange to confer with Bob Enslin as to possible arrangements with our present U.S.A. sales agents, co-ordination of information between the two of you, and a general indoctrination into our operating procedures. I will send you a proposed schedule of your activities during your Montreal visit so that you will know what we have lined up for you.

It would be very useful to our Traffic Department if you could bring with you freight rate information, and freight classification information now in the possession of Armstrong Contracting & Supply relating to shipments of LIMPET from Gloucester, N.J., to a variety of U.S.A. points. This will be very helpful to us in establishing the lowest possible rates from Montreal to those U.S.A. destinations where we hope to be shipping carloads of LIMPET. Information relating to the shipment of Spray Machines might also be helpful as well.

Cordially yours,

N.L. Barr,
Vice-President

NLB:ms

September 28, 1967

To: Mr. A.C. Richardson

From: N.L. Barr

Armaspray

Your letter of September 25 is rather disturbing to both Serge and myself for we felt that Armstrong was going our way on LIMPET. I felt especially good about this as a result of our discussions with Jim Liddell last Summer.

I am extremely loath to approach Owens-Corning as long as we can expect a reasonably good volume of business from Armstrong C&S. However, if Armstrong are definitely going to minimize LIMPET, as a matter of policy, then it would appear that we have no other good course to follow.

I find it a little difficult to believe that with our quality, our prices, our service, and our machines (we had a good test at Ottawa this week on the Meyer machine), that Armstrong would turn away from LIMPET.

I suggest you see Jim Liddell at the earliest opportunity to try to get an indication from him as to what their intentions are on LIMPET. I know he will say that he has no wish to stand in our way when it comes to approaching Owens-Corning, but given some indication that we might expect a volume of business from Armstrong at levels roughly equivalent to a reasonably good year they had with J.W.R., then, with this assurance, we might deem it desirable to restrict our efforts with Owens-Corning. Specifically, we might use Owens-Corning to fill in the gaps where we are not able to sell LIMPET through a specific Armstrong branch.

On the other hand, we don't yet know how Owens-Corning will react to such an approach, as I merely have an indication that they would like to talk about taking on LIMPET if we are interested.

I expect to be in New York on Monday, October 23, and, depending upon how you make out with Jim Liddell, you might, or might not, want to come over to make a call on Owens-Corning.

Assuming you are able to see Jim Liddell early next week, I suggest you give me a call afterwards so we can decide what is best to do. I am leaving for a two-week visit to England on October 8.

NLB

N.L. Barr

NLB:ms
c: Mr. S. Dreimanis

November 6, 1967

TO: Mr. M. L. Barr

FROM: A. C. Richardson

RE: A.C.& S. LIMPET ACTIVITY

In my letter of October 3rd, I promised to advise you further on Limpet potential (versus Armaspray) after meeting with various A.C.& S. branches on my West Coast trip.

1. St. Louis District.

I met with Bud Hetrick, District Manager, and Jim Roach, Branch Manager. Mr. Hetrick has the following branches in his district: St. Louis, Cincinnati, Dayton, Ohio, Indianapolis, Louisville, and Memphis, Tenn. Hetrick stated that there were no outstanding bids on Limpet anywhere in his district. He also advised that there was not much spray activity at all and the St. Louis Branch is currently tied up on two very large industrial projects. He advised that his 1968 budget has an approved appropriation for the purchase of an Armaspray/Universal machine. This would indicate he expects to pursue Armaspray business next year or he is under pressure from Lancaster to purchase a machine and to get into this phase of the business.

While Mr. Hetrick is not aware that I know of his activity, he did work with Monsanto Chemical Company whose headquarters are in St. Louis on an Armaspray project and he was successful in writing a specification which resulted in a substantial contract for the Philadelphia Branch Office.

2. Los Angeles District.

I met with Mann Sweet, District Manager, and Warren Maggio, Branch Manager. Primarily this was a "Commercial" operation but now they are doing some "Industrial" work. Mr. Sweet states that they have no interest in either Limpet or Armaspray and he has many other urgent problems of reorganization in his district to take care of before he would consider taking on the training and promotion involved to get into the spray business. This office was never particularly active nor interested in Limpet or for that matter other new products.

3. San Francisco Branch (of L.A.)

Al Gross, Manager. He stated that he has promoted one Armaspray job at Standard Oil of California and the job was done with a Universal machine which he borrowed from the Seattle district. There are no outstanding Limpet quotations and he is not pursuing this business. Furthermore he requested shipping instructions for returning two Limpet machines to Montreal. This has been taken care of.

W.L. Barr

4. Portland Branch.

Bob Binford, Manager. This was formerly one of the most active Limpet offices in the Armstrong organization. He has done considerable Armaspray work using two of the three Armaspray machines in the Seattle district. He was discouraging about any future Limpet activity although he admitted he thought Limpet is still a superior product - but did say Armaspray had proved to be suitable on any contract he has undertaken.

5. Seattle District.

Neither the District nor the Branch Manager was available so I spoke with the Estimator and Hugh Holdt, the Construction Superintendant. He advised there were no outstanding Limpet quotations and that they have done some small Armaspray jobs.

6. Spokane Branch.

John Markealli, Manager. I tried to contact him twice by phone but he was out of town. This office was formerly as active in Limpet as Portland, and I gathered from information received at Portland and Seattle that this Branch has done some Armaspray contracts.

One point which was made by every contact was that their first loyalty must be to their own product and in general they could not foresee nor offer any encouragement as to increased Limpet activity or to any Limpet activity whatsoever. Confidentially, one manager showed me a memo from Lancaster, the gist of which is as follows " - - certainly since we are, for all practical purposes, out of the Limpet business and should be vigorously promoting Armaspray 16, we can see no reason for not getting rid of the spare parts for the Limpet machine and making the necessary arrangements for sending your Limpet machine back to Atlas Asbestos. Your investment and spare parts should not influence promotional activity on Armaspray."

I believe this resume on Limpet activity by A.C.& S. offices covering a large part of the U.S. will give you the general picture which I believe will be identical to the pattern at other A.C.& S. offices which I will be calling on in the future.

A. C. Richardson

ACR:jr
cc: Mr. S.Dreimanis

Division of Bell Asbestos Mines, Ltd.

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ATLAS ASBESTOS COMPANY

LIMPET PROJECTS

THE PULP AND PAPER INDUSTRY

OWNER	SITE	EQUIPMENT INSULATED WITH LIMPET	CONTRACT DATE
Western Kraft Corporation	Albany, Oregon	General Equipment	10/14/63
Weyerhaeuser Company	Longview, Wash.	Digester	11/8/63
Weyerhaeuser Company	Everett, Wash.	2 Silicate Tanks	12/13/63
Cascade Fiber Company	Eugene, Oregon	Hot Air Furnace	12/19/63
Georgia-Pacific	Toledo, Oregon	General Equipment	12/24/63
Crown Zellerbach	St. Helens, Oregon	Duct Work	12/26/63
Crown Zellerbach	Camas, Wash.	Air Ducts	2/26/64
Crown Zellerbach	St. Helens, Ore.	10" Steam Line Fittings	2/28/64
Longview Fiber Company	Longview, Wash.	Cooker	4/7/64
West Virginia Pulp & Paper	North Charleston, S.C.	General Equipment	4/15/64
Longview Fiber Company	Longview, Wash.	Cooker, Blow Tank and Steam Line	5/27/64
U. S. Plywood	Lebanon, Oregon	Cold Air Duct	5/28/64
Potlatch Forests, Inc.	Lewiston, Idaho	Evaporator Plant	6/10/64
Boise Cascade	St. Helens, Oregon	Duct Work	6/29/64
Western Kraft Corporation	Albany, Oregon	Digester	6/29/64
Potlatch Forests, Inc.	Lewiston, Idaho	Combustion Boiler Plt.	7/7/64
Western Kraft Corp.	Albany, Oregon	Digester	7/15/64
West Va. Pulp & Paper	Charleston, S.C.	Crude Tall Oil Tank	8/12/64

Potlatch Forests, Inc.	Lewiston, Idaho	Combustion Eng. Co. Recovery Boiler	8/13/64
Georgia-Pacific	Toldeo, Oregon	Precipitator	8/24/64
Weyerhaeuser Company	Everett, Wash.	Fireproof Beams and Columns	8/28/64
Weyerhaeuser Company	Everett, Wash.	Boiler Stack	8/23/64
Weyerhaeuser Company	Everett, Wash.	Steam Shower	9/4/64
Potlatch Forests, Inc.	Lewiston, Idaho	Insulator Compartments	9/22/64
Scott Paper Company	Everett, Wash.	Air Cap Duct	10/29/64
Potlatch Forests, Inc.	Lewiston, Idaho	Cyclone & Venturi	11/16/64
Portlatch Forests, Inc.	Lewiston, Idaho	Precipitator Ducts	11/15/64
Crown Zellerbach	No.Portland, Ore.	Duct Work & Equipment	12/9/64
Weyerhaeuser Company	Everett, Wash.	Boiler Duct	12/15/64
Crown Zellerbach Company	Camas, Wash.	Duct Work and Equipment	1/4/65
Georgia-Pacific	Toledo, Oregon	#9 Digester	1/6/65
Georgia-Pacific	Toledo, Oregon	#8 Digester	1/6/65
Weyerhaeuser Company	Springfield, Ore.	Tanks, Breeching and Evaporators	2/5/65
Weyerhaeuser Company	Longview, Wash.	Ducts and Vessels	2/5/65
Weyerhaeuser Company	Longview, Wash.	Hot Water Tank	2/5/65

Ambler, Pa.
Oct. 15, 1959

PERSONAL

Mr. Norman L. Barr

Re: Trip to England
J. W. Roberts Co.

First of all, I would like to express my appreciation for the opportunity of becoming Merchandising Manager of Sprayed "Limpet" Asbestos, and the consequent trip to England to be educated for this position.

Now having met all of the personnel of the J. W. Roberts Organization in person and realizing how world-wide the S.L.A. market is and its international acceptance, one can only be impressed with their know-how. Consequently I will approach the marketing of S.L.A. in the United States with enthusiasm. Undoubtedly we have a vast potential and a long way to go.

Herewith my actual program for the eight weeks' training period.

FIRST WEEK COMMENCING THE 20TH OF JULY

This was spent with Mr. Marshall, Mr. Wilson, Mr. Spavold, Mr. Hughes and Mr. Craven, all with the exception of Mr. Marshall being in the Export Department. This was a general introduction to the J. W. Roberts Organization and their relationship with T.B.A. Co., T.A.C. Co., N.I. Co., Licensees and the countries in which they operate.

I visited Henley Green, along with Mr. Spavold, to witness the processing and manufacture of various blends of S.L.A. We were given information there relative to the U.L.I. label procedure. We next had a meeting with the warehouse superintendant on the processing of orders of fibre by K & M on J.W.R. and shipping and invoicing by J.W.R.

With Mr. Hughes and Mr. Craven, we had meetings to explore the joint venture arrangement between K & M and J.W.R. An interesting note is that only in France is there a similar deal. The Atlas Asbestos arrangement for Canada is not a joint venture.

The remainder of this first week was a general introduction to S.L.A. mostly spent with Mr. Spavold who described in general

the program for the following seven weeks, and in brief, gave me an introduction to the three main divisions as: (a) Thermal Insulation; (b) Fire Protection; (c) Acoustics.

Mr. Spavold also at this time supplied three text books for outside study, all to some degree being concerned with the three items above.

SECOND AND THIRD WEEKS COMMENCING 27TH OF JULY AND 4TH OF AUGUST

This was the standard spray operators course taught by Mr. Terry Goulding with some assistance from Mr. John Burt, both of the Spray Services Department. The reason that both were involved is that they are also outside job inspectors, and their schedule necessarily has to be flexible.

This part of the course was taken along with Mr. J. M. Wilkinson of T.B.A. Co. who was proceeding to South Africa as a T.B.A. resident salesman after completion of this course.

FOURTH WEEK COMMENCING 10TH OF AUGUST

This is a special course for supervisors. Time on this was spent with Mr. Dobson, General Sales Manager for S.L.A. in the U.K., Mr. Alec Wilson, Export Sales Manager, and Mr. Dolbey, Director of Research.

During this week the emphasis was on exploring all phases of S.L.A. sales in the U.K. and Internationally, which could be adapted to use in the U.S.

FIFTH, SIXTH AND SEVENTH WEEKS COMMENCING 17TH, 24TH, AND 31ST OF AUG.

The intent here was in general to spend three days of each of these weeks as contracts became available for inspection in the field. It was tentatively set up as follows: J.W.R. Ltd., T.A.C. Co., Ltd., and N.I. Co. Ltd.

This naturally had to be kept flexible since the elements of time and travel were such that jobs where actual spraying was in process were sometimes too far away in the time available.

The two extra days per weeks were to be spent at Horwich to witness methods of fibre evaluation in the laboratory, sample testings of the process fibre from Henley Green, and the general description and purpose of this laboratory's machinery and function under Mr. George Hazelby.

We participated in the machine shop in the stripping and assembly of spray guns and machines.

During this period we had a lecture by Mr. Brian Moody, Chief Engineer and Designer of spray machines and equipment (under Mr. Dolbey's direction). Mr. Moody dwelt at length on the derivation of the various machines, the progress being made in improving the current models, and an outline of the program they intend to follow with particular emphasis on high capacity delivery machines for the U.S.

Elsewhere in this report we will give a breakdown on these various machines, and their capacities, and what is contemplated to improve the 64 machines at present in the hands of our applicators.

EIGHTH WEEK COMMENCING THE 7TH OF SEPTEMBER

This was a general summary of all of the work covered up to this time with any time that I wished spent with any individual in the J.W.R. Organization to get answers to my questions, and to clear up any part of my notes taken throughout the previous seven weeks, which I did not consider clear enough or complete enough.

We spent two days with Mr. Keith Ashworth, Chief Chemist, witnessing experiments relative to moisture movement in insulation including competitive materials particularly rock wool sprays and Fibreglas of various densities. We also went into special coatings, the study of the corrosion of metal, the priming of metal surfaces, different types of adhesives, and toughening solutions.

We also had a brief discussion of a new contemplated "Limpet" mixture presently being experimented with which does not include Portland Cement. Mr. Ashworth could not give us actual costs on this material yet, but assured us that it could be cheaper than what we are presently buying, could provide for better adhesion. When this could become available could only be guessed at, and would depend upon further laboratory tests.

The remainder of this week was spent with Mr. Burt who described testing organizations in the U.K. and the U.S. with emphasis on fire tests. Mr. Burt also went through all of the files and supplied samples of all J.W.R. literature which I required to make my dossier complete.

We were supposed to at this time spend a day or so with Mr. Pennington, Assistant Manager of the Spray Services Department, on technical calculations for moisture movement, thermal and comfort insulation, and acoustics. This part was taken over by Mr. Goulding.

We also had a session with Mr. Spavold on turbines. He provided us with all J.W.R.'s current literature on this. This is an excellent piece of technical material which I hope to incorporate into our sales manual.

Knowing that during your period in England, S.L.A. was only one item among many, I am enclosing a complete syllabus of the spray school course. Since this is my only copy and there is material in it to which I may wish to refer during the course of our training period, I would appreciate its return at your convenience.

RESUME OF JOBS VISITED

1. Warrington - A U.K. subsidiary of Lever Brothers was visited along with Mr. Terry Goulding. We witnessed three jobs, all previously completed:

   (a) A large acoustical application including ceilings and side walls of the company auditorium used as part of the employee recreation program.

   (b) In the maintenance machine shop of the factory where the ceilings and side walls have been insulated for fire proofing, sound and comfort insulation.

   (c) The third job was fire proofing of the roof and steel girders of a new process building.

   All of the work we saw was definitely of a superior nature. The tour was conducted by a member of the Engineering and Maintenance staff who was very knowledgeable about S.L.A. and its uses.

2. North Wales - This was at the John Summers Ltd. Steel Foundry which was visited with Mr. Brian Sherrit, the J.W.R. representative for that part of the country.

   We were allowed to ride in the cabin of the overhead crane which was unloading steel billets from flat cars as they came from the blast furnaces. There was a small air conditioning unit installed in this cab in conjunction with S.L.A. The operator of the cab who had been on the job before these improvements were made was high indeed in his praise of the new conditions.

   We had a meeting with the Maintenace Superintendant of John Summers who showed us two further cabs going up in an addition to the rolling mill which he wished insulated and a further two steel panel type office structures on which he wishes estimates, and recommended thicknesses. One of these was the shift foreman's office within ten feet of the blast furnaces, and which despite air conditioning, was extremely uncomfortable. The other was the control room directly over the rolling mills, also warm to the point of extreme discomfort.

   Also on this trip was Mr. Albert Thompson, Contract Manager of J.W.R. The reason for his presence was the only contract work that J.W.R. does directly in the U.K. is railroad carriage work, but they also have the right to do the first job of anything that may be regarded as a new use of S.L.A.

3. Railway Carriage Shops - We visited this again with Mr. Thompson and our fellow student, Mr. Wilkinson. While it is not contemplated that we in the U.S. would have any success on this type of work, it was interesting to watch the spray technique used with L.B.5.

During the travel time to and from the job, we were lectured by Mr. Thompson on all aspects of contract work supervised by him such as:

(a) Spec writing.

(b) Estimating.

(c) Wage rates and production bonuses.

(d) Trade Union jurisdiction in the U.K.

4. Birmingham - Made this trip jointly with Mr. Terry Goulding who was on a job inspection trip. We visited three jobs. Two were routine comfort insulation and acoustical, and were complete.

The third I found most interesting. This was three huge pyramidal shaped malting rooms in a brewery. Two were complete, and a three man crew was working on the third. One man was on the floor feeding the machine, and two men were 45 feet up spraying and pressing L.W.25 for thermal insulation. The quality of the work was definitely superior, but on returning to the floor I found the machine setting to be at two.

In passing I would like to make particular note that of all the actual spraying I witnessed in the field, the machine settings were very low. Considering that this control device has numbers running from one to nine, and that the machine being used is admittedly very much slower than rock wool spray machines, it is apparent that only the dominant position held by S.L.A. throughout the world and the lack of experience with the severe competition from other spray materials permits this condition to continue.

A further interesting sidelight on this is after the development L.C.H.A. machine (which we hoped would be the factor which would help us in the U.S.) was sent out to a Newall's insulation job for a breaking-in period, there was some complaint by the spray crew. Mr. Brian Moody, who did the engineering on the machine, went out to investigate. He found to his surprise the complaint was that the machine would not spray slowly enough.

5. Newcastle-on-Tyne - This visit was of two days' duration, and the job trips were supervised by Mr. Oliver, Contract Manager of Newall's Insulation.

We visited two shipyards and witnessed various types of bulkhead, deckhead, duct and engine room insulation. Of particular interest were the specifications of reinforcing S.L.A. such as metal clips,

light weight lath, and scrim cloth. I was impressed particularly by one crew of plasterers and their work on D.D.2 finishing cement.

The size of the current crew on this insulation work for the area of Newall's Insulation was 642 men of various crafts. About 20 of these were on S.L.A. work 100% of the time. The majority of this work, probably 80%, is marine applications.

Mr. Oliver did admit that Fibreglas appeared to be getting greater acceptance and is providing more competition all the time.

The only shore job visited here was a subsidiary of Proctor & Gamble where the application was on the underside of a concrete deck and concrete enveloped beams. This was for fire proofing and acoustics, and was the best white finish job that I saw at any time outside the spray school. Again the quality of the work was superior.

6. London Area - I was escorted by Mr. Peter Cooper, the J.W.R. salesman for the area.

(a) Stockwell School - This was three very modern type buildings, all of which had a "Limpet" application. The main building was six stories high where the application was in classrooms primarily for fire proofing, and secondly sound control. The ceilings had a white fibre finish, and were tamped to provide a random pattern.

(b) New TV Studio - This was on the site of the former White City Sporting Stadium. It was a huge circular building divided into pie-shaped segments with a ceiling height of approximately 45 feet. Unfortunately, the foreman on this job had just arrived to replace a man transferred elsewhere and was without a helper. We were unable to see actual spraying in progress. It was a fire proofing job on steel girders.

I took the opportunity to determine the depth of the foreman's knowledge of S.L.A. He had been a helper for two years, and an actual spray man for five. He had first-class knowledge of his equipment and the materials and what he was trying to accomplish. It is interesting to note when he found out I was going through a training period, he immediately asked about his teacher of five years' prior, Mr. Roy Spavold, although he had not seen him in all of that time.

One can see from this there is a fine esprit de corps within the organization, and intense training comprising a full week given by J.W.R. Spray Services Department to men such as these can definitely pay off.

Another interesting facet of this is there is apparently very little turnover among the spray technicians. With the proper training given by J.W.R., and the amount of work developed and specified by the associate companies, these men are kept fully employed. Since the employment situation in the construction industry in the U.K. is 100%, and there is a constant turnover in other trades, it would appear that there were items of J.W.R.'s training that could be duplicated in the U.S.

(c) This was a huge new steam generating plant outside London. The Newall's Insulation superintendant had just been transferred from the Battersea Power Plant where he had been continuously employed for seven years in insulation work, a large part of which was with S.L.A.

We discussed in detail this specification for oil storage tanks with aluminum finish and witnessed the spraying and Flintkote emulsion finish on ten foot square ducting.

Relative to this application, I was interested to find that the turbines on this job would not be insulated with S.L.A. Peculiarly enough, while about 50 turbines per year are insulated with S.L.A. in Western Europe alone, no turbines have ever been insulated in the U.K.

This is a sorepoint with J.W. Roberts, and is evidently part of a policy set that 85% magnesia would be used to a certain extent.

7. Bury St. Edmunds - This was a sugar beet factory. The installation in every case was on processing equipment for thermal insulation, and the foreman of N.I. Co. had a 30 man crew. He had done most of the spray work himself, however, and it was all completed. He stated that there was approximately 13 sugar beet factories around England where N.I. Co. was called in to insulate new equipment. Since the growing season is short, these factories operate for a five month period only.

It would be interesting to investigate the sugar beet industry in the U.S. since on request from us, all of the technical details, names of the pieces of equipment and successful specifications could be supplied by our British associates. This could tie in nicely in time with our efforts in the plants and equipment installation field.

8. Derby - I was met at the railroad station by Mr. B. M. Thompson, the J.W.R. representative for the area. A tour of this facility was conducted by a staff engineer of Rolls Royce. This is a high altitude test chamber of a very technical nature. The installation was a combination of thermal insulation and sound control. I was supplied with a well-illustrated magazine article of this installation which will be useful for reference in this type of work in the U.S.

MEETING WITH MR. HILLS

Mr. Hills, Chief of Research at T.B.A. Co. in Rochdale, heard of my presence at J.W.R. and requested an afternoon of my time. This was the only time in the eight weeks where my sole interest and time were not devoted to S.L.A.

Mr. Hills had two specific requests to make of me because of my knowledge of the U.S. market.

He had been approached by a Mr. Lilley, British representative of the Armstrong Cork Co., who wished to license T.B.A. for the use of a new Armstrong patented beater process for felts. He wanted to know exactly what Armstrong Cork's reputation was, whether they were reputable and to my knowledge a good company to do business with. His reason for asking was that since the patent was extremely technical, and since the Armstrong representative did not appear to be very knowledgeable, this created some doubts in his mind. By coincidence, my being a former employee of Armstrong Cork, impressed him, and I was able to give them a first-class rating on all counts.

His second question concerned Raytheon and a possible connection with Raybestos Manhattan. He had had some correspondence on technical matters with a gentleman from R.M., and suddenly on new correspondence from Raytheon, the same gentleman's name appeared. I assured him that to the best of my knowledge there was no connection between these two companies whatsoever.

MEETING WITH THE BOARD J.W.R.

On the final day of my training period I was invited to meet with Messrs. Morling, Waddell, Marshall and Dolbey. The whole intent of this meeting as far as I could gather was they be assured that all my questions had been answered, and that I was completely happy with the spray school course of training, and whether or not I thought we were now in a better position to obtain a larger part of the U.S. market. In addition to this, the fact was brought out that Mr. Alec Wilson will be visiting us in the U.S. next year. His purpose being, no doubt, to find out whether our progress and direction is as it should be, and to report back to the Board.

POLYURETHANE

As I am unaware of the relationship between J.W.R. and K & M relative to research work on new products, I think it advisable to present here the above subject.

There is a program on this material which is being worked on rather intensely by Mr. Ashworth of the Chemistry Department, and Mr. Moody, the Chief Engineer.

As is known, Sprayed "Limpet" Asbestos, while an excellent product, is definitely not for use in low temperature work. About a year ago, Mr. Ashworth, who is a former employee of Imperial Chemical Industries, came to work for J.W.R. bringing with him some knowledge of a program that I.C.I. had been working on relative to spraying Polyurethane. This program of J.W.R. was not included in my curriculum. However, since I displayed interest in this, they were kind enough to brief me somewhat on what they were trying to do and the progress being made.

I.C.I. had developed a method of spraying this material which was not entirely satisfactory due to two things. One was the weight of the gun approximately 22 pounds, and the control of an extremely toxic gas released during spraying.

J.W.R. on the basis of their spray knowledge, attempted to secure the exclusive U.K. rights with the promise they would try to improve and perfect this process. I.C.I. would not grant these rights, and several other companies as well as J.W.R. are interested and are working on this project. From what I was told, it would appear that JWR in this past six months have advanced faster and further, and I was led to believe that some regret was expressed by I.C.I. that an exclusive had not been given.

While I saw some of this material in slab form which had been sprayed, I was never in the actual laboratory where this work was carried out. I was informed, however, by these two gentlemen that enough progress has been made and that a patent application is pending in the United States for the gun, considerably reducing the weight and eliminating the lethal gas.

I understand that Polyurethane is not an uncommon chemical and that at least three major companies in the U.S. are making it. Such being the case, I have tried to visualize where Keasbey & Mattison could benefit ultimately in the U.S., and it would appear that possibly a royalty basis for the use of the gun may be investigated.

Since at this time we are investigating the possibility of working with Armstrong Cork to some degree, perhaps even a national basis, and since Armstrong Cork are nationally accepted and have a tremendous amount of know-how in the low temperature insulation field, and further since vegetable cork in the past few years has been rapidly losing out to such materials as Styrofoam and Fibreglas, and since I am assured by JWR that Polyurethane can be

extremely competitive, this combination of facts presents rather an interesting picture which our committee for the investigation of new materials may care to take a look at.

Some work in Polyurethane has already had acceptance in the U.S. known as cavity insulation. When two basic chemicals which comprise Polyurethane are poured into a sealed cavity in exact proportions, they cause a reaction which foams up to about three to four times the original volume of the chemicals entrapping millions of air cells, thus creating the insulation.

Asbestos Magazine carried an advertisement some time this year for a U.S. company who apparently were far enough advanced to offer premolded sections of pipe covering for the low temperature market.

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
220741	3/8	Houston	Turbine	$ 1,825	$ 400
203419	3/11	Los Angeles	Fireproof Vessel Skirt	2,765	135
282401	3/12	Seattle		40,000	3,200
220411	3/12	Houston	Exhaust Duct	4,570	1,300
203499	3/13	Los Angeles	Fireproof Vessel Skirt	9,262	370
237721R	3/13	Hartford	Spray Turbine		
289565	3/14	Minneapolis	Spray Turbine	2,540	
224385	3/15	Houston	20' Diameter Tank	1,218	364
220769	4/9	Houston	100' Tower	1,500	265
152337	4/15	Cincinnati	Fireproof B. R. Ceiling	1,100	225
284751	4/18	Seattle	Precipitation	4,000	800
272581	4/19	San Francisco	Vessel	2,890	192
224395	4/19	Houston	Piping & Equipment	3,000	2,500
203499	4/25	Los Angeles	Fireproof Vessel Skirt	9,373	370
203543		Los Angeles	Fireproof-Shell Oil	1,950	190
262019	4/29	St. Louis	Turbine	2,000	1,000
284763		Seattle	Digestor	4,160	763
264487		St. Louis	2 Reactors	1,750	156
272593		San Francisco	Test Cell	5,747	700

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
224403	4/29	Houston	Bottom of Converter	$ 288	$ 101
203563		Los Angeles	Fireproof Vessel Skirt	1,850	350
241183	5/14	Philadelphia	H. P. Turbine	915	202
282435		Seattle	B. R. Equipment Duct and Piping	2,193	216
203585	5/27	San Francisco	Turbine Flange	586	269
142131	5/29	Chicago	G. E. Steam Turbine	7,290	
272625	6/4	San Francisco	Storage Vessel	840	153
241183	6/4		H. P. & Turbine	1,135	202
104073	6/5	Charlotte	Cement Plant	102,332	14,846 Limp.
					12,431 BD.2
237721	6/7	Hartford	Turbine	134,674	1,800 ?
220791	6/10	Houston	Sod. Cell	225	45
220793	6/13	New Orleans	LB.8 ?	225	100
224425	6/14	Houston	Dist. Cal.	1,900	215
190333	6/20	Kansas City	Boiler & Piping	500	77
224427	6/20	Houston	Rental ? Ethyl Corp.	200	100
147043	6/25	Minneapolis	~~33 jobs~~ Turbine	~~471,090~~ 1,300	~~44,370~~ 400
203627	6/26	Los Angeles	P. Plant Rep.	377	101
203499	6/27	Los Angeles	Vessel Skirt & Piping	9,262	370

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
106795	6/27	Atlanta	Dryer Duct	$ 2,800	$ 600
190343	6/28	Kansas City	B. R. Ceiling	2,699	542
220803	6/29	New Orleans	Air Preheater	1,200	400
123989	7/1	Boston	Turbine Exhaust	350	45
203633	7/2	Los Angeles	Asphalt Tank	1,748	277
220559	7/2	New Orleans	Turbine Exhaust	800	185
224425	7/5	Houston	Dist. Cal.	2,269	315
220811	7/8	New Orleans	Turbine Casing	800	180
142175	7/16	Chicago	L. P. Turbine	3,050	455
183125	7/18	Detroit	Top of Tar Shell	1,890	723
203637	7/18	Los Angeles	H. P. Cylinder	4,095	588
284799	7/19	Portland	Air Duct	595	100
203633	7/24	Los Angeles	Mobile Asphalt Tanks	1,797	277
287691	8/2	Spokane		845	273
142191	8/12	Cleveland	Turbine	882	201
287695	8/12	Spokane		2,638	844
282469	8/15	Seattle	Gas Flue	3,000	750
284801	8/15	Portland	Steam Piping	10,031	500
142197	8/16	Chicago	Heat Exchanger	723	200

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
284801	8/17	Portland	Piping & Equipment	$ 10,225	$ 500
239553	8/22	Syracuse	Paper Machine	38,396	540
125079	8/23	Providence	Turbine	860	240
224445	8/26	Houston	Vessels	4,980	1,000
236017	8/27	Elizabeth	B. R. Ceiling	700	175
117155	8/29	Charleston	Piping and Equipment	10,300	1,440
241399	9/13	Philadelphia	Turbine	2,000	500
290443	9/13	Puerto Rico	Vessel	1,140	215
220827	9/11	New Orleans	Sod. Cell.	225	50
183207	9/19	Detroit	No Finish ??	1,098	341
190377	9/19	Kansas City	Kewanii Boilers	645	144
236991	9/7	Elizabeth	Tank	62,183	100
227021	9/24	Los Angeles	Fireproofing Vessel Skirt	1,585	400
224451	9/24	Houston	Asbestos Wall	772	228
103719	9/25	Birmingham	Piping and Equipment	3,500	
284815	9/25	Portland	Sub Cont. or ?	5,967	1,000
103715	9/26	Birmingham	Vulc. Doors	350	25
220833	9/26	New Orleans	Gas Turbine	8,316	2,600
220835	9/27	New Orleans	Fireproof Inst. Panel	6,677	927

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
246337	9/30	Harrisburg	Steam Generator	$ 12,000	$ 87
290445	9/30	Caribbean	Fans and Breeching	6,916	1,475
220837	10/1	New Orleans	G. E. Turbine	1,425	300
183223	10/1	Detroit	Pipe and vessel	26,400	2,000
183225	10/2	Detroit	Bot. Tanks	398	60
335719	10/2	London	Dow Chem. Sarnia, Westinghouse Turbine	1,840	525
183225 Rev.1	10/2	Detroit	Reichold Chem. Co.	389	60
236991-R4	10/7	Elizabeth	Tanks & Piping	63,645	100
142233	10/9	Chicago	Du Pont	370	72
190387	10/9	Kansas City	Standard Oil Tank	1,150	258
262093	10/9	St. Louis	Pillsbury	19,300	3,000
142131-x1	10/10	Chicago	Inland Steel Co., Insulate 30" Flange	84.42	?
183235	10/11	Detroit	Cadillac Plastics Co. Equip.	6,584.00	200
284827	10/14	Portland	Western Kraft Corp. Equip.	3,500	700
236991	10/16	Elizabeth	United Engineers, Okonite Co. Tanks	64,806	100
272747	10/16	San Francisco	Standard Oil, Air Wash.	400	43
282499	10/16	Seattle	Harrison Mem. Hosp., Fireproof Duct	392	67
103737	10/16	Birmingham	Du Pont Heat Exchanger	2,100	300
272749	10/16	~~San Francisco~~	~~Standard Oil, Still~~	~~640~~	~~115~~

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
236991R5	10/16	Elizabeth	United Eng., Ikonite Co. Tanks	$ 64,806	$ 100
241435	10/22	Philadelphia	G. E. Atlantic City Elec. Co. #1, Turbine	3,000	?
277045	10/23	Los Angeles	Standard Oil, Fireproof Vessel Skirt	551	71
272753	10/23	San Francisco	Westinghouse, Cross Oven Piping	638	100
282497	10/24	Seattle	American Smelting & Ref. Insulate Flue	25,000	4,800
224465	10/28	Houston	Dow-Freeport Tank	546	150
142191x1	10/28	Chicago	U. S. Steel Turbine Shell	650	210
117155-Rev1	10/31	Charleston	Union Carbide Inst., West Virginia Piping & Equip.	10,825	1,440
246349		Harrisburg	PP&L, Sunbury Station, Turbine-High Pressure End	2,000	335
277051	11/5	Los Angeles	Wilshire Oil Co., Chicago Bridge, Fireproof Sphere Support Column	1,740	310
272765	11/7	San Francisco	General Mills Rec. Tank	587	57
103763	11/7	Birmingham	Du Pont Equipment	5,000	?
284847	11/8	Portland	Weyerhaeuser Digestor	100	?
277055	11/16	Los Angeles	Haynes Steam Station	5,506	1,200
194231	11/14	Dallas	Certain-teed, Autoclave	4,180	1,043
220865	11/15	New Orleans	La. P&L Co., Penthouse Roof	1,210	270
335763	11/22	London	Imperial Oil - Sedimentation Tank	1,800	540
335771	11/26	London	Foster Wheeler, Dow Chem. Boiler Top	1,385	530
265061	12/9	Cincinnati	Brown Boveri, City of Troy	3,230	123

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1963	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL	
277089	12/9	Los Angeles	Chrysler Corp. Fan Duct & Incinerator	$ 2,745	$ 621	
284851	12/12	Portland	Boiler	100	15	
282513	12/13	Seattle	Weyerhaeuser Co. Two Silicate Tanks	960	144	✓
335881	12/13	London	Imperial Oil, Sedimentation Tank	700	300	
957853	12/19	Portland	Cascade Fiber Co. Hot Air Furnace	450	100	✓
	12/20	Charlotte	Carolina Power Co., Low Pressure Heater	367	102	
284855	12/24	Portland	Georgia Pacific - Equipment	200,000	15,000	✓
284857	12/26	Portland	Crown Zellerbach - Ductwork	8,140	2,000	✓
117181	12/30	Baltimore	Charlotte, Union Carbide Underside of Floor	1,728	357	

LIMPET PROJECTS -- RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
220885	1/1	New Orleans	Allied/Solvay - Vessels & Apparatus	$ 4,100	$ 514
264507	1/2	St. Louis	Memphis, G. E. Alco	7,000	
277157	1/3	Los Angeles	Standard Oil - Fireproof Pipe Supports	733	100
239653	1/13	Syracuse	Solvay Process - 2 Heaters	979	151
287757	1/13	Spokane	Montana Sulphur Chem. Co., Tank, Boiler, Reactor	5,176	733
282525	1/21	Seattle	Scott Paper - 2 Digestors	2,983	240
224479	1/22	Houston	Celanese Corp., Heat Exchanger	600	135
125249	1/30	Providence	G. E. Turbine, New England Electric	26,200	10,000
277159	2/4	Los Angeles	Allied Eng. Co. Edwards AFB Test Cell Door	4,345	937
224499RI	2/12	Houston	Celanese Chem., Heat Exchanger	630	135
108557	2/14	Nashville	TVA Widows Creek, #8 Turbine R.V.Labor Only	24,940	
239657RI	2/19	Syracuse	Niagara Mohawk, Doghouse	10,403	
220935	2/20	New Orleans	Oklahoma Cement Plant	27,109	5,200
183393	2/20	Detroit	Reichold Chem. Co.-Bottom of Kettles, no fin.	1,341	300
183395	2/21	Detroit	Reichold Chem. Co.-1 Kettle, Sides & Bottom	858	200
220937	2/22	New Orleans	Alabama Power Co. - 125mKW Turbine	1,000	700
284867	2/26	Portland	Crown-Zellerbach - Air Ducts	4,175	1,120
284857X2	2/28	Portland	Crown-Zellerbach - 10" Steam Line & Fittings	1,626	
277205	3/11	Los Angeles	Haynes Steam Plant - Seal Beach	32,490	4,000

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
220885X1	3/12	New Orleans	Solvay Process - Vessels	$ 6,689	$
241489X1	3/13	Philadelphia	G. E. Metropolitan Edison	3,000	
108567	3/30	Nashville	TVA, Deck & Beams	4,440	800
224485R1	4/1	Houston	Alcoa, Underside of Concrete Floors	3,285	643
241669	4/2	Philadelphia	Aetna Steel, Panels	500	165
284869	4/7	Portland	Longview Fibre Co., Cooker	3,075	500
262195	4/9	St. Louis	Staley Mfg. Co., Preheat Air Ducts	2,466	269
220965	4/9	New Orleans	Grace & Co., Reactor Piping & Bends	250	40
239721	4/13	Syracuse	Niagara Mohawk, Turbine	1,500	336
921687		Philadelphia	Westinghouse Gas Turbine	660	290
142383	4/17	Chicago	Northshore Country Club, Boiler Room Ceiling	1,450	400
109527	4/15	Savannah-	W. Virginia Pulp & Paper	24,494	2,165
241489X2	4/	Philadelphia	G. E., Eastern Shore Public Service	800	?
220967	4/23	New Orleans	Central Louisiana Electric Co., G.E.Turbine	1,600	400
193577	4/22	Denver	G. E. Turbine, Consumer Public Power	325	50
147157	4/24	Minneapolis	Montana-Dakota Utilities, Turbine	1,500	400
335771R1	4/21	London	F. W./Dow Boiler Top	2,242	530
224513	4/27	Houston	Celanese Chem., Headers	1,998	309
335719-R1	4/27	London	Westinghouse/Dow, Turbine	1,994	525

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LIMPET PROJECTS - RUNNING LIST

	CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
X	125321	4/30	Providence	G. E. Turbine & Piping, Bangor Hydro	$ 385	$ 155
X	262219	4/28	St. Louis	American Oil, Turbine	565	145
X	125313	4/28	Providence	G. E. West Lynn Factory	2,410	120
	220971	5/6	New Orleans	Baton Rouge Hospital, Equipment	27,232	100
X	246399X4	5/8	Harrisburg	P.P.&L. I.&H.P. Cylinder	2,150	675
	103859	5/8	Birmingham	Oven-Fruehauf Trailer Plant	1,445	500
X	241489X3	5/12	Philadelphia	G. E. Turbine Metropolitan Edison	1,000	?
	246333X2	5/26	Harrisburg	(A) Boiler House	13,127	87
	284869X1	5/27	Portland	Longview Fiber Co., Cooker, BlowTank, Steam Line	4,438	1,700?
	284877	5/28	Portland	U.S. Plywood, Cold Air Duct	298	84
X	224517	5/28	Houston	Monsanto , Chocolate Bayou, 3 Turbines	3,300	?
	220985	5/28	New Orleans	Grace Company, Reactor and Blender	600	150
X	163995	6/2	Columbus	Columbus & So. Ohio Electric Co., Turbine	3,323	420
	224521	6/2	Houston	Union Carbide , Piping & Stripper	1,163	121
X	241489X4	6/5	Philadelphia	G. E. Atlantic City Elec., Turbine #7	1,000	?
	190505	6/10	Kansas City	Northeast Hi School, Boilers & Breaching	3,719	585
	287827	6/10	Spokane	Potlatch Forests, Inc., Evaporator Plant	17,269	2,546
	264527	6/11	Memphis	Humko Chemical, Fireproof Vessel Skirt	1,333	120
	224533	6/19	Houston	Memorial Baptist Hospital, 1" on walls	3,940	1,415

$5,699

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
290517	6/19	Caribbean	Union Carbide, Equipment	$ 95,000	$ 19,500
241795	6/29	Philadelphia	Aetna Steel, Panels	300	100
284881	6/29	Portland	Boise Cascade, Duct	500	?
284885	6/29	Portland	Western Kraft, Digestor	1,995	500
221001	6/29	New Orleans	Clark Bros.Columbia Gulf Transmission 2 htrs		
			regenerators turbine exhaust-air inlet-outlet piping.	14,570	2,000
272905	6/30	San Francisco	Certain-teed, Autoclave	4,086	673
290521	6/30	Caribbean	Banco De Ponce Geo. Fuller, Beams and Deck Fireproofing-	2,320	1,000
183607	6/8	Detroit	Reichhold Chem. Co. Portions of 3 vessels	1,740	375
287833 Rev.	7/7	Spokane	Combustion, Boiler Plant, Potlatch	5,000	2,000
142441	7/8	Chicago	Inland Steel, Turbine	1,785	600
265171	7/13	Cincinnati	Chevrolet, Oven & Catalytic Unit	3,053	499
284885R2	7/15	Portland	Western Kraft, Digester	2,295	500
262287	7/21	St. Louis	American Oil Co., Filter Tanks	952	168
220935X3	7/22	New Orleans	Oklahoma Cement, Precipitator, collector ducts, dust	23,739	?
262289	7/23	St. Louis	Buckman Lab., Vessels & Equipment	8,978	1,500
227359	7/24	Los Angeles	United Tech. Center, Test Cell Door	5,400	510
272943	8/3	San Francisco	Standard Oil, Tank	2,085	264
108601	8/6	Nashville	exhaust air inlet & outlet piping Clark Bros.-Hampshire, Penn., Regenerator Turbine	14,570	2,000

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
272943R-1	8/10	San Francisco	Standard Oil, 2 Tanks	$ 2,415	$ 300
246417R2	8/10	Harrisburg	P.P.&L. Brunner Island, Piping & Equipment Unit #2, Power House	194,440	4,700
109581	8/12	Savannah	West Va. Pulp & Paper, Crude Tall Oil Tank	1,150	400
287843	8/13	Spokane	Combustion Eng., Recovery Boiler, Potlatch Forests	10,000	4,000
125429	8/17	Providence	Taunton Municipal Lighting Plant #5 Turbine	850	?
115169	8/17	Richmond	Newport News/Freeport Sulphur T-2 Tanker 5 Tanks	154,700	28,800
224574	8/19	Houston	Anheiser Busch, Equipment	271,000	1,487
284919	8/24	Portland	Georgia-Pacific Precipitator	2,000	250
220385R7	8/25	New Orleans	Solvay Process, Vessel & Equipment	18,450	3,000
109587	8/26	Savannah	Du Pont Camden S. Carolina #1 Spinning Machine	15,000	?
142473	8/26	Chicago	Inland Steel, Turbine	1,785	600
125553	8/27	Providence	Narraganset Electric Co., Shell #10, Turbine	1,253	393
282589	8/28	Seattle	Weyerhaeuser, Everett, Wash., Fireproof Col & Beams	10,000	?
282591	8/28	Seattle	Weyerhaeuser-Bumstead Woolford, Boiler Stack	3,079	600
183635	9/2	Detroit	Reichold Chem., Kettle - No finish	473	90
277389	9/3	Los Angeles	Standard Oil, Col. & Beams	1,625	170
282599	9/4	Seattle	Weyerhaeuser, Steam Shower	200	?
124109	9/8	Boston	G. E. Turbine Exhaust	450	50
211551X2	9/21	Philadelphia	P.P. & L., Martins' Creek, Turbine	3,500 T & M	?

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LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
287853	9/22	Spokane	Potlatch Forests, Research-Cottrell, 8 Insulator Compartments	$ 1,335	$ 296
241911	9/23	Philadelphia	G. E./Atlantic City Elec. Co., Deepwater Station, Turbine	1,000 T & M	
262289	9/23	St. Louis	Buckman Lab., Vaporizer	1,295	246
284931	9/25	Portland	Reichold Chem., Equipment	30,000	2,000
267077	9/25	Louisville	American Tobacco, Ceiling	2,113	540
221031	10/5	New Orleans	Tenneco Oil Co., Vessel Skirts & Legs	5,662	1,400
239856	10/7	Syracuse	Solvay/Allied Chem., 9 Tanks	12,311	2,050
252965	10/12	Pittsburgh	G.E./West Penn Power Co., Patch Turbine	1,950	554
224569	10/12	Houston	Coastal Iron Works, W.S.C.G. "Reliance", Diesel Exhaust System	900	67
115179	10/14	Richmons	Du Pont , Duct	2,756	309
221035	10/19	New Orleans	Dow Chem., Vessels & Equipment	18,972	862
282613	10/20	Seattle	G.E. Cas Turbine Base, Chugach Elec. Alaske Spenard	2,156	81
108601R1	10/21	Nashville	Clark Bros., Regenerator Assemblies	17,758	2,500
125501	10/23	Providence	G. E. Turbine Repair	1,500	?
282621	10/29	Seattle	Scott Paper Co., Air Cap Duct	14,945	2,941
335987	11/4	London	Imperial Oil, 3 Tanks	6,980	561
335983	11/4	London	Cabot Carbon Limited, Pulsator Boxes	4,474	1,914
262381	11/9	St. Louis	Union Starch & Refining Co., Rotary Driers-Cyclones	9,729	810
287861	11/16	Spokane	Potlatch, Forests, Inc., Cyclone, -Venturi duct Boiler	5,612	1,211

11/14/8

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1964	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
287863	11/16	Spokane	Potlatch, Precipitator Ducts	8,423	2,053
108621	11/19	Nashville	T.V.A. Replace Limpet on valves & Piping	1,000	400
800005	11/19	National Cork	ACCO, Dryer & Exhaust Duct	498	118
239887	11/24	Syracuse	Solvay Process, Tanks	15,500	1,700
161693R1	11/27	Cleveland	Girdler Corp., Goodrich-Gulf-Vertical Pipe Support Columns	23,100	686
108619	11/28	Nashville	Bull Run, T.V.A., Piping & Equipment	881,170	4,000
239885	12/1	Syracuse	Niagara Mohawk, Insulate Upper Dog House	3,200	957
800007	12/2	National Cork	ACCO, Dryer Duct Insulation Repairs	500	152
335989	12/7	London	Dow, 2 Turbines	1,500	?
284985	12/9	Portland	Zellerbach	34,800	200
341665	12/10	Montreal	Oven Wall Panels	5,300	2,350
282637	12/15	Seattle	Weyerhaeuser, Boiler Duct	3,396	642
282635	12/15	Seattle	Hot Water Tank	1,705	336
246417R1	12/15	Harrisburg	P. P. & L.	186,000	4,700
282639	12/24	Seattle	Spray Dryer	200	30
262413	12/28	St. Louis	Universal-Atlas, Cement Co., Equipment & Ducts	95,800	17,808
224593	12/28	Houston	Heater, Humble Oil	401	94
142559	12/29	Chicago	Inland Steel, Turbine	1,785	600
				259411	

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LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
283005	1/4	Portland	Crown Zellerbach Ductwork & Equipment, Camas, Wash.	$ 4,980	$ 1,260
283011	1/6	Portland	Georgia-Pacific Digester #9, Toledo, Oregon	2,650	600
283013	1/6	Portland	Georgia-Pacific Digester #8, Toledo, Oregon	2,650	600
287877x	1/6	Spokane	Anaconda-Butte, Montana Ducts & Stacks, Great Falls, Montana	3,771	766
247285	1/8	Harrisburg	ACCO Building Insulation, Lancaster, Pa.	2,800	500
129873	1/12	Boston	Garage Ceiling, Lynn, Mass.	1,030	318
239917x	1/15	Syracuse	Niagara-Mohawk, Glenmont, N. Y. Tunnel Insulation	1,075	128
239937x	1/15	Syracuse	Turbine Repair, Glenmont, N.Y.	640	128
239939x	1/15	Syracuse	Penthouse Repair, Glenmont, N.Y.	500	180
239941	1/15	Syracuse	Turbine #2, Glenmont, N.Y.	2,090	500
242091x	1/18	Philadelphia	G.E./Atlantic City Turbine, Gibbstown, N.J.	800	
253049	1/28	Pittsburgh	Penn Electric, Reinsulate #3 Turbine (G.E.) Shell Shawville, Pa.	5,077	1,260
224599	2/1	Houston	Shell Oil Houston Refinery, Two Storage Tanks	3,341	603
125649	2/3	Providence	Narragansett Elec. Co. Manchester Station, Turbine Shell	1,159	336
283027	2/5	Portland	Weyerhaeuser, Springfield, Ore. Tanks, Breeching, Evaporators	61,470	7,000
283029	2/5	Portland	Weyerhaeuser, Longview, Wash. Ducts & Vessels	16,000	5,000
283031	2/5	Portland	Weyerhaeuser, Longview, Wash. Hot Water Tank	1,695	400
287885	2/6	Spokane	Potlatch Forests, Inc. Lewiston, Idaho, Boiler Ash Hopper Recovery	2,100	400
242119	2/8	Philadelphia	Atlantic City Elec. Co. Deep Water Station Penns Grove, N.J., G.E. Turbine		

103819

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
221099	2/8	New Orleans	Solvay/Allied Chem. Corp., Baton Rouge, La. Evaporator	$ 2,100	$ 333
224601	2/9	Houston	Shell Pipe Line Corp. Oil Tanks	1,371	140
283037	2/11	Portland	Herbert Malarkey Paper Co. Asphalt Tank Portland, Ore.	325	90
283029R1	2/12	Portland	Weyerhaeuser Co. Longview, Wash. Ducts & Vessels	28,000	5,000
106023	2/12	Jacksonville	Buckeye Cellulose Co. Digester & Heat Exchangers Foley, Fla.	6,760	2,450
239975	2/12	Syracuse	Niagara Mohawk Power Co., Repair #1 Turbine	2,480	910
287889	2/16	Spokane	Potlatch Forests, Inc. Lewiston, Idaho	2,116	466
287893	2/25	Spokane	Potlatch Forests, Inc. Misc. Items, Lewiston, Idaho	1,900	500
253065	3/2	Pittsburgh	U.S. Steel #13 Benzine Still, Clairton, Pa.	7,477	672
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283065	3/17	Portland	Soderham Machine Mfg. Co. Hambro Forest Products Insulate Buttner Dryer and Equipment Oregon Calif.	13,890	3,000
166939	3/18	Buffalo	Du Pont Niagara Falls, Two Reactors	2,920	210
224607	3/19	Houston	Houston L & P Greens Bayou Plant Turbine	2,623	532
283071	3/25	Portland	Western Kraft Corp. Albany, Ore. Digester	1,995	500
282673	3/25	Seattle	Rath Packing Co. Insulate Windows, Seattle	252	70
282675	3/29	Seattle	Asarco, Converter Gas Duct, Tacoma	1,370	224
105041	4/6	Orlando	Turbine Flanges, City of Fort Pierce	400	50
277497R1	4/6	Los Angeles	Piping, National Gypsum Co.	51,071	2,158
224533	4/13	Houston	Baptist Hospital, 1" Limpet on walls	2,831	1,241

129,781

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
224609	4/14	Houston	Texaco Port Arthur Core drum at Coke Still	$ 1,726	$ 907
183927	4/15	Detroit	Reichhold Chemical Co., Powerhouse Ceiling	1,489	346
265297	4/20	Cincinnati	School-Boiler Room Ceiling	1,170	360
283085	4/21	Portland	Crown Zellerbach Camas, Wash. Tank	250	100
242187	4/23	Philadelphia	G. E. Metropolitan Edison, Titus Station Turbine	1,500	
283095	4/28	Portland	Longview Fiber Company, Cookers, Longview, Wash.	3,795	800
196903	4/29	Omaha	Observatory Dome, Midland College, Nebraska	1,490	603
242195	4/30	Philadelphia	Northwest Magnesite Co., Cape May, N.J. Cottrell Unit - 3rd Limpet	15,300	2,760
283099	5/3	Seattle	Georgia-Pacific Ductwork, Toledo, Oregon	5,000	1,000
224619	5/1	Houston	Texaco, Port Arthur, Heater	639	235
147277	5/1	Minneapolis	Northern States Power Co., Riverside Steam Plant No. 8 Turbine	672	
147273	5/3	Minneapolis	G. E. Minnesota P & L Co. Clay Boswell Station Turbine	2,100	
221081	5/5	New Orleans	Westinghouse La. P. & L. Co., Nine Mile Sta. No. 3 Turbine	2,000	200
336043	5/5	London	Imperial Oil, Sarnia, Powerformer Unit	2,000	
265311	5/11	Cincinnati	Western Hills High School, Boiler Room Ceiling	1,860	544
283105	5/12	Portland	Wah Chang Corp. , Albany - Hopper	400	200
238531	5/13	Hartford	G. E., Conn. L. & P, Danielson, Conn. L.P. Exhaust Casing	500	
108649	5/13	Nashville	Clark Bros. Columbia Gulf, Turbine Unit repairs	400	
264599	5/18	Memphis	City Power Plant, Clarksdale Miss. Turbine Oil Reservoir	600	
					42,891

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
262519	5/19	St. Louis	American Oil, Woodriver, Ill. #5 Pipe Still	$ 2,135	$
242227	5/19	Philadelphia	Chicago B & I. Bell (inside) of Watersphere Scranton, Penna.	1,090	189
147283	5/21	Minneapolis	Ottertail Power Co., Hoot Lake Sta., Westinghouse turbine	2,100	350
282699	5/26	Seattle	Asarco-Tacoma preheater heat exchange	1,783	500
109695	5/26	Savannah	So. States, Phosphate Fert. Co. Equipment Savannah	12,309	2,276
221061	6/3	New Orleans	Solvay/Allied Chem., Baton Rouge, Caustic Evaporator	1,380	30
221071	6/3	New Orleans	Solvay/Allied Chem.,,Baton Rouge, Wet Classified	3,156	105
283109	6/3	Portland	Weyerhaeuser, Longview, repair storage tank	1,250	400
283111	6/3	Portland	Longview Fiber Co., Breeching	11,690	3,000
162251	6/9	Columbus	Columbus & So. Ohio Elec. Co., Conesville Sta. Turbine	3,937	370
100009	6/11	Atlanta	Greenwood Mills, Greenwood, So. Carolina B. B. Turbine	1,614	600
221063	2/23	New Orleans	Westinghouse Mississippi P.&L.Co., Rex Brown Steam Plant #2 turbine	2,000	140
221075	4/24	New Orleans	Clark Bros. Columbia Gulf Transmission, Delhi, Patching	1,000	25
125793	6/21	Providence	G. E. New England Elec. System, Brayton Point		
			Station - Repairs - Unit #2	2,000	
253147	6/22	Pittsburgh	West Penn Power Company, Armstrong Station		
			Reasdale (Westinghouse)	2,177	500

38,621

LIMPET PROJECTS - RUNNING LIST

	CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
	109713	6/28	Savannah	American Cyanamid, Savannah, Two Heat Exchangers	$ 2,850	$ 400
	283121	7/8	Portland	AER. Corp. Crown Zellerbach, Camas, Wash. #9, Dryer System	3,625	1,000
	224631	7/8	Houston	Texaco - Port Arthur 5' dia. x 38' high tower (no finish?)	435	120
	277661	7/9	Los Angeles	Standard Oil, El Segundo, Fireproof Tank, Columns	1,200	110
	184067	7/14	Detroit	Reichold Chemical Company, Tank - No Finish	1,800	356
	147299	7/15	Minneapolis	Waldorf Paper Products, St. Paul, Repair Turbine	600	200
	226465	7/30	San Antonio	Reynolds Metals, Gregory, Texas - Vessels, equipment, ducts, breechin	236,550	42,840
	193799	7/30	Denver	Monfort Packing Company, Greeley, Colorado, Four Tanks	2,164	269
	283139	8/10	Portland	Weyerhaeuser, Longview, Wash. Boiler Plant	51,000	15,000
	264625	8/12	Memphis	Buckman jobs Two Reactors with BD.2 finish	2,320	400
	224643	8/16	Houston	Texaco, Port Arthur, Surge Drum	474	185
X	282755	8/16	Seattle	Chugach Electric, Spenard, Alaska, G.E. Gas Turbine	2,256	81
	221107	8/26	New Orleans	Kaiser Aluminum, Gramercy, La. Digestors & Desilicators.	20,984	427
X	239103	9/2	Syracuse	New York State Elec. & Gas Corp., Freenridge Sta. Dresden #4 Turbine	1,300	455
	282759	9/2	Seattle	Scott Paper, Everett Air Cap Duct #2 Paper Machine	1,000	500
X	266589	9/7	Indianapolis	Public Service Co. of Indiana, Wabash Sta., Terre Haute, Turbine	2,000	
	283149	9/10	Portland	Western Kraft Corp, Albany, Oregon, Lime Kiln Cyclone	935	200
	287967	9/14	Spokane	Boise Cascade, Wallula, Wash., Evaporator	3,161	699
	221111	9/18	New Orleans	Daiser Aluminum & Chemical, Chalmette, Insulate Calcination area	15,000	2,000

34,954

	CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
X	147323	9/20	Minneapolis	Interstate Power Co., Fox Lake Station, Sherburn, Minn. Turbine	$ 500	$ 180
	253337	9/21	Pittsburgh	Memorial Hospital, Johnstown, Penna., Boiler Room Ceiling	2,500	350
	266611	9/23	Indianapolis	P.P.G. Shelbyville, Indiana, Ductwork	2,450	400
	283161?	9/24	Portland	Publishers Paper Co., Oregon City, Oregon, Brightener Tower	4,747	900
X	125887	9/27	Providence	Narragansett Elec. Co., Manchester Sta., Providence, R.I., Turbine Shell	1,000 approx.	
	221117	9/29	New Orleans	Louisiana Cement Company, Precipitator	6,000	2,000
	111673	9/29	Baltimore	Manganese Chemical Corp., Baltimore, Miscellaneous Tanks.	1,895	340
	239117	9/30	Syracuse	Black & Clauson, Fulton, New York, Quonset Hut	2,600	
	277797	10/8	Los Angeles	Standard Oil Fireproofing vessel support columns.	1,600	200
X	147327	10/8	Minneapolis	Ottertail Power Co., Hoot Lake Sta. G.E. Turbine	1,800	
	282777	10/11	Seattle	American Smelting & Refining, Tacoma, General Repairs	3,000	600
	283163	10/20	Portland	Georgia Pacific, Toledo, Oregon, Hot Well Tank	5,200	300
	239135	10/20	Syracuse	Armstrong Cork Co., Fulton, New York, Boiler Headers	511	80
	242455	10/27	Philadelphia	Nazareth Cement Company, Dust Collector	1,400	363
	282781	11/1	Seattle	Seattle Steam Corp., Vessel and equipment	9,157	560
X	117279	11/5	Charleston	G.E. Monongehela Power Co. Willow Island Power Sta.(Re-insulate turbine)	2,000	456
	226465	11/15	San Antonio	Lummus/Reynolds Metals, Vessels, Equipment, Ducts, Breeching(Add.$24,902	261,452	49,270
	283175	11/18	Portland	Georgia Pacific-Toledo Oregon, M & D Digester	3,333	400
	265471	12/3	Cincinnati	Mahon/International Harvester, Fan & Duct System	24,540	3,200
					33,803	

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
221133	12/3	New Orleans	Louisiana P & L #1 Turbine, 9 Mill Point Sta.	$ 500	$ 150
800107	12/6	Pensacola	Escambia Chemical Company, Insulate Tank	521	150
336115	12/6	London	Imperial Oil Sarnia, 5 Asphalt Drums	6,800	400
373525	12/6	San Francisco	Shell Oil, Martinez Refinery, Oiling of Control House	1,460	384
283187	12/8	Portland	Wah Chang Corp., Hopper Cyclone & Condenser	1,500	300
800109	12/13	Pensacola	Chemstrand/Monsanto, Insulate Converter	177	70
224675	12/13	Houston	Texaco, Interior Walls, Exterior Ceiling & Doors of Hot Room	698	195
197047	12/14	Omaha	East High School, Lincoln Nebraska	1,550	685
800111	12/14	Pensacola	Tenneco Chemicals P.O.F. Still	445	118
283191	12/17	Portland	G. E./Longview Fiber, Turbine	3,978	200
336125	12/21	London	G. E. Ontario Hydro, Sarnia, 2 Turbine Bases	1,794	180
336127	12/21	London	Imperial Oil, Asphalt Unit, Sarnia - Drum	531	40
111699	12/28	Baltimore	DuPont Baltimore, Curtis Bay, Boiler Insulation - LB.8	5,600	1,440
282801	12/29	Seattle	Nordberg, Milwaukee, Henry Foss, Tug Exhaust Manifold	1,500	250

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1965	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
104101	3/17	Charlotte	Morgantown Chemical Corp., 1,000 Gal, Reactor	$ 700	$ 96
224493	3/23	Houston	Texaco Core Drum/Coke Still/LB.8	1,669	924
	3/24	Los Angeles	Allied Eng., Edwards, A.F.B.	46,466	937
190483	3/25	Kansas City	Chemical Construction Co., Clark Bros., Equipment & Piping	960	90

CONTRACT NUMBER	1966	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
283205	1/13	Portland	Shell Chemical Company, St. Helens, NH_3 Plant	$ 59,900	$ 2,000
283203	1/14	Portland	Georgia Pacific, Toledo, Equipment	75,000	5,000
800117	1/17	Pensacola	Archer-Daniels-Midland, 5000 Gallon Resin Tank	675	115
283209	1/24	Portland	American Timber & Trading Co., Retort, North Plains, Oregon	700	150
226465	2/3	San Antonio	Lummus/Reynolds, G.D. 17, 18 and Boiler Economiser	3,890	941
126049	2/7	Providence	Narraganset Electric Co., Manchester St. Sta., #10 Turbine	500	?
194555	2/15	Dallas	Kaiser Eng.Arkansas Cement Corp. Kiln Multicyclone dust collector system	11,660	791
184383	2/17	Detroit	Reichold Chemical, Bottom & Sides Kettle - LB.8	1,009	263
247513	2/23	Harrisburg	ACCO, Bldgs. 96,97,98, Fireproofing	21,035	1,900
117279R	2/24	Charleston	Monongahela Power Co., Willow Island, Power Station	2,150	450
184395	3/1	Detroit	Reichold Chemical, Kettle	607	94
283225	3/9	Portland	Weyerhaeuser, Longview, Two Digesters	3,636	600
282827	3/10	Seattle	Can Can Company, Beer Oven	2,105	377
253349	3/14	Pittsburgh	U. S. Steel, #2 Power House, Clairton, New G. E. Turbine	1,017	74
282831	3/16	Seattle	Boeing Company, Vessel	2,730	325
283229	3/24	Portland	Longview Fiber, Reactor	1,708	218
242621	3/22	Philadelphia	Atlantic City Elec. Co., B.L. England Sta., G. E. Turbine Repair	2,000	?
242619	3/27	Philadelphia	Atlantic City Elec, Deepwater Sta., G. E. Turbine Repair	600	?
283233	3/29	Portland	Stearns-Rogers, Denver, International Paper, Gardiner, Oregon, Duct	8,641	1,600

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1966	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
224703	3/30	Houston	Texaco, Port Arthur, Fractionator Tower	$ 978	$ 335
194581	3/31	Dallas	Jones-Blair Paint Co., Tank & Boiler Room Ceiling	639	146
332925R1	4/4	Toronto	Joy Mfg. Co., Steel Co., Hamilton, Ontario, Precipitator	13,000	1,400
160059	4/5	Cleveland	G. E. Republic Steel, #1 Power House, Turbine	3,020	400
275763	4/6	Sacramento	Reno-Sparks Sewage Facility Aeration - Ductwork & Piping	9,725	1,100
242641	4/7	Philadelphia	G. E. Metropolitan Edison, Portland St.	1,500	?
246803	4/13	Harrisburg	Westinghouse P.P.&L, Brunner Island, I.P. Cylinder & Valves	2,500	400
800133	4/18	Pensacola	Tenneco Chemical, Bay Minette, Ala., Pitch & Reboiler Top & Bottoms	995	336
234135	4/27	Buffalo	Du Pont Reactor	1,200	180
253377	4/27	Pittsburgh	West Penn Power Co, Mitchell Sta., Boiler Feed Pump Turbine	575	88
239323	4/29	Syracuse	New York State E. & G., Millikan St. Turbine Repair	2,000	840
288041	5/3	Spokane	Waldorf-Hoerner Paper Prod. Co., Missoula, Montana, Kamyr		
			Sawdust Digester	10,326	761
242663	5/4	Philadelphia	G. E. P.P.&L. Martin's Creek	2,000	600
198039	5/9	Tulsa	Western Farmers Elec. Co-op., Anadarko, Oklahoma, Turbine	1,170	330
332696	5/10	Toronto	Steel Company, Insulate Flue	27,500	700
282851	5/13	Seattle	Ketchikan Pulp Co., Alaska, Recovery Boiler Flue Entries	10,000	1,000
253393	5/16	Pittsburgh	Enamel Products Co., Paint Line - Ducts & Fans	7,500	308
162471	5/19	Columbus	Columbus and Southern Ohio Elec. Co., Pickway Power Plant, Turbine	2,185	320

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1966	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
162471	5/19	Portland	Wah Chang Corp., Hopper, Cyclone & Condenser	$ 895	$ 110
144035	5/23	Peoria	Nordberg Pantorel, Minneapolis Power Plant Ill., Exhaust Header	300	120
147405	5/23	Minneapolis	Aurora Steam Elec. Plant, Aurora, Minn. Steam Turbine	1,200	400
800149	6/2	Pensacola	Archer-Daniels-Midland, Two Kettles	1,998	250
162483	6/7	Columbus	Columbus & Southern Ohio Elec. Co., Poston Sta., Helsonville, Turbine	4,840	616
			(Check This One)		
160115	6/7	Cleveland	Harshaw Chemical Co., Fireproof Metal Bldg., Walls,Ceiling & Beams	960	225
282861	6/15	Seattle	Boeing Renton Washington, 500° Test Rig	1,317	300
800155	6/16	Pensacola	ACCO, Pensacola, Ceiling	100	?
253409	6/17	Pittsburgh	Bethlehem Steel, #2 Turbo Generator Franklin Works, Johnstown	595	57
336195	6/23	London	Imperial Oil, Boiler Breaching	3,785	850
115265	7/1	Richmond	V. M. I.	4,100	850
147425	7/1	Minneapolis	Waldorf Paper Products, St. Paul, Turbine Overhaul	600	120
194631	7/5	Dallas	Standard Oil of Texas, El Paso, Precipitator inlet duct to catalytic cracker	3,190	440
288061	7/7	Spokane	Potlatch Forests, Inc., Lewiston, Idaho, Boiler Plant	5,200	800
800177	7/14	Pensacola	ACCO, Pensacola, Ceiling	200	?
221167	7/29	New Orleans	Solvay Process/Allied, 2 Flash Tanks	1,092	171
288065	8/5	Spokane	Waldorf-Hoerner Paper Products Co.,Missoula, Montana,900/TD		
			Kamyr Digester	94,000	7,622

LIMPET PROJECTS - RUNNING LIST

CONTRACT NUMBER	1966	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
283293	8/24	Portland	Wah Chang Corp., Albany, Oregon, Condenser	$ 950.00	$ 90.00
290649	8/26	Caribbean	P. R. Water Resources Authority, Palco Seco Station, No. 2 Turbine	2,007.00	865.00
126347	9/1	Providence	G. E. Turbine No. 1, Brayton Point Station	800.00	?
288077	9/6	Spokane	Waldorf-Hoerner, Missoula, Deaerator	11,734.00	423.00
248837	9/14	Wilmington	Delmarva P. & L. Edgemoor Station, G. E. Turbine	1,500.00	300.00
800199	9/15	Pensacola	Chemstrand/Monsanto, Gonzales, Florida, Tank	1,535.00	397.00
246911	9/20	Harrisburg	Armstrong Cork Co., Building 34-E, Beams & Ceiling	3,726.00	899.00
282899	9/20	Seattle	Scott Paper, Everett, Washington, #2 Paper Machine - Fan	1,500.00	500.00
288081	9/23	Spokane	Stauffer Chemical Co., Silver Bow, Montana, Storage & Sludge Tanks	5,964.00	324.00
246925	9/29	Harrisburg	Armstrong Cork Co., Floor Plant - Beams	1,085.00	130.00
147459	10/3	Minneapolis	Northern States Power Co., Vessel	12,427.00	304.00
283329	10/12	Portland	Weyerhauser, Longview, Boiler Ductwork	2,410.00	600.00
800201	10/13	Pensacola	Chemstrand/Monsanto, Pensacola, Tank	1,280.00	235.00
264713	10/13	Memphis	Buckman Lab., Cadet, Missouri, Reactor	2,080.00	227.00
242911	10/14	Philadelphia	G. E./Metropolitan Edison, Portland Station,Boiler Feed Pump Turbine	800.00	?
242917	10/14	Philadelphia	G.E./Atlantic City Electric, Deepwater Station, New Jersey, Turbine	1,000.00	?
800185	10/17	Pensacola	Chemstrand/Monsanto, Gonzalez, Florida, Tank	1,385.00	368.00
253501	10/24	Pittsburgh	U.S. Steel, Clairton Works, Stand Pipes at Cake Ovens	700.00	?
246927	10/27	Harrisburg	Westinghouse/P.P.&L., Brunner Island, #2 Unit (Repair)	5,000.00	300.00

LIMPET PROJECTS - NORMAL USE

CONTRACT NUMBER	1966	OFFICE	DESCRIPTION	CONTRACT PRICE	LIMPET MATERIAL
224761	11/7	Houston	Texaco, Port Arthur, Stills and Towers - LB.4	$ 5,345.00	$ 819.00
147471	11/18	Minneapolis	Aurora Steam Electric Plant, Aurora, Minn., Steam Turbine	1,500.00	300.00
221183	11/22	New Orleans	Louisiana P. & L., Ninemile Point Sta., No. 2 Turbine, Low Temp.Valves	250.00	49.00
115287	12/12	Richmond	Madison College Boiler Rooms, Two Dormitories	1,895.00	392.00
126347	12/15	Houston	Texaco, Port Arthur, Flash Tower and Bubble Tower	2,995.00	487.00

FROM

Newalls Insulation Company

BRANCH OF TURNER & NEWALL LTD.

Washington Station, Co. Durham

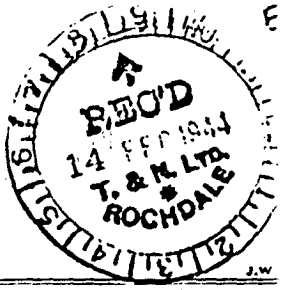
JLC

Telegrams
NEWSULATE, Washington Station.

Telephone No.
LOW FELL 76035.

S.N. 57

J.L. Collins, Esq.
TO



YOUR REF. JCD/GA/JS/JP/GCH/RWA

OUR REF. AG/E

11th February 1944
19....

Asbestosis Regulations
Spray Machines

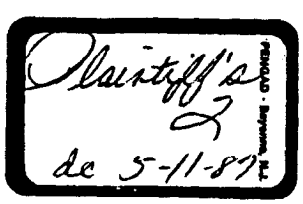
I have today had a letter from Mr. Collins having reference to the above, and after consultation with Mr. Shepher the company have decided that the position is that legally Sprayed Limpet Asbestos operators are not subject to the Asbestosis Regulations, as the Spray process was not in use when the Regulations were drafted, and the wording of the Regulations does not apply to this process.

Despite this I have been instructed that we should follow Dr. Merewether's advice, i.e. the taking of appropriate precautionary measures such as the wearing of respirators and the non-employment of juveniles under the age of 18, just as if the Regulations did apply.

In view of this I shall be glad if you will take all necessary precautions and ensure that all employees engaged on the Sprayed Limpet Asbestos process are supplied with respirators, and as far as possible, such employees should be made to use same.

I would again emphasise the fact that you must employ no juveniles on this process.

Please give this your most careful attention so that when visits are made by H.M.Inspectors they will appreciate that we are taking every possible precaution with regard to the Sprayed Limpet Asbestos process.



Turners Asbestos Cement Co. Lt
Trafford Park.

B23

Attention of Mr. H. Newton

JAS/VK

15th June 1945

Asbestosis Regulations
Spray Machine Operatives

With reference to your letter of 14th June enquiring as to the position of the Asbestos Spray process in relation to the Asbestosis Scheme, this question was considered early in 1944 when Newalls Insulation Co. Ltd. began to use the Spray process to a considerable extent, and I think it will be sufficient if I give you the gist of a communication sent to Mr. Grieve of Newalls Insulation Co. Ltd. at that time.

The position is that legally we consider that Spray operatives are not subject to the Asbestosis Regulations as the Spray process was not in use when the Regulations were drafted and the wording of the Regulations, in our view, does not apply to the Spray process. Although this is so, Mr. Shepherd considers that all appropriate precautionary measures should be taken, for example, the wearing of respirators and the non-employment of juveniles, just as if the Regulations actually applied, and no doubt you will see that these measures are taken by your own employees and by the employees of any Licensees whom you may authorise to use the process.

In view of the fact that legally the Asbestosis Regulations do not apply to Spray operatives it is not necessary, under present circumstances, for a contribution to the Asbestosis Fund to be made by T.A.C.Co.Ltd. in respect of such employees.

I hope that the above information will dispose of the query you have raised, but if you need any further information no doubt you will write to us again.

B26

FROM

Newalls Insulation Company

BRANCH OF TURNER & NEWALL LTD.

Washington Station, Co. Durham

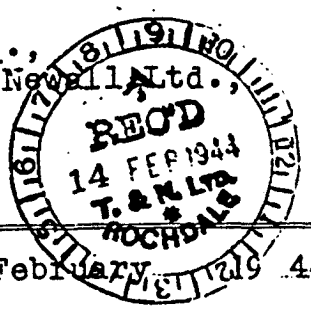
Telegrams
NEWSULATE, Washington Station.

Telephone No.
LOW FELL 76035.

S.N. 21.

TO

J.L. Collins, Esq.,
Messrs. Turner & Newall Ltd.,
ROCHDALE.



YOUR REF. JLC/OP - OUR REF. AG/E

11th February 19 44

Dear Mr. Collins,

Asbestosis Regulations
Spray Machines

I am in receipt of your letter of the 10th instant having reference to the above, and note the decision which has been come to between yourself and Mr. Shepherd that legally Limpet Asbestos Spray Operators are not subject to the Asbestosis Regulations.

Our various Areas, together with Messrs. Andersons Insulation Company, have already been instructed regarding precautions to be taken in connection with the application of Limpet Asbestos Spray, and to the best of my knowledge all

Contd....

employees engaged on this process have been supplied with Mark IV Respirators which are the approved type. I would not guarantee that employees are in all cases making use of these, but I have issued a further letter to all our Areas, and also to Andersons Insulation Company, a copy of which I enclose herewith.

Yours faithfully,

ENC:

From

Turners Asbestos Cement Co. Ltd.

TRAFFORD PARK, MANCHESTER

To

TAC 516

J. L. Collins Esq.,
Turner & Newall Ltd.,
Spotland,
ROCHDALE.

RECD 19 JUN 1945 T. & N. LTD. ROCHDALE

Your Ref.:

Our Ref.: RN/DW.

18th June, 1945.

Asbestosis Regulations
Spray Machine Operatives.

I have received a letter from Mr. Smith, setting out the position in regard to operatives engaged on the Asbestos Spray process. The position is perfectly clear so far as we are concerned but there is just one point on which I should like your opinion; at the end of the second paragraph of his letter Mr. Smith says that no doubt we shall see that the usual precautionary measures are taken by our own employees and by the employees of any Licensees whom we may authorise to use the process. The point I am raising is whether, in writing to sub-licensees, you have any particular views on the way in which we should refer to the decision taken by T.&.N; it is a T.&.N. decision and can probably only be passed on to the sub-licensees as our own opinion and not as an official ruling, i.e. from either the Home Office or the Factory Inspector.

B21

Turners Asbestos Cement Co.Ltd.,
Trafford Park.

Attention of Mr. R. Newton

JLC/OP

19th June 1945.

Asbestosis Regulations
Spray Machine Operatives

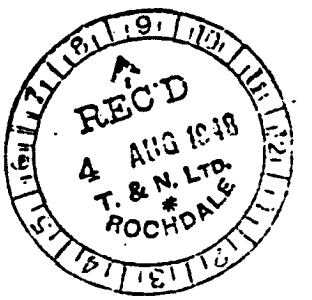
Thank you for your letter of yesterday's date, referring to Mr. J. A. Smith's letter to you of 15th June on this subject. His letter was in fact largely a repetition of the letter which I wrote on the subject to N.I.Co. Ltd. last year, and I think that the position is still as it was then. We take the attitude that legally the Spray Machine operatives are not subject to the Regulations but that all appropriate precautionary measures should be taken, and we have in fact agreed either with the Home Office or with appropriate Factory Inspectors that juveniles shall not be employed and that respirators will be worn. In view of the above it seems to me that your Sub-Licensees should similarly be instructed that legally the Asbestosis Regulations do not apply, and if the point is raised with them by any Factory Inspector they can say that they have been advised by T.A.C.Co.Ltd. that the Regulations do not apply, but that even so all appropriate precautionary

over ....

measures should be taken. You should therefore tell your Sub-Licensees to be careful to take such precautions at all times.

Secretary.

C O P Y



Dear Sirs,

Asbestosis Regulations
Spray Machine Operatives

In connection with the use of the Asbestos Spray process by your operatives, it is considered desirable or draw your attention to the Asbestosis Regulations in relation to the process.

We take the attitude that legally the Spray Machine operatives are not subject to the regulations and if the point is raised with you by any Factory Inspector you can say that you have been advised by T.A.C. Co. Ltd. to this effect, but even so, all appropriate precautionary measures should be taken, for example, the wearing of respirators and the non-employment of juveniles. No doubt you will see that such precautions are taken at all times.

Yours faithfully,

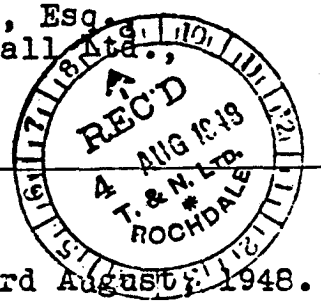
From

Turners Asbestos Cement Co.
Limited,
TRAFFORD PARK

To

B16

J.L. Collins, Esq.,
Turner & Newall Ltd.,
Spotland,
Rochdale.



Your Ref.:

Our Ref.: RN/BW.

3rd August, 1948.

Asbestosis Regulations
Spray Machine Operatives

I am attaching copy of a letter which was drawn up following correspondence with you in June, 1945, and which it has been our practice to send to companies appointed as Sub-Licensees.

In view of the alterations which have taken place consequent upon the passing of the National Insurance (Industrial Injuries) Act, I have discussed this letter with Mr. Stone as to whether or not any alteration should be made and he recommended that I should refer the matter to you in view of the earlier correspondence.

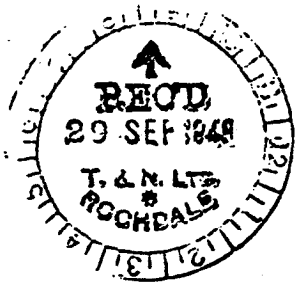
I think the attached letter still meets the situation, but you may feel that we should make some reference to the fact that Asbestosis now comes under the main description of "pneumoconiosis".

Perhaps you will be good enough to consider the matter and let me have your views hereon in due course.

R. Newton.

J. W. ROBERTS LTD., ARMLEY, LEEDS 12, ENG.

Mr. J.L. Collins



Your Ref. F.18445/2/J
Our Ref. NLD/WL

28th September, 1948

H.M. Chief Inspector of Factories,
Ministry of Labour & National Service,
Factory Department,
8, St. James's Square,
LONDON. S.W.1.

Dear Sir,

Thank you very much for yours of the 27th instant, and for your consideration of the points made in mine of the 8th.

Unfortunately I am not likely to be in London before the middle of October, when, if possible, I should appreciate an opportunity of a preliminary talk with you pending our joint meeting with Dr. Merewether and Mr. H.H. Jones. I will accordingly arrange to get in touch with you a little nearer the time.

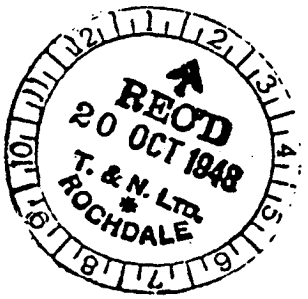
Whilst we have for some time been employing equipment that overcomes the dust nuisance when spraying asbestos in railway carriage shops, the supply position has not enabled us, until quite recently, to extend new improvements to all other users, but we are ourselves now proceeding with the manufacture of the modified nozzles and machines which we have perfected in recent months, with the intention of supplying these to all our other customers as quickly as possible.

Yours truly,

(N.L. Dolbey)

B4

J. W. ROBERTS LTD., ARMLEY, LEEDS 12, ENG.



JLC

Your Ref. F.18445/2/J
Our Ref. NLD/WL

19th October, 1948

L. le Coutier Esq.,
H.M. Deputy Chief Inspector of Factories,
Ministry of Labour & National Service,
Factory Department,
8, St. James's Square,
LONDON. S.W.1.

Dear Mr. le Coutier,

As requested when I had the pleasure of meeting you on the 13th instant, I am enclosing herewith instructions for converting our more modern asbestos spraying machines into the latest dustless spraying type, as the photographs will give you a better indication of the simple modifications involved, the pamphlet being a preliminary proof of what we shall be sending out very shortly to those concerned.

At the moment we are equipping ourselves to produce the necessary gear, and have arranged that in future all new machines delivered to users in Great Britain shall be so fitted.

No doubt you will be good enough to show the illustrations to Mr. Norman Jones on his return from Geneva, and possibly to Dr. Merewether, at the same time asking them to advise us when it will be convenient for us to meet in Leeds.

Yours sincerely,

(N.L. Dolbey)

Encl:

Sprayed

LIMPET Asbestos

MARINE APPLICATIONS

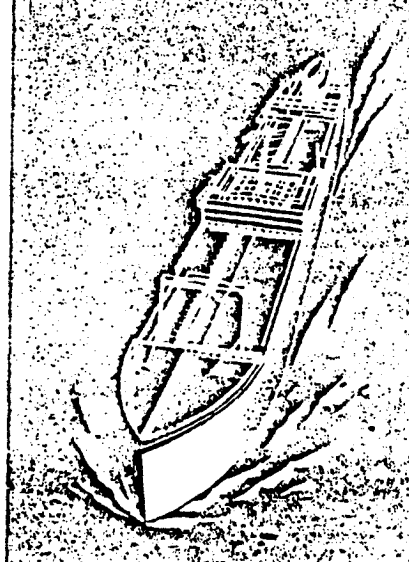
Sprayed LIMPET Asbestos has a record of over 25 years of successful use in naval ships, passenger liners, cargo vessels, oil tankers, ice-breakers and many other types of craft. This extensive experience, coupled with the continuous research and development which is devoted to the product, has resulted in quickly applied lightweight coatings of high thermal, fire resistance and acoustical efficiency which are exceptionally well adapted to meet the requirements of most insulation problems encountered in accommodation spaces, machinery spaces, trunking and other elements of ships' construction

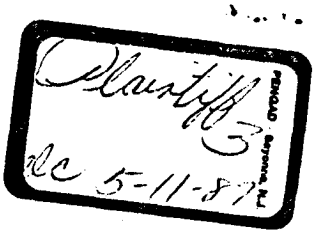
These may be divided, very broadly, into three main categories:—

COMFORT INSULATION

FIRE PROTECTION

NOISE REDUCTION





THE FOLLOWING IS A SELECTION FROM THE LIST OF SHIPBUILDERS WHO HAVE USED *Sprayed LIMPET Asbestos* FOR MARINE INSULATION

UNITED KINGDOM

Ailsa Shipbuilding Co. Ltd. Troon.
Barclay, Curle & Co. Ltd., Whiteinch, Glasgow.
Bartram & Sons Ltd., South Dock, Sunderland.
Blyth Dry Docks and Shipbuilding Co. Ltd., Northumberland.
Brooke Marine Ltd., Lowestoft.
John Brown & Co., (Clydebank) Ltd.
Cammell Laird & Co. (Shipbuilders & Engineers) Ltd., Birkenhead.
William Denny & Bros. Ltd., Dumbarton.
William Doxford & Sons (Shipbuilders) Ltd., Pallion, Sunderland.
Fairfield Shipbuilding & Engineering Co. Ltd., Govan.
Furness Shipbuilding Co. Ltd., Haverton Hill-on-Tees.
Harland & Wolff Ltd., Belfast.
Hawthorn Leslie (Shipbuilders) Ltd., Hebburn-on-Tyne.
Sir James Laing & Sons Ltd., Sunderland.
Lithgows Ltd., Port Glasgow.
John Readhead & Sons Ltd., South Shields.
Scott's Shipbuilding & Engineering Co. Ltd., Greenock.
Alexander Stephen & Sons Ltd., Linthouse.
Smith's Dock Co. Ltd., South Bank-on-Tees.
Swan, Hunter & Wigham Richardson Ltd., Wallsend-on-Tyne.
Vickers-Armstrongs (Shipbuilders) Ltd., Barrow-in-Furness.
Vickers-Armstrongs (Shipbuilders) Ltd., Walker-on-Tyne.
J. Samuel White & Co. Ltd., Cowes.
Yarrow & Co. Ltd., Scotstoun.

AUSTRALIA

Broken Hill Proprietary Co. Ltd., Whyalla.
State Dockyard, Newcastle, N.S.W.

BELGIUM

Soc. Anon. Cockerhill-Ougree, Hoboken.

BRAZIL

Ishikawajima Do Brasil, S.A. Rio de Janeiro.

CANADA

Canadian Vickers Ltd., Montreal.
Davie Shipbuilding Ltd., Lauzon, Quebec.

DENMARK

Aalborg Vaerft A/S.
Burmeister and Wain, Copenhagen.
Helsingor Skibsvaerft-og Maskinbyggeri A/S, Elsinore.
Odense Staalskibsvaerft A/S.

FINLAND

Rauma-Repola O/Y., Telakka, Rauma.
Wartsila-Konsernen A.B., Sandvikens, Skeppsdocka, Helsinki.

GERMANY

Blohm & Voss A.G. Hamburg.
Bremer Vulkan Schiffbau & Maschinenfabrik, Bremen-Vegesack.
Deutsche Werft, Hamburg.
Flensburger Schiffsbau-Gesellschaft.
J. G. Hitzler Lauenberg/Elbe.
Howaldtswerke Hamburg A.G.
Kieler Howaldtswerke A.G.
Krogerwerft G.m.b.H. Rendsburg.
Lubecker Flender-Werke A.G.
Werft Nobiskrug G.m.b.H. Rendsburg.

HOLLAND

Amsterdamsche Droogdok-Maatschappij N.V.
N.V. Boele's Scheepswerven en Machinefabriek, Bolnes.
Nederlandsche Dok en Scheepsbouw Mij., Amsterdam.
Rotterdamsche Droogdok Mij., and New Waterway Shipbuilding Co., Schiedam.
N.V. Kon Mij., "De Schelde", Flushing.

INDIA

Hindustan Shipyard Ltd., Vizagapatam.

ITALY

Ansaldo S.A. Cantiere di Livorno.
Ansaldo S.A. Genova Sestri
Cantieri Navali Riuniti S.p.A.

JAPAN

Hitachi Shipbuilding & Engineering Co., Ltd.

NORWAY

A/S Akers Mek, Verksted. Oslo.
A/S Bergens Mek. Verksteder.
A/S Fredriksstad Mek, Verksted.
A/S Trondhjems Mek. Verksted.

SWEDEN

Eriksbergs Mek. Verkstads A/B., Gothenburg.
A/B Gotaverken, Gothenburg.
Kockums Mek, Verkstads A/B., Malmo.

UNITED STATES OF AMERICA

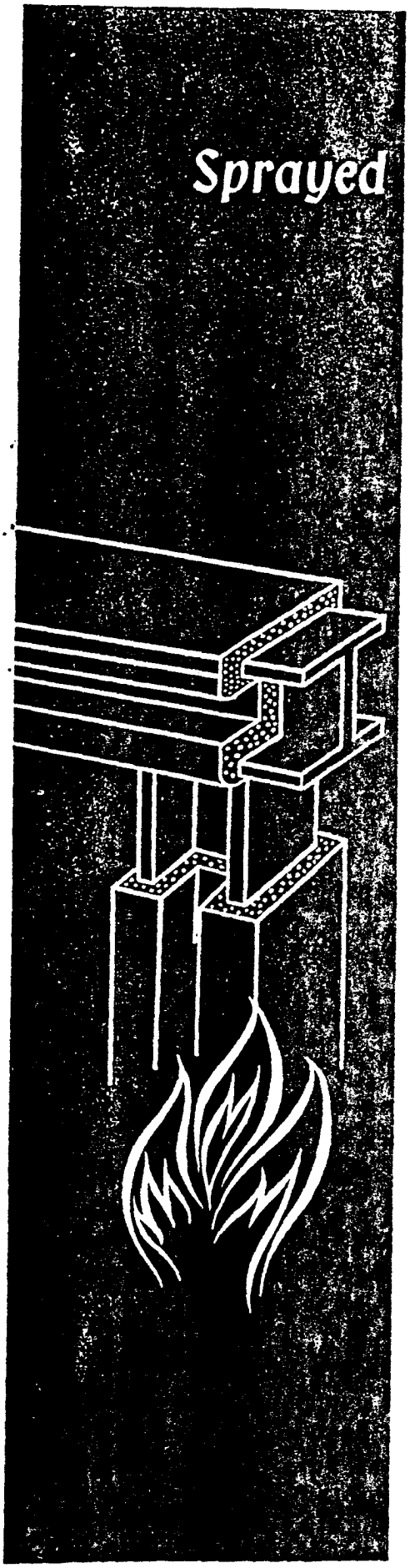
Ingalls Shipbuilding Corp. Pascagoula, Miss.

YUGOSLAVIA

Brodogradiliste "3 MAJ" Rijeka.
Brodogradiliste "Split".
Brodogradiliste "Uljanik", Pula.

THE FOLLOWING IS A SELECTION OF TANKERS, PASSENGER AND OTHER SHIPS TAKEN FROM OVER 2,000 VESSELS ON WHICH *Sprayed LIMPET Asbestos* HAS BEEN APPLIED

Tankers	Passenger, Cargo and other vessels	
British Queen	Oriana	Britannia
British Faith	Leonardo da Vinci	Nevasa
British Trader	Rotterdam	Port Auckland
Shell Aramare	Principe Perfeito	Provence
Zaphon	Empress of Canada	Lobito Palm
Kosicia	Empress of England	Ibadan Palm
Caltex Liverpool	Reina Del Mar	Ilorin Palm
Eli Maersk	Southern Cross	City of Port Elizabeth
Emma Maersk	Northern Star	Stockholm
World Enterprise	Iberia	Ocean Monarch
Spyros Niarchos	Saxonia	St. Germain
Bollsta	Caronia	Kosmos III
Ringerd	Sylvania	St. Clair
Tank Duchess	Carinthia	Ellora
Athelstane	Gripsholm	Ellenga
Esso York	Bergensfjord	Moskva
Esso Durham	Statendam	Leningrad
Serenia	Moordrecht	Baikal



LIMPET Asbestos

FIRE PROTECTION

The value of asbestos as a fire protective medium has long been recognised and the natural characteristics of this material are exploited to the fullest possible extent by the *Sprayed LIMPET Asbestos* process. This consists of spraying, through specially designed equipment, a controlled stream of asbestos fibre to form a tight fitting, homogeneous coating over the surface to be protected.

Sprayed LIMPET Asbestos coatings become, in effect, an integral part of the structure, a characteristic which gives them practical advantages over pre formed sectional materials applied as a cladding. In the event of fire, sectional cladding is liable to separate at joints under the sudden, intense, heat load and the cavity behind it then acts as a flue. A further valuable property of *Sprayed LIMPET Asbestos* coatings is their ability—due to their resilient, fibrous, structure—to follow all dimensional changes of the heated surfaces without spalling or fissuring, as frequently happens with rigid types of fire protective materials.

The coatings can be applied to any structure regardless of shape, size or material, whether this be steel, concrete, masonry or timber —and without extensive mechanical support. Because of this, and also because of their lightweight nature, *Sprayed LIMPET Asbestos* coatings are extensively used for the fire protection of columns, beams, floor structures, partitions and ships' bulkheads.

The Reference List at the end of this leaflet illustrates the wide range of fire protective applications which have been executed with *Sprayed LIMPET Asbestds*. The material has been thoroughly tested by recognised testing authorities, over many years. It was, for example, one of the first materials to be accepted by the Ministry of Transport as complying with the requirements of the International Convention for the Safety of Life at Sea—1948,—for A-Class or Fire Resisting Divisions. Further tests, by the Joint Fire Research Organisation of the Fire Offices Committee and Department of Scientific and Industrial Research, by the Underwriters' Laboratories of Chicago and Canada and by similar Authorities in Germany, France, Italy, Switzerland and other countries, now offer conclusive proof of the suitability of the material for the fire protection of an ever increasing range of structures.

***Sprayed LIMPET Asbestos* fire protective applications may, broadly, be divided into the following categories:—**

THE PROTECTION OF SUPPORTING STRUCTURES: To prevent collapse in the event of fire.

THE PROVISION OF FIRE BARRIERS: To prevent the spread of fire from one location to another.

A FURTHER SELECTION OF *Sprayed LIMPET Asbestos* APPLICATIONS FOR FIRE PROTECTION OF BUILDINGS

Firestone de la Argentina S.A.—Buenos Aires—Argentina.

Citroen—Usine de Clichy—France.

Dannen Feed Mills Inc.—Kansas City—U.S.A.

Bristol Myers Warehouse—Hillside—N. Jersey—U.S.A.

Penn Fruit Company—Philadelphia—U.S.A.

Deutsche Erdoelwerke A.G.—Helde—Germany.

Maerske Refinery—Copenhagen—Denmark.

Petroleos Mexicanos—Mexico City—Mexico.

Soc. Cheriffienne des Petroles—Casablanca—Morocco.

Refineria de Manguinhos—Rio de Janiero—Brazil.

Imperial Chemical Industries Ltd.—Billingham—England.

Pressed Steel Co. Ltd.—Swansea—Glamorgan—Wales.

Administration Headquarters—Scott Paper Company—Philadelphia—U.S.A.

Thorne Electrical House—London—England.

Prudential Assurance Company—Holborn—London—England.

Slough College of Further Education—Slough—England.

Grands Magasins de la Belle Jardiniere—Nantes—France.

La Rinascente—Department Store—Rome—Italy.

Prisunic, Succursale D'Aueteuil—France.

Kreissparkasse—Gellenkirchen—Germany.

Stoll Theatre—London—England.

Virginia Beach Auditorium—Norfolk—U.S.A.

Quebec Hydro Hotel—Canada.

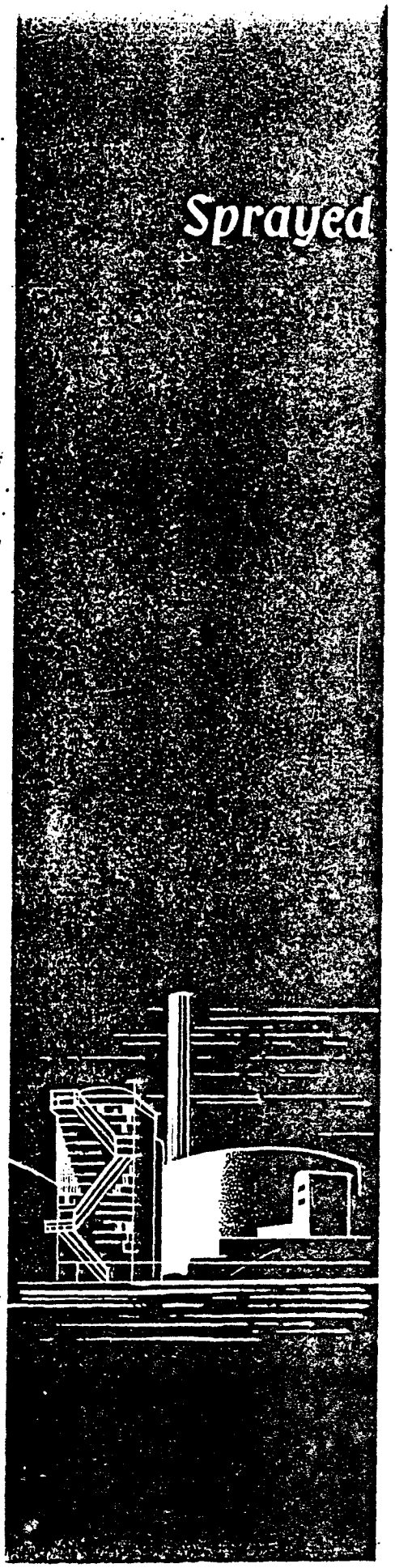
R.A.F. Station, Aldergrove—Co. Antrim—N. Ireland.

Midland Air Terminal—Texas—U.S.A.

Fire Station—St. Catherines—Canada.

Montreal Airport—Canada.

Admiralty Supply Reserve Depot—Palmer's Wharf—London—England.



LIMPET Asbestos

THERMAL INSULATION OF PLANT AND MACHINERY

Sprayed LIMPET Asbestos* is a most versatile and efficient process for all thermal insulation applications within the temperature range of 200°F to 1200°F *(90°C to 650°C).
It has often proved to be the simplest, and consequently most economical, solution to a variety of problems concerning thermal insulation in Power, Processing and Storage plant, including equipment such as boilers, heat exchangers, economisers, flue gas ducting, stacks, precipitators, treating and storage vessels, diesel engine exhaust systems and steam and gas turbine casings.

Sprayed LIMPET Asbestos, is the original process of forming insulation coatings by spraying asbestos fibre onto the surface to be insulated: a carefully controlled stream of fibre is applied, through specially designed equipment, to form a coating of pre-determined density and thickness. Thicknesses of up to 10" *(250 mm)* can be achieved in one operation, without need for extensive mechanical support and the finished insulation coating is therefore a completely homogeneous mass, of considerable mechanical strength, in intimate contact with the insulated surface. These practical advantages ensure that the exceptionally low thermal conductivity values of *Sprayed LIMPET Asbestos* coatings, determined in the laboratory, are realised in practice. This is not the case with the more conventional forms of insulation, in slab or mattress form, which suffer reductions in efficiency by convection effects at joints, by combined convection and radiation at imperfectly mated surfaces and by direct conduction through the supporting structure.

The tables which follow will permit the reader to assess the merits of this process in a wide field of applications. Complete information on the thermal properties of *Sprayed LIMPET Asbestos* coatings is contained in the Technical Data section.

A FURTHER SELECTION OF *Sprayed LIMPET* *Asbestos* APPLICATIONS FOR THERMAL INSULATION OF PLANT AND MACHINERY

POWER STATION PLANT

Shell Mex Limited—Shell Haven—Great Britain.

Imperial Chemical Industries Ltd.—Wilton—Great Britain.

British Electricity Authority—Power Stations at Battersea, Deptford, Fulham, Barking, Brighton, Carmarthen Bay, Rye House, etc.

OIL REFINERY & CHEMICAL PROCESSING PLANT

British Petroleum Company—Grangemouth—Great Britain.

Shell Refinery—Heysham—Great Britain.

Aquila Refinery—Trieste—Italy.

Y.P.F. Refinery—La Plata—Argentine.

Texaco Refinery—Pointe a Pierre—Trinidad.

C.P.I.M. Refinery—Emmastad—Curacao.

African Explosives & Chemical Co.—Modderfontein—S. Africa.

GENERAL INDUSTRIAL PLANT

Rolls Royce Aero Engine Test Plant—Derby—Great Britain.

Volos Cement Factory—Volos—Greece.

Coal Pulverising Plant—Ruien—Belgium.

Cellulosa Argentina—Kaptuan Bermudez—Argentina.

Caribbean Cement Co.—Kingston—Jamaica.

Asahi Dow Chemical Co.—Kawasaki—Japan.

STEAM TURBINES

Metropolitan Vickers Turbo Alternator Set—Billingham—Great Britain.

Hayward Tyler (De Laval) Auxiliary Turbines—Glasgow—Great Britain.

Cie Electromecanique (Brown Boveri) Turbo Alternator Set—Violaines—France.

Brown Boveri Turbo Alternator Set—Valdarno—Italy.

M.A.N. Turbo Alternator Set—Gelsenkirchen—Germany.

A.E.G. Turbo Alternator Set—Esslingen—Germany.

Escher Wyss Turbo Alternator Set—Sostanj—Jugoslavia.

Lang Turbo Alternator Set—Inota—Hungary.

Oerlikon Turbo Alternator Set—Capetown—S. Africa.

Limpet ASBESTOS

LIST OF:

* Equipment Insulated with Limpet
* Limpet Jobs by States
* Tanks and Vessels with Limpet
* Miscellaneous Limpet Applications
* Chemical and Allied Industries Jobs
* Power Plants Applications

NO MATTER WHAT ---------
IF IT REQUIRES INSULATION ----
THINK OF -------*LIMPET*

Tanks, Vessels, Piping, and Miscellaneous Equipment Satisfactorily Insulated with Limpet

Autoclaves
Boiler Sidewalls
Breeching
Conical Tanks
Cyclone Dust Arresters
Deaerators
Distillation Towers
Dryers
Ducts
Dust Collectors
Evaporators
Exhaust Headers
Filter Presses
Fireproofing Structural Steel
Hortonspheres
Heat Exchangers
Mixing Kettles
Packaged Boilers
Piping
Pump Housings
Reactors
Rotary Digesters
Separators
Settling Tanks
Slurry Heaters
Storage Tanks
Tube Turns
Turbine Casings
Valves and Fittings
Vessel Skirts

One or more Limpet Installations have been made in the following states:

Arizona	Michigan
California	Minnesota
Connecticut	Mississippi
Delaware	Missouri
District of Columbia	Ohio
Florida	Oklahoma
Illinois	Pennsylvania
Kansas	Rhode Island
Louisiana	Tennessee
Maryland	Texas
Massachusetts	West Virginia
	Wisconsin

Note: One or more Limpet jobs have been performed in 25 of our district and branch offices.

Aluminum Company of America, Point Comfort, Texas

Buckman Laboratories, Memphis, Tennessee

Consumers Power Company, Port Sheldon, Michigan
Central Igualdad, Mayaguez, Puerto Rico
Cargill, Inc., Minneapolis, Minnesota

C. H. Dexter and Sons, Inc., Windsor Locks, Connecticut
Dow Chemical Company, Freeport, Texas
Dow Chemical Company, Plaquemine, Louisiana
E. I. DuPont de Nemours and Company, Beaumont, Texas
E. I. DuPont de Nemours and Company, Circleville, Ohio

Fels Soap Company, Philadelphia, Pennsylvania
Firestone Rubber and Latex Company, Orange, Texas
Benjamin Foster Company, Philadelphia, Pennsylvania

Jones-Blair Paint Company, Dallas, Texas
Jefferson Chemical Company, Port Neches, Texas

Kaiser Aluminum Company, Gramercy, Louisiana
Keasbey and Mattison Company, Santa Clara, California
Keasbey and Mattison Company, Hillsboro, Texas

Monsanto Chemical Company, Chocolate Bayou, Texas
Mallenkrodt Chemical Company, St. Louis, Missouri

Ormet Corporation, Burnside, Louisiana
Ohio Power Company, Philo, Ohio
Ohio State Hospital, Columbus, Ohio

Solvay Process Company, Syracuse, New York
Solvay Process Company, Baton Rouge, Louisiana
Sherwin-Williams Company, Chicago, Illinois

Toni Company, St. Paul, Minnesota

Miscellaneous Applications

Fireproofing Applications

E. I. du Pont de Nemours and Company, Beaumont, Texas
Standard Oil Company, El Segundo, California
Tenneco, New Orleans, Louisiana

Ceiling and Wall Insulation

Burke-Wilhelm, San German, Puerto Rico
Brown and Root Caribe, Inc., Guayanilla, Puerto Rico
Black and Clawson, Fulton, New York
Furlong Construction Company, Hilltown, Pennsylvania
International Brotherhood of Carpenters Office, Washington, D. C.
Knight Paving Company, Syracuse, New York
Mallinkrodt Chemical Company, St. Louis, Missouri
St. Paul Water Department, St. Paul, Minnesota
Veterans Administration Hospital, Houston, Texas

Ducts and Breeching Applications

Coplay Cement Company, Coplay, Pennsylvania
Central Igualdad, Mayaguez, Puerto Rico
Detroit Edison Company, Detroit, Michigan
General Electric Company, Greenwood, Mississippi
Kaiser Aluminum Company, Gramercy, Louisiana
Monsanto Chemical Company, Chocolate Bayou, Texas
Oklahoma Cement Company, Pryor, Oklahoma
Sewer and Water Board, New Orleans, Louisiana

Piping Application

E. I. du Pont de Nemours and Company, Beaumont, Texas
Firestone Rubber and Latex Company, Orange, Texas
Metropolitan Edison Company, Portland, Pennsylvania
Solvay Process Company, Syracuse, New York

Aluminum Company of America, Point Comfort, Texas - Tank Insulation

Buckman Laboratories, Memphis, Tennessee - Tank Insulation

Coplay Cement Manufacturing Company, Coplay, Pennsylvania - Duct Insulation

C. H. Dexter and Sons, Windsor, Connecticut - Rotary Digesters
Dow Chemical Company, Freeport, Texas - Tank Insulation
Dow Chemical Company, Plaquemine, Louisiana - Fan Housings and Accompanying Ducts
Diamond Alkali Company, Pasadena, Texas - Tank Insulation
E. I. du Pont de Nemours and Company, Beaumont, Texas - Pipes, Tanks, Fan Housings, Etc.
E. I. du Pont de Nemours and Company, Circleville, Ohio - Tank Insulation

Fels Soap Company, Philadelphia, Pennsylvania - Tank Insulation
Benjamin Foster Company, Philadelphia, Pennsylvania - Tank Insulation
Firestone Rubber and Latex Company, Orange, Texas - Tanks, Pipes, Vessels, Etc.

International Paper Company, Navasota, Texas - Tank Insulation

Jones-Blair Paint Company, Dallas, Texas - Tank Insulation
Jefferson Chemical Company, Port Neches, Texas - Tank Insulation

Kaiser Aluminum Company, Gramercy, Louisiana - Tanks and Duct Insulation
Keasbey and Mattison Company, Santa Clara, California - Autoclave Insulation

Monsanto Chemical Company, Chocolate Bayou, Texas - Tank and Duct Insulation
Mallenkrodt Chemical Company, St. Louis, Missouri - Tank Insulation

Oklahoma Cement Company, Pryor, Oklahoma - Dust Arresters and Breeching
Ohio Oil Company, Detroit, Michigan - Tank Insulation

Solvay Process Company, Syracuse, New York - Pipes and Tank Insulation
Solvay Process Company, Baton Rouge, Louisiana - Tank Insulation
St. Regis Paper Company, Sartell, Minnesota - Turbine Insulation
Standard Oil Company of California, El Segundo, California - Fireproofing
Sherwin-Williams Company, Chicago, Illinois - Tank Insulation

Texaco Corporation, Port Arthur, Texas - Tank Insulation
Tenneco, New Orleans, Louisiana - Fireproofing
Toni Company, St. Paul, Minnesota - Tank Insulation

Union Carbide and Carbon Company, Charleston, West Virginia - Door Insulation

Power Plants

Baltimore Gas and Electric Company, Baltimore, Maryland - Turbine and Breeching
Brown Boveri Company, Seal Beach, California - Turbines
Boger and Crawford, Philadelphia, Pennsylvania - Three Boilers

Cleveland Illuminating Company, Cleveland, Ohio - Heat Exchanger
Commonwealth Edison Company, Hammond, Indiana - Turbine
Consumers Power Company, Port Sheldon, Michigan - Deaerator and Oil Storage Tanks
Central Igualdad, Mayaguez, Puerto Rico - Boiler Breeching
Connecticut Light and Power Company, Hartford, Connecticut - Turbine Insulation

Delaware Power and Light Company, Wilmington, Delaware - Oil Tank Under Gas Turbine
Detroit Edison Company, Detroit, Michigan - Secondary Air Ducts

General Electric Company, Brawley, California - Gas Turbine
General Electric Company, Winfield, Kansas - Base of Gas Turbine
General Electric Company, Cochise, Arizona - Base of Gas Turbine
General Electric Company, Greenwood, Mississippi - Gas Turbine and Ducts
Greenwood Utilities Company, Greenwood, Mississippi
Gulf States Utilities Company, Baton Rouge, Louisiana

Houston Light and Power Company, Greens Bayou, Texas - Westinghouse Turbine and Deaerator Tank

Indiana and Michigan Power, Mishauka, Indiana - Turbine

Louisiana Power and Light Company, New Orleans, Louisiana - Westinghouse Turbine

Metropolitan Edison Company, Portland, Pennsylvania - G. E. Turbine, High Pressure Side

New York Electric and Gas Company, Corning, New York - Westinghouse Turbine
Northern States Power Company, Minneapolis, Minnesota - G. E. Turbine
Narragansett Electric Company, Providence, Rhode Island - Turbine Casing
New England Power Company, Somerset, Massachusetts - Turbine Casing

Ohio Power Company, Philo, Ohio - Turbine Casing

Philadelphia Electric Company, Barbados Island, Pennsylvania - G. E. Turbine Exhaust Casing

St. Regis Paper Company, Sartell, Minnesota - G. E. Turbine

Westinghouse Corporation, Willow Glenn, Louisiana - Turbine Insulation

TAC 45

SELECTION OF SPRAYED "LIMPET " ASBESTOS

FIRE PROTECTION APPLICATIONS

Firestone de la Argentina S.A. - Buenos Aires Argentina.

Citroen - Usine de Clichy - France.

Dannen Feed Mills Inc. - Kansas City - U.S.A.

Bristol Myers Warehouse - Hillside - N. Jersey - U. S. A.

Penn Fruit Company - Philadelphia - U.S.A.

Deutsche Erdoelwerke A.G. - Heide - Germany.

Maerske Refinery - Copenhagen - Denmark.

Petroleos Mexicanos - Mexico City - Mexico.

Soc. Cheriffienne des Petroles - Casablanca - Morocco.

Refineria de Manguinhos - Rio de Janeiro - Brazil.

Imperial Chemical Industries Ltd. - Billingham - England.

Pressed Steel Co. Ltd. - Swansea - Glamorgan - Wales.

Administration Headquarters - Scott Paper Company - Philadelphia U.S.A.

Thorne Electrical House - London - England.

Prudential Assurance Company - Holborn - London - England.

Slough College of Further Education - Slough, England.

Grands Magasins de la Belle Jardiniere - Nantes - France.

La Rinascente - Rome - Italy.

Prisunic, Succursale d'Auteuil - France.

Kreissparkasse - Geilenkirchen - Germany.

Stoll Theatre - London - England.

Virginia Beach Auditorium - Norfolk - U.S.A.

Quebec Hydro Hotel - Canada.

R.A.F. Station, Aldergrove - Co. Antrim - N. Ireland.

Midland Air Terminal - Texas - U.S.A.

Fire Station - St. Catherines - Canada.

Montreal Airport - Canada.

Admiralty Supply Reserve Depot - Palmer's Wharf - London - England.

SELECTION OF SPRAYED "LIMPET" ASBESTOS APPLICATIONS FOR ACOUSTICAL CORRECTION AND SOUND LEVEL REDUCTION.

Berliner Opernhaus - Berlin - Germany
General San Martin Theatre - Buenos Aires - Argentina
Regent Theatre - Brisbane - Australia
Concert Hall - Turku - Finland
Capitool Theatre - The Hague - Holland
Civic Theatre - Charleroi - France
Astra Cinema - La Spezia - Italy

Chemistry Lecture Hall - Poona University - India
The College of Further Education - Oxford - England
Politecnico di Torino - Turin - Italy
Parkinson Building - Leeds University - Leeds - England
Lecture Hall - Maison de la Chimie - Paris - France
Palais de Congres - Brussels - Belgium
Woodbridge High School - Woodbridge, N.Jersey - U.S.A.
Council Chamber - Belfast City Hall - N. Ireland,
U.S. Embassy Offices - New Delhi - India
Central Hospital - Helsinki - Findland

Guildford Cathedral - Guildford - England
Church of St. Johanes De Brite - Lisbon - Portugal
Church of Saint Bernardin De Sienne - Ville St. Michel - Canada
St. Anne's Roman Catholic Church - Hamilton - Canada

London Airport - London - England
Brussels Airport - Brussels - Belgium
Midland Air Terminal - Midland - Texas - U.S.A.
Canadian Pacific Express - Montreal - Canada.
Olivetti Argentina S.A. - Buenos Aires - Rep. Argentine.
Hydroelectric Power Station - Val D'Aosta - Italy
British Railways - Engine Test Room - Rugby - England
Humber Ltd. - Test Rooms - Coventry - England
G.P.O. Telephone Exchange - Capetown
South Africa.

BRIEF LIST OF TANKER VESSELS
HAVING
SPRAYED "LIMPET" ASBESTOS FOR
FIRE PROTECTION OF BULKHEADS
&
INSULATION OF ACCOMMODATION SPACES.

"British Trader"	.....	British Tankers Co.Ltd.
"British Queen"	.....	" " " "
"British Destiny"	.....	" " " "
"British Ambassador"	.....	" " " "
"British Architect"	.....	" " " "
"British Aviator"	.....	" " " "
"British Trust"	.....	" " " "
"British Gannet"	.....	" " " "
"British Swift"	.....	" " " "
"British Kiwi"	.....	" " " "
"World Enterprise"	.....	Niarchos Group
"World Unity"	.....	" "
"World Concord"	.....	" "
"World Glade"	.....	" "
"World Dale"	.....	" "
"World Mead"	.....	" "
"Spyros Niarchos"	.....	" "
"Eugenia Niarchos"	.....	" "
"Kosicia"	.....	Shell Tankers N.V.Ltd.
"Zephon"	.....	Shell Tankers Ltd.
"Aluco"	.....	" " "
"Arainta"	.....	" " "
"Amoria"	.....	" " "
"Volvatta"	.....	" " "
"Vexeilla"	.....	" " "
"Varicella"	.....	" " "
"Esso Westminster"	.....	Esso Petroleum Co. Ltd.
"Esso Canterbury"	.....	" " " "
"Esso York"	.....	" " " "
"Esso Exeter"	.....	" " " "
"Esso Durham"	.....	" " " "
"Esso Portsmouth"	.....	" " " "
"Eli Maersk"	.....	A. P. Moller Tankers Ltd.
"Emma Maersk"	.....	" " " " "
"Al-Malik Saud Al-Awal"	.....	Saudi Arabian Tankers Ltd. (Onassis Group).
"Tank Duschess"	.....	Sigurd Heriofson & Co.
"Athelstan"	.....	United Molassas Co. Ltd.

SPRAYED "LIMPET" ASBESTOS.

BRIEF LIST OF APPLICATIONS

IN U.K. POWER STATIONS

BABCOCK & WILCOX LIMITED:

Carrington Generating Station.
Dunstan Power Station.
North Tees Power Station.
Shell Mex Limited, Shell Haven.

FOSTER WHEELER LIMITED:

Bankside Power Station.

CLARKE CHAPMAN & CO. LTD:

Hylton Road Power Station - Sunderland.
Brunswick Wharf Power Station.

STIRLING BOILER CO. LTD:

Kingston Power Station.
Newton Abbott Power Station.

IMPERIAL CHEMICAL INDUSTRIES LIMITED:

Main Power Plant - Wilton.

BRITISH ELECTRICITY AUTHORITY:

Barking Power Station.
Battersea Power Station.
Brighton Power Station.
Carmarthen Bay Power Station.
Deptford Power Station.
Fulham Power Station.
Rye House Power Station.

"Limpet" applications in Power Stations have included thermal insulation of Bailey Walls - Boiler Casings - Main Flue Gas Ducts - Dust Separators and Hoppers - Precipitator Hoppers - Induced Draught Fans.

TESTING AUTHORITIES.

The wide field of applications of Sprayed "Limpet" Asbestos makes it necessary for constant research to be carried out, both on the material and on the method of application.

In addition to their own Laboratory tests, J. W. Roberts Ltd. periodically submit their material to various recognised testing authorities, in order to confirm its outstanding characteristics in various fields of application.

The following is a brief list of such authorities who have carried out tests on Sprayed "Limpet" Asbestos insulation coatings for Thermal Insulation - Sound Absorption and Insulation - Fire Protection - Moisture Re-evaporation - Resistance to Frost - Mechanical Damage - Etc.,

Department of Scientific & Industrial Research, Elstree.

National Physical Laboratory, Teddington.

Corrosion Research Dept. - British Iron & Steel Research Association.

Underwriters' Laboratories Inc., Chicago.

Mellon Institute of Industrial Research - University of Pittsburgh.

National Bureau of Standards - U.S. Department of Commerce.

R. H. Harry Stanger, A.M.I.C.E., A.M.I.Mech.E., M.I.Struct.E., Elstree.

Laboratoire National D'Essais, Paris.

Centre Scientific et Technique du Batiment, Paris.

Associazione Nazionale Controllo Combustione, Rome.

Istituto Elettrotecnico Nazionale Galileo Ferraris - Turin.

Forschungsheim Fur Warmeschutz E.V., Munich.

Baustoff-Forschung Buchenhof - Dusseldorf.

Bundesanstalt Fur Mechanische Und Chemische Material Prufung - Hamburg.

Prof. Dott. Ing. L. Cremer - Munich.

Prof. Dr. Ing. Th. Kristen - Technische Hochschule - Braunschweig.

Statsprøveanstalten - Copenhagen.

Magistrat Der Stadt Wien - Vienna.

Technologisches Gewerbemuseum - Vienna.

Schweizer Stahlbauverband - Zurich.

MR. [illegible]

Armstrong
CONTRACTING AND SUPPLY CORPORATION

TELEPHONE: [illegible] AREA CODE 717

100 NORTH LIME STREET
LANCASTER, PENNSYLVANIA

March 5, 1965

LIMPET PROJECTS

THE PULP AND PAPER INDUSTRY

MILL	SITE	EQUIPMENT INSULATED WITH LIMPET	CONTRACT DATE
Western Kraft Corporation	Albany, Oregon	General Equipment	10/14/63
Weyerhaeuser Company	Longview, Washington	Digester	11/8/63
Weyerhaeuser Company	Everett, Washington	2 Silicate Tanks	12/13/63
Cascade Fiber Company	Eugene, Oregon	Hot Air Furnace	12/19/63
Georgia-Pacific	Toledo, Oregon	General Equipment	12/24/63
Crown Zellerbach	St. Helens, Oregon	Duct Work	12/26/63
Crown Zellerbach	Camas, Washington	Air Ducts	2/26/64
Crown Zellerbach	St. Helens, Oregon	10" Steam Line Fittings	2/28/64
Longview Fiber Company	Longview, Washington	Cooker	4/7/64
West Virginia Pulp & Paper	North Charleston, S.C.	General Equipment	4/15/64
Longview Fiber Company	Longview, Washington	Cooker, Blow Tank and Steam Line	5/27/64
U. S. Plywood	Lebanon, Oregon	Cold Air Duct	5/28/64
Potlatch Forests, Inc.	Lewiston, Idaho	Evaporator Plant	6/10/64
Crown Cascade	St. Helens, Oregon	Duct Work	6/29/64
Western Kraft Corporation	Albany, Oregon	Digester	6/29/64
Potlatch Forests, Inc.	Lewiston, Idaho	Combustion Boiler Plt.	7/7/64
Western Kraft Corp.	Albany, Oregon	Digester	7/15/64
West Va. Pulp & Paper	Charleston, S. C.	Crude Tall Oil Tank	8/12/64

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LIMPET PROJECTS-CONTINUED

OWNER	SITE	EQUIPMENT INSULATED WITH LIMPET	CONTRACT
Potlatch Forests, Inc.	Lewiston, Idaho	Combustion Eng. Co. Recovery Boiler	8/13/64
Georgia-Pacific	Toledo, Oregon	Precipitator	8/24/64
Weyerhaeuser Company	Everett, Washington	Fireproof Beams and Columns	8/28/64
Weyerhaeuser Company	Everett, Washington	Boiler Stack	8/28/64
Weyerhaeuser Company	Everett, Washington	Steam Shower	9/4/64
Potlatch Forests, Inc.	Lewiston, Idaho	Insulator Compartments	9/22/64
Scott Paper Company	Everett, Washington	Air Cap Duct	10/29/64
Potlatch Forests, Inc.	Lewiston, Idaho	Cyclone & Venturi Duct	11/16/64
Potlatch Forests, Inc.	Lewiston, Idaho	Precipitator Ducts	11/16/64
Crown Zellerbach	No. Portland, Oregon	Duct Work & Equipment	12/9/64
Weyerhaeuser Company	Everett, Washington	Boiler Duct	12/15/64
Crown Zellerbach Company	Camas, Washington	Duct Work and Equipment	1/4/65
Georgia-Pacific	Toledo, Oregon	#9 Digester	1/6/65
Georgia-Pacific	Toledo, Oregon	#8 Digester	1/6/65
Weyerhaeuser Company	Springfield, Oregon	Tanks, Breeching and Evaporators	2/5/65
Weyerhaeuser Company	Longview, Washington	Ducts and Vessels	2/5/65
Weyerhaeuser Company	Longview, Washington	Hot Water Tank	2/5/65

Number	Type	Subject	Stock
1	S.L.A.	S.S. Rotterdam	Nil
2	S.L.A.	Diesel Elect. Trains	250
3	S.L.A.		Nil
4	S.L.A. & Ferobestos	Italian Liner	Nil
5	Ferobestos & S.L.A.	M.V. St. Clair	Nil
6	S.L.A.	Skerryvore Lighthouse	Nil
7	Ferobestos	Ships	
8	S.L.A.	Chase Manhattan Bank	Nil
9	S.L.A.	John Summers Works	
10	S.L.A. & Ferobestos	"Oriana"	Nil
11	Ferobestos	Electric Cargo Crane	Nil
12	S.L.A.	BBC. T.V. Studios	Nil
13	S.L.A.	Moskva	
14	S.L.A.	I.C.I.	Nil
15	S.L.A.	Guildford Cathedral	75
16	Ferobestos	Nimrod Project	35
17	S.L.A.	Italian State Railways	
18	S.L.A.	Dorval Airport	
19	S.L.A.	Trio of Ships	
20	S.L.A.	Italian Theatre	40
21	Ferobestos	Rolling Mill Bearings	Nil
22	Feroglas	Bridge Parapet Panels	
23	S.L.A.	Bolton Eagle Spinning Mill	
24	S.L.A.	Coventry Fire	
25	S.L.A.	Seattle World Fair	
26	Mattresses	Thorp Marsh Power Station	
27	S.L.A.	Ferry Ships	
29	S.L.A.	C.L.I. House Montreal	20
28	S.L.A.	Indian Railways	
30	S.L.A.	Japanese Wind Tunnel	
31	S.L.A.	Bowling Centres	Nil
32	S.L.A.	B.P. Belguim	
33	Ferobestos	Machine Tool Slides	Nil
34	S.L.A.	Danish Fire Fighting School	
35	S.L.A.	Hilton Hotel	
36	S.L.A.	Italian Church	
37	S.L.A.	Prudential Tower Boston	Nil
38	S.L.A.	Laguardia Airport Terminal	
39	S.L.A.	Swimming Pools	Nil
40	S.L.A.	New York World Fair	
41	Ferobestos	Ins. of Sulpher Carriers (Ships)	
42	S.L.A.	Judo Stadium Tokyo	
43	Ferobestos	Four Bristish Aircraft	
44	S.L.A.	Radio Towers	
45	S.L.A.	Italian Liners	
46	S.L.A.	Turbines	
47	S.L.A. & Ferobestos	Sulpher Carriers	
48	S.L.A.	Unique Lighthouse for Kish Bank	
49	Gridlite	Daylight through Flat Roof Decks	
50	S.L.A.	Proof against Fire and Water	
51	S.L.A.	Condensation in Aboltoris	
52	S.L.A.	Fire Protection in action	
53	S.L.A.	Abbotsinch Airport Terminal	
54	Limpet R.W. Goods	Limpet Adds Distinction	Nil
55	S.L.A.	Kungsholm P. Eugenio C.	
56	S.L.A.	4in 1 ins for new ships	

Number	Type	Subject	Stock
57	Ferobestos	Wearstrips as slideway inserts for Machine tools	Nil
58	S.L.A.	Fire protection and acoustic correction throughout the world	
59	S.L.A.	At Expo 67	
60	Ferobestos	British Schooner & Italian Hydrafail Boats fitted with Ferobestos rubber bearings	
61	Gridlite	Provides Daylight in new plant of B.I.P. Chemicals Ltd.,	
62	Rainwater		Nil
63	Pervec	New Oil Terminal	
64	Ferobestos	North Sea Gas/Oil search Rigs	
65	Ferobestos	Slideway inserts for machine tools	
66	Ferobestos	The longest cabinlift in the U.K. pivots on Ferobestos Bearings	

F. Training Record.

Recorded Operators Through School.

Year.	Home.	Overseas.
1945	43.	-
1946.	30.	2
1947.	45	-
1948	69	3
1949	77	1
1950	25	2.
1951	45.	2.
1952.	39	10
1953	27	16
1954.	28	24.
1955	23	19.
1956	32.	12
1957	40	9
1958	36	5
1959.	37.	2.
1960	28	2.
1961.	48	4
	672	119

Average about first time. 39.

672
119
791

100 131 162
72. 33
33
33
261
672
119
22

MEN TRAINED = 1074 up to Xmas 1965

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NAME	TRAINING DATES	
A. ANDERSON (NIC)	13 June 49 - 26 June 1949	
Ronald ATKEN (NBC)	13 July 1959	26 July 1959
AINDOW J.W. (50 mls)	27 Oct 1958	2 NOV 1958
ABRENS Kurt (O)	1 NOV 1954	Dismissed (end of Term)
ACA N.B. (O)	26-5-54	21-5-54
ANDERSON A. (O)	29-11-54	10-12-54
DOTT Alberto AA (O)	25-5-56	8-6-56
ALLEN A (TAC)	12-3-56	22-3-56
ANDELN A.F (NEWALL)	9-1-56	20-1-56
ATWELL P.G (TAC)	26-6-57	5-7-57
ASTAUND R. (O)	1-10-53	14-10-53
ALLISON K (C)	17 9 53	30-9-53
ANTCLIFF S.A (ADM)	11-2-52	22-2-52
ANDERTON D. (NIC)	22-9-52	3-10-52
ABLOTT R (CORK)	22-9-52	3-10-52
ANNETTE A. J. (TAC)	26-2-51	9-3-51
AIRD W. (NIC)	7-12-48	17-12-48
ALLEN J T (ADM)	6-12-48	15-12-48
ANDERSON A (MCD)	24-2-48	3-3-48
AMOS F (MCD)	24-2-48	3-3-48
ANDREWS J (NIC)	30-4-46	8-5-46
ARCHER F.G JWR	25-11-46	— 46
ATHERTON H JWR	13-3-61	20-3-61
BIHARI. T. (O)	17-7-61	29-8-61
BIRTWISTLE F E (TAC)	12-6-45	15-6-45
BENNETT W. J (TAC)	12-3-45	16-3-45
BLACKWELL T. S (TAC)	30-4-45	4-5-45
BOWIS J (ADM:)	28-5-45	6-6-45
BUTTER C (HAWKINS)	24-10-45	31-10-45
BRNDEN R (MCD)	27-11-45	5-12-45
BENNETT H. J. (MCD)	26-2-46	6-3-46
BENSON E (NICOL	30-4-46	7-4-46
BERRIS R.C (TAC)	17-6-46	21-6-46

NAME	TRAINING DATES	
BAUDE P (O)	16-9-46	11-10-...
BALCH S G (NCB)		16-1-...
CANNISH S.W (NCB)	12 8 47	20-8-...
BEARMAN H (NIC)	7-2 61	9-2-6...
BUCKLE R. (TAC) (O)	3-11-47	7 11-...
BONNEVAL R. DE	3-3-48	11-3-...
BODIAN R A (NEWALL)	8-6-48	16-6-...
BENNET (ADM)	19-7-48	29-7-...
BURGESS S.G (Kenya)	9-8-48	20-8-...
BRYAN R. (JWR)	18-10-48	28-10-...
BURFORT P.W (MCD)	8-11-48	17-11-...
BISHOP H.S. (MCD)	8-11-48	17-11-...
BOYLE C (NEWALL)	7-12-48	17-12-...
BRIAN J. (TAC)	4-10-49	14-10-...
BORMAN F (TAC)	20-6-49	29-6-...
BOYLAND W.M (RAF)	4-10-49	13-10-...
BLACKBURN J. (NIC)	17-4-50	28-4-...
BUCKLEY J (NIC)	4-9-50	15-9-...
BAILEY E A (ADM)	22-5-51	31-5-...
BARNES L G (NEWALL)	22-5-51	31-5-...
BURGESS H (JWR)	22-5-51	30-5-...
BUTTRESS R C. (NIC)	24 9 51	5-10-...
BROWN E (TAC)	7-1-52	15-1-52/10-2-52
BARKER C (JWR)	22-4-52	2-5-...
BRANAGAN N (NEWALL)	22-4-52	2-5-...
BALDWIN H (NEWALL)	9-9-52	18-9-...
BUCHOLZ W. (O)	19-5-52	30-5-...
BARR P.C. (TAC)	13-11-52	21-11-...
BURDEN H (NIC)	8-12-52	19-12-...
BADZE V (JWR)	2-2-53	13-2-53
BROOKS F. (N. Borneo) (O)	3-9-53	16-9-...
BROWN T.R (NIC	7-12-53	18-12-...
CARVETH-WARD (JWR)	7-1-57	21-1-57
BECKER H (JWR)	14-5-57	15-5-57

NAME	TRAINING DATE		NAME	TRAINING DATE	
BADDELEY A. (TAC)	8-4-57	19-4-57	BEST J (Cardington)	13-2-61	24-2-61
BLYTH G (NIC)	30-9-57	11-10-57	BLACKBURN F.H. (NIC)	19-6-61	30-6-6
BORRAS S (JWR)	2-12-57	6-12-57	BONN B. (NIC)	19-6-61	30-6-
BROOKS C.A. (JWR)	2-12-57	6-12-57	BARTON J. (NIC)	10-7-61	12-7-
BENNETT F (Snr) JWR	30-12-57	3-1-58	—	—	
BLACKWALL M (TAC)	7-5-56	18-5-56	COX, D.C. (ICI)	30-1-61	3-2-
BAKER G (TAC)	7-5-56	18-5-56	CHEETHAM J. NIC	23-7-45	27-7
BOUHON J (O)	10-9-56	28-9-56	CUMMINGS J.	24-9-51	5-10-
BAKER J (JWR)	7-2-55	- 55	CUTHENDEN C.W (ADM)	11-2-52	22-2-
BONAČIĆ N. (O)	15-2-55	4-3-55	CARVALHO F.A. (O)	16-7-53	28-7-
BOOCKLEY G JWR	4-7-55	15-7-55	COOKE E. (W.Proctor)	14-5-49	27-5-
BOUDIAF C (O)	26-9-55	8-10-55	CHILES RT (NICO)	21-11-55	2-12-
BARTSCH W (O)	20-10-54	2-11-54	CHASE F (JWR)	16-2-59	19-2-
BOUR G. (O)	20-10-54	2-11-54	CRIPPS W.J. (BTC)	28-9-59	9-10
BASKIN A (TAC)	31-10-55	11-11-55	COLEMAN W.H. (TAC)	2-5-60	13-5
BIRCHARD T.H. (NIC)	10-10-55	21-10-55	CARTER J. (NICO)	7-7-58	11-7-
BACILLET P (O)	19-7-54	6-8-54	CHEVALIER R. (O)	3-3-58	—
BERNARD J (O)	7-7-54	20-8-54	CUGNIERES L. (O)	3-3-58	—
BARTSCH W. (O)	20-10-54	2-11-54	CLARKE J. (NICO)	6-1-58	17-1-
BOUR G (O)	20-10-54	2-11-54	CRAIGIE A (NICO)	11-8-54	22-?
BENNET F Snr. (JWR)	6-1-58	3-2-58	CRAIGIE M (Fisher)	4-10-56	15-10
BIMSON S (NIC)	6-1-58	17-1-58	CHATSINT C (O)	26-9-55	8-10
BATHKE H (O)	3-3-58	14-3-58	COLLIION R. (O)	26-9-55	8-10
BARBOU L (O)	14-4-58	2-5-58	CORNELL B. (JWR)	13-6-55	24-6-
BENN H. (NIC)	2-6-58	13-6-58	CAWLEY G (JWR)	10-9-56	14-9-
BROWN G (NICO)	7-7-58 / 11-7-58	10-5-54 / 13-5-54	CAMP VAN J. (Kestaven)	9-1-56	20-1-
BIGLIN R. JWR	11-8-58	15-8-58	COTTHAM J.E. (Blandford)	25-10-57	8-11-
BUTCHER K (TAC)	10-10-60	21-10-60	COATES T. (TAC)	8-4-57	19-4-
BONET J.C.J. (O)	2-8-60	12-8-60	CIERESZKO S. (JWR)	4-2-57	8-2-
BURKE J.T. (BTC)	23-5-60	27-5-60	CLIFFORD C. (AJAX)	1-10-53	14-10-
BRANNAN R. (TAC)	7-12-59	18-12-59	CHANEY T. (NICO)	13-4-53	24-4-
BEVAN D.J (NIC)	29-6-59	10-7-59	CAINE R (NICO)	2-2-53	13-2
BOTTLE R. NIC	29-6-59	10-7-59	CHARLAND G.J. (O)	11-12-52	23-12
BADGER J. (Cork)	16-3-59	26-3-59	CHAPMAN J.P. (JWR)	10-11-52	21-1

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NAME	TRAINING	BANKS
COLLIER W.S. (NICO)	22-9-52	10-10-52
" " "	10-7-61	12-7-61
CARNEGIE A (NICO)	13-5-52	16-5-52
CUNNINGHAM L. (ADM)	10-7-58	19-7-51
CAIN L. (ADM)	27-2-51	8-3-51
CALLAGHAN J. (PROC)	17-10-49	22-10-49
CRAWFORD GH. (ADM)	3-5-49	11-5-49
CLARKE A.V. (TAC)	30-4-49	29-4-49
CARNEGIE A. (NICO)	7-12-48	17-12-48
COOPER R.I. (ADM)	6-12-48	15-12-48
CRANE A.N. (MCD)	22-11-48	1-12-48
CALCUTT J.E (ADM)	13-9-48	22-9-48
CHIPLAN R. (NAND)	30-8-48	10-9-48
CHAPMAN TJ. (NAND)	9-8-48	20-8-48
CAVIL J. (KEMPTON)	28-6-48	2-7-48
CHANTLER K (TAC)	12-4-48	16-4-48
CAMPBELL RJ. (TAC)	9-2-48	19-2-48
CORBETT J. (NICO)	19-1-48	30-1-48
CROSS J E (TAC)	3-11-47	7-11-47
CHARDEN D. (MCD)	2-9-47	10-9-47
CLAIR A. (MCD)	12-5-47	20-5-47
COLEAN TJ. (TAC)	17-6-46	21-6-46
CASEY R.L. (MCD)	12-3-46	20-3-46
COLMER C (MCO)	26-2-46	6-3-46
CARNEGIE A. (NICO)	19-2-46	22-2-46
CROCKER A.E (TAC)	16-7-45	20-7-45
COLLIER J. (TAC)	16-7-45	20-7-45
CURLE. C.F. (MCD)	12-6-45	20-6-45
CAIUTE F. (ADM)	28-5-45	6-6-45
CUNNINGHAM J. (TAC)	30-4-45	4-5-45
CLAYTON J. (SDI)	25-10-61	3-11-61
CAMPBELL A (O)	25-9-61	30/10-61
" " "	6-11-61	10-11-61

NAME	TRAINING	DATE
DALRY/L.J. (ADM)	22-4-52	3-5
DENT A.E. (O)	8-12-52	12-12
DOYLE N.J. (TAC)	18-3-45	16-3
DAWSON J.H. (NICO)	20-8-46	26-8
" " "	16-9-46	20-9
DARWIN AE (JWR)	25-11-46	—
DANIEL G (MCD)	7-1-47	15-1
DAVIES W. (NICO)	2-6-47	13-6
D-9-47	10-9	
DIX R.S.G. (TAC)	9-2-48	19-2
DOAN E. (KEMPTON)	9-2-48	20-2
DUPERT J. (O)	18-8-48	28-
DOMMINI F.G (ADM)	19-3-49	18-3
DAY C. (NICO)	17-10-49	28-1
DOYLE H (TAC)	12-12-49	18-12
DELAFIELD A. (ADM)	27-2-51	8-3
DALE F. (TAC)	21-5-51	1-6
DOLTON E. (HAMOND)	9-9-52	189
DRYWOOD G.W.E (ADM)	27-4-53	8-5
DUCASTEAU F. (O)	25-2-57	8-3
DUPONT. A. (O)	25-2-57	8-3
DREIMANIS S. (O)	25-1-56	22-2
DOYLE R. (TAC)	7-5-56	18-5
DAVIDSON A. (DARLINGTON)	25-6-56	6-7
DUPONT A (O)	26-9-55	1-10
DEIREZ J. (O)	26-9-55	8-10
DENCH AH. (NICO)	1-3-56	5-3
" " "	7-12-53	11-12
DUNCAN M. (JWR)	19-7-54	30-7
DAMMLOS E. (O)	13-9-54	24-9
DORAN M.J. (JWR)	16-6-58	23-6
DAVIES J.R. (JWR)	30-5-60	10-6
DREEZER F. (DARLINGTON)	25-1-60	5-2
DREW R. (DARL	25-1-60	5-2

NAME	TRAINING DATES		NAME	TRAINING DATES	
CANCE A.W (JWR)	25·9·59	9·10·59	FENNELL J. (NICO)	24·9·51	5·1
DREW H.F. TAC DANERAL W. NCO	12·4·59 4·9·61	24·4·59 8·9·61	FEBERS O. (MILLERS)	5·1·53	16·1·5
—		—	FOX N. (TAC)	22·4·52	2·5·
EVENDEN F. (ADM)	19·7·45	29·7·45	FITZGERALD P.J. (TAC)	8·6·53	19·6·5
ELLIOT R (NCO)	24·2·45	3·2·45	FARRELL T. (IRISH SUPER)	8·6·53	19·6·5
ELLIS R (PROCTOR)	12·6·49	24·6·49	FEA E. (O)	28·5·56	8·6·5
EASTWOOD T (NICO)	21·3·49	1·4·49	FARNHAM D. (JWR)	21·3·56	27·1·
EMSTOE A.J. (NICO)	15·2·49	25·2·49	FITZGERALD R.W. (MILLERS)	14·10·57	18·10·
EVERETT L. (PROCTOR)	17·8·49	28·8·49	FEDDERN W. (O)	23·2·55	1·4·5
EGGAN M (O)	22·11·50	1·12·50	FRIEDRICH M. (O)	23·2·55	1·4·
EASTWOOD A. (NICO)	2·4·51	12·4·51	FRANCIS K.W (JWR)	24·1·55	4·2·5
ELPHICK L (ADM)	3·3·52	14·3·52	FRANCIS E. (O)	15·10·56	21·10·
ELPHICK C (NICO)	9·11·53	20·11·53	FEA E (O)	28·5·56	8·6·5
EARL S. (TAC)	18·11·57	29·11·57	FITZGERALD G (TAC)	31·10·55	11·11·5
" " "	10·7·61	12·7·61	FAIRIE J.R.R. (JWR)	4·7·55	15·7·5
EMMERT C.H. (O)	20·10·54	2·11·54	FREEAR L. (JWR)	4·7·55	15·7·5
EYRES R. (JWR)	15·9·58	26·9·58	FOSTER J.F.F. (JWR)	13·6·55	24·6·5
EMMERSON M. (CORK)	16·3·59	26·3·59	FEHRMAN W. (O)	23·3·55	1·4·5
ELSENGER R (DARL?)	26·7·61	26·7·61	FAHENY W. (O)	10·5·54	4·6·5
—		—	FLYNN C. (TAC)	24·5·54	4·6·5
FELSTEAD C (NICO)	21·11·60	8·12·60	FREER J.W. (DARL?)	23·6·58	4·7·5
FORD J. (NCO)	12·2·46	20·2·46	FLYNN J (JEV)	27·10·58	5·11·5
FORD J.W. (NICO)	21·11·60	2·12·60	FIELDING J. (NICO)	2·6·55	7·6·55
FARLEY F (NCO)	26·2·46	6·3·46	FITZGERALD W (JWR)	15·9·58	26·9·58
FOLEY F.R. (NCO)	25·11·47	2·12·47	FARRINGTON J. (R.T.C)	7·9·59	18·9·59
FYVIE H (TAC)	22·9·47	26·9·47	FULTON R. (TAC)	9·1·61	20·1·61
FITZ K (NCO)	24·2·48	3·3·48	—	—	—
FAIRLEY L. (NICO)	15·2·49	25·2·49	GURNEY R. ([illegible])	16·8·45	20·8·45
FLYNN E.P. (TAC)	14·11·49	25·11·49	GROOM A.F. (TAC)	16·7·45	20·7·45
FARADAY H. (NICO)	17·10·49	28·10·49	GRANTHAM H. (NCM)	28·5·45	6·6·45
FERREIRA CHR. (O)	24·9·51	5·10·51	GAMBORG (O)	27·9·46	11·10·4
FOLLET R.J. (ADM)	14·8·51	24·8·51	GWILLIAM (NICO)	22·9·47	3·10·4
FINCH W. (ADM)	10·7·51	19·7·51	GREAVES W. ([illegible])	21·6·48	2·7·4
FURNEDGE G (ADM)	8·10·51	19·10·51	GWILLIAM R. (NICO)	8·6·45	18·6·4

NAME	TRAINING DATES		NAME	TRAINING DATES	
GAMBLE, W.J (NICO)	12.4.48	16.4.48	HAWKINS J. (NICO)	21-11-60	2-12-
GIRDLESTONE. H. (NICO)	19-1-48	30-1-48	HARPER D. (NICO)	7-1-61	9-2
GREENHALGH T. (Kenyon)	9-8-48	20-8-48	HARLINGTON E.H. (TWR)	10-12-43	14-12
GREEN W. (MCD)	8-11-48	17-11-48	HENLEY H.V. (MCD)	27-11-46	5-12-
GODDEN A.G (MCD)	25-10-48	3-11-48	HIGGINSON W. (TMC)	16-7-45	20-7
GRAHAM R. (Kenyon)	5-9-49	16-9-49	HYDE J.W. (ADM)	28-5-45	6-6
GROOM A.T. (TAC)	28-2-49	11-3-49	HAMPSON A. (TMC)	11-2-46	16-2
GILROY S. (NICO)	10-1-49	21-1-49	HERVON E. (J.S.S.E.C.O)	9-4-46	16-4-
GREAVES H. (NICO)	20-2-50	3-3-50	HEARSON A.G (MCD)	25-11-47	3-12
GEARTY T. (NICO)	4-9-50	15-9-50	HOUGH H (Kenyon)	27-10-47	6-11-
GIDLEY W.G (ADM)	14-5-51	23-5-51	HEMBRY G.C. (MCD)	12-8-47	20-8
GREEN J. (NICO)	21-1-52	31-1-52	HALL J. (Kenyon)	31-8-48	3-9-
GRAY G.J. (ADM)	8-10-51	19-10-51	HAZARD C.E. (H.M.DOCK)	8-6-48	16-6
GREGORY G (NICO)	13-4-53	24-4-53	HOWE. S (MCD)	24-2-48	3-3-
GRIMES E. (NICO)	12-4-53	24-4-53	HUNTER A. (ADM)	19-7-48	29-7-
GRAHAM KDD. (O)	17-9-53	30-9-53	HUGHES L (ADM)	19-7-48	29-7-
GATES D.J. (TWR)			HORN H E (ADM)	6-12-48	15-12
GRIFFITHS R.J. (TWR)	12-3-56	22-3-56	HURDEN R. (ADM)	13-9-49	22-9
GRUBER S.H (TWR)	12-3-56	22-3-56	HOPKINS G.R.W. (ADM)	20-9-49	28-9-
GANN D. (TAC)	12-3-56	22-3-56	HORTON, W.H. (TAC)	5-9-49	16-9-
GRAY A. (O)	1-10-53	14-10-53	HARRIS G (NCM)	31-5-49	8-6
GEORGE. L. (O)	15-10-56	21-10-56	HUME H (ADM)	31-5-49	8-6
GEORGE L (O)	15-10-56	21-10-56	HUME W. (Kenyon)	18-5-49	27-5
GARRIDO A (O)	10-9-56	21-9-56	HOPKINS J.W (ADM)	3-5-49	11-5-
GLEESON W. (NICO)	11-1-54	22-1-54	HANTON H.F. (Asst. Vice-Chan.)	28-2-49	11-3-
GERDES K.H (O)	1-11-54	15-11-54	HOLDEN C. (NICO)	15-2-49	25-2-
GREININGER J. (O)	10-10-55	14-10-55	HUMBLE J.W (NICO)	10-1-49	21-1-
GERDES K. (O)	1-11-54	15-11-54	HUNTER S. (NICO)	10-1-49	21-1-
GOULDING J (TWR)	27-10-58	5-11-58	HEAD H.L. (TMC)	30-1-50	10-2-
GOUGH L. (TWR)			HANKINS C. (NICO)	15-5-50	26-5-
GIBBS G (TWR)	9-10-61	20-10-61	HARGHTY A. (TMC)	1-2-50	10-2
GIBBS D.S. (TWR) GILBERT N.	4-9-61	8-9-61	HARPER H.W. (NICO)	28-11-49	2-12
			HARPER A.C. (NICO)	28-11-49	2-12
HILLCOAT R.D (NICO)	20-2-61	24-2-61	HOLLIS, W.A. (ADM)	4-12-49	12-12

HARE / PR	(JWR)	2·4·51	12·6·51					
HANSON R	(TAC)	2·10·50	12·10·50	IVES E.A.	(JWR)	24·1·55	4·2	
HOGG N	(NICO)	5·9·50	15·9·50					
HODGINS G	(CORK)	27·5·51	21·8·51	JOHNSON D.	(JWR)	18·12·45	14	
HOOD J.	(O)	7·1·52	18·1·52	JONES R	(CORK)	27·9·45	5·4	
HOWELLS H.	(NICO)	11·12·57 19·11·51	14·12·51	JAMES J.	(MCD)	26·2·46	6·3	
HAMBLETON R	(JWR)	20·9·51	30·11·51	JONES W.	(MCD)	25·11·47	3·1	
HIEBERD H	(ADM)	8·10·51	19·10·51	JUPP E.A.	(ADM)	4·10·49	12·1	
HARRISON T.	(NICO)	3·2·52	14·2·52	JONES T.D.	(NICO)	2·4·51	13·4	
HARPER F.R.	(NICO)	12·10·52	24·10·52	JONES J.E.	(NICO)	5·1·50	16·1	
HOESEWEN W.H.	(ADM)	9·9·52	18·9·52	JACQUES S.	(TAC)	7·1·52	18·1	
HARRAMAN A.H.	(O)	3·9·52	16·9·52	JONES C.E.	(JWR)	22·6·52	2·5	
HILLEBRAND A.		13·7·53	24·7·52	JASON S.	(ADM)	11·2·52	22·	
HUNDHAMMER H.	(O)	12·7·53	24·7·52	JOHNSTON J.	(HALER)	5·1·53	16·1	
HICKS J.	(ELAND)	28·10·57	8·11·57	JAGGESAR L	(O)	15·10·56	21·10	
HENNESSEY R.T.	(NICO)	21·11·55	2·12·55	JAGGESAR B	(O)	15·10·56	21·10	
HILL H.	(TAC)	31·10·55	11·11·55	JORGENSON H	(O)	12·9·55	22·9	
HORTON R.D.	(TAC)	24·5·54	4·6·54	JONES W.J.	(NICO)	29·3·54	7·4	
HURBERT S.	(NICO)	2·6·58	7·6·58	JONES D.H.	(NICO)	29·3·54	9·4	
HOYLE W.	TAC	15·9·58	26·9·58	JOHNSTONE W.M	(TAC)	25·7·54	5·2·5	
HARRIS F	(JWR)	11·8·58	15·8·58	JOHNSON R	(JWR)	11·8·58	15·8	
HAYES J.	(JWR)	4·2·57	8·2·57	JAN J.	(O)	20·5·54	14·6	
HOGAN J.	TAC	15·9·58	26·9·58	JOHNSON E	(NICO)	19·1·59	30·1	
HARRISON A G	(JOINS)	22·2·54	5·2·54					
HOUSE AW	(TAC)	2·5·60	12·5·60	KINROSS R.	(NICO)	14·1·53	18·1	
HORNBY A.	(JWR)	7·9·59	11·9·59	"	"	10·7·41	12·7	
HILTON A.	(JWR)	7·9·59	11·9·59	KINGS D.	(JWR)	30·5·60	10·6	
HEXTER R.S.P.	(NICO)	29·6·59	10·7·59	KERR G.H.	(NICO)	20·2·61	24·2	
HOGAN J.F.	(TAC)	22·2·59	6·2·59	KIRKWOOD L	(LCI)	30·1·61	3·2	
HOGAN N.	(TAC)	22·2·59	6·2·59	KEARLEY H	(TAC)	10·12·45	14·12	
HOLLANDS L.	(TAC)	22·2·59	6·2·59	KING T.G.	(MCD)	27·11·45	5·12	
HARRISON H.	(JOINS)	27·10·58	5·11·58	KNOWLES A.	(MCD)	13·6·45	20·6	
		30·10·61	1·11·61	KERMODE G.R.	(MCD)	12·5·47	21·5	
HOLMS W.E.	(JOINS)	29·10·58	5·11·58	KENYON K.	(KENYON)	18·7·49	29·7	

NAME		TRAINING DATES		NAME		TRAINING DA[TES]	
KENNY F	(NGM)	10-7-51	19-7-51	LAWSON F.	(NICO)	25-1-60	5-2
KORT J.	(HERTEL)	9-1-56	20-1-56	LOWE, R.M.	(B.T.C)	7-9-59	18-9
KANE J.J.	(NICO)	15-7-57	19-7-57	LEWIS N	(NICO)	19-1-59	30-
KAHEE H.	(O)	22-3-55	1-4-55	LEE G.H.	(Kenyon)	4-4-49	14-4
KIRKBRIGHT G.A.	(JWR)	10-9-56	14-9-56	LAWSON R.	(NICO)	20-2-50	3-3
KREUBEL H.	(O)	25-10-54	29-10-54	LAVERY K.	(JWR)	30-1-50	10-2
KIRBY J.W.	(NICO)	29-3-54	9-4-54	LEIEN. E.	(TAC)	17-10-49	25-1
KANE V.V.	(NICO)	15-3-54	26-3-54	LAWLER, V.J.	(TAC)	2-10-50	12-10
KLEINDEINST H.	(O)	3-3-58	14-3-58	LOGAN D.	(NICO)	12-2-52	22-2
KREUBAL H.	(O)	25-10-54	29-10-54	LOCKWOOD H.C.	(O)	3-11-50	10-12
KNOLL L.	(O)	13-9-54	24-9-54	LESTER N.	(JWR)	13-4-53	24-4
KEEP J.P.	(TAC)	15-9-58	26-9-58	LONESHAW D.	(NICO)	8-7-57	19-7
KIRK G	(BTC)	23-5-60	27-5-60	LOWNDES J.	(NICO)	8-7-57	19-7
KERESZTESY.E.	(O)	9-3-60	23-9-60	LAWSON. C.N	(NICO)	7-12-52	18-12
KELLEHER H.	TAC	13-4-59	24-4-59	LONERGAN F.	(TAC)	31-10-55	11-11
KNOLLMAYER.G.	(O)	8-6-59	19-6-59	LOUIS J.	(C)	11-5-55	3-6
KATZENSTEIN.H.	(O)	18-9-61	22-9-61	LOGAN J.P.	(NICO)	4-10-54	15-10
				LEZSOVITES.L	(O)	17-7-61	3-8-6[1]
LAINSBURY.L.	(HAWKINS)	24-10-45	31-10-45	McASLAM.R.	(NICO)	30-4-46	3-
LITTLE. E.	(ADM)	28-5-45	6-6-45	McGOWAN	(NCO)	7-1-47	15-
[illegible] E.	(NICO)	19-2-46	22-2-46	McLEOD D.	(NICO)	24-10-49	25-
LARSON H.M.	(C)	27-9-46	11-10-46	MURPHY.V.	(JWR)	29-6-59	3-7
LEE W.	(NCO)	26-2-46	6-3-46	McGUIRE J.	(TAC)	23-2-59	6-3
LOWES A.	(J+R Mackay)	10-11-47	19-11-47	McCONKEY	(DARL?)	25-1-54	5-2
LOWES N	(MACKAY)	26-6-48	3-7-48	MC GAUGHEY J	(DARL)	25-6-56	6-7
LEAGUE H.	(NCO)	24-2-48	3-3-48	MORTIMORE. R.D.	(TAC)	12-4-48	16-4
LEE E	(Kenyon)	9-8-48	20-8-48	McLARNON. V.	(NICO)	5-6-59	17-6
LE SAUX. P.	(C)	18-10-48	28-10-48	MORRIS. C.J.	(NICO)	29-6-59	10-7
LAYCOCK J.L.	(Kenyon)	20-4-49	29-4-49	McELROY, W.J.	(TAC)	7-2-59	18-2
[illegible]ERICK J.	(HILLERS)	7-7-58	18-7-58	McELROY J.	(TAC)	2-5-60	13-5
LYAN K.C.	(NICO)	7-1-57	21-1-57	McELROY. R	(TAC)	2-5-60	12-5
LEE. R.	(JWR)	6-1-58	15-1-58	MELLON. J.	(JWR)	30-5-60	10-6
LANE. J.	(JWR)	30-5-60	10-6-60	MACKLIN. T.	([illegible])	1-9-58	11-
LOWERY E.	NICO	25-1-60	5-2-60	McKEE. W.	([illegible])	1-9-58	11-9

NAME	TRAINING DATES		NAME	TRAINING DATES	
MAX FERS (O)	7·9·54	8·10·54	MICHAUX J. (R.[illegible])	30·5·49·	10·6·49
MILLER. W. (JOHNS)	22·2·54	26·2·54	McLELLAN. J. (KENYON)	16·5·49	27·5·49
MILLER. R. (DARH)	25-1·54	5·2·54	MALONAY. E. (TAC)	16-5-49	27·5·49
MILLS GA (JWR)	11·6·56	22·6·56	MUSSELL. H.F. (HDM)	3·5·49	11·5·49
MANSEN. I. (JWR)	11·6·56	22·6·56	McGLADDERY. D. (KENYW)	20-4-49	29-4-49
MILLS. G.A. (JWR)	11·6·56	22·6·56	MAYERS. J. (KENYON)	4·4·49	14·4·49
MANSEN. I (JWR)	11·6·56	22·6·56	McMASTERS. R. (NICO)	21·3·49	1·4·49
MITCHELL. W.L. (MILLERS)	14·10·57	25·10·57	McLEOD. D. (NICO)	21·3·49	1·4·49
MacMONAGLE. J.W. (NICO)	16·9·57	27·9·57	" " "	12-4-61	15·4·6
MAKJANIC. D. (O)	12·8·57	30·8·57	MULLINGER. A. (NICO)	24-1-49	4-2-49
MERRY. A.H.L. (JWR)	11·3·57	15·3·57	McMINN. J. (NICO)	24-1-49	4-2-49
MOROWSKI. A. (JWR)	4·2·57	8·2·57	MARTIN. L.T. (MCD)	8·11·48	17·11·48
MEARNS. G. McD. (JWR)	4·2·57	14·2·57	MACDONALD. G.A (MCD)	8·11·48	17·11·48
MARCHAND. A. (O)	25·2·57	8·3·57	McCLUNG J. (NICO)	19·1·48	30·1·48
MATHESON. J. (O)	17·9·53	30·9·53	MARLEY T.J. (MCD)	25·11·47	3·12·47
MEHEUX. G.W. (NICO)	27·4·53	8·5·53	MACKIE. A (JWR)	10-11-47	19·11·47
MATHER. G. (NICO)	22·9·52	3·10·52	MACKAY. J.R. (MCD)	2·9-47	10-9-47
MARTIN. J. (MILLER)	5 5·52	16·5·52	MARKER. F.C. (MCD)	12·8·47	20·8·47
MACPHERSON. R.S. (MILLER)	5·5·52	16·5·52	MENIGAN. L. (MCD)	13·6·47	21·5·47
McLAREN. J (AIM)	3·3·52	14·3·52	MOCK. R. (MCD)	-	-
McKAY J. (HLM)	8·10·51	19·10·51	MANSFIELD R.S. (LT. STEEL SEC. Con)	12·11·46	15·11·46
MOORE. R.P. (ADM)	8·10·51	19·10·51	MINTO. G. (NICO)	19·2-46	22·2·4
McCAFFERTY J.G. (NICO)	24·9·51	5·10·51	MATHER P. (TAC)	10-12-45	14·12·-
McCARTNEY. W. (CORK)	27·8·51	31·8·51	MARLOW H.H. (MCD)	27·11·45	5·12·4
MYLTON. F.C. (ADM)	14·8·51	22·8·51	McMENAMY. C. (CORK)	27·9·45	5·10·4
MALLET. S. (ADM)	10·7·51	19·7·51	MASSEY H. (TAC)	16·7·45	20·7·45
McBRIDE. J.H. (CORK)	5·6·50	16·6·50	MAY. A.W.G. (MCD)	12-6·45	20·6·4
MINEHEAD. J. (NICO)	17·4·50	28·4·50	McGUINNESS. D. (TAC)	12-6-45	15·6·4
MISKIMMIN. J. (NICO)	20·2·50	3·3·50	McGRUM. F. (JWR)	12·2·61	24·2·[illegible]
MARRISON S.H. (TAC)	14·11·49	25·11·49	McKNIGHT. J. (JAGL)	12·2·61	24·2·6
MIDDLETON. C. (KLM)	4·10·49	12-10·49	MORGAN D. (NICO)	12·2·61	24·[illegible]
MILLER. J. (NICO)	12·6-49	24·6·49	MAUTNER. (O)	6·10·52	15·10·5
McGOWAN. A. (NICO)	13·6-49	24-6-49			
McDONALD. A. (HLM)	21-5-49	5·6·59			

NAME	TRAINING DATES		NAME	TRAINING DATES	
NORRIS. N.F (NCAT)	28·5·45	6·6·45	PARKIN. G (NICO)	30·4·46	8·5·
NICCOLLS K.W. (NICO)	21·11·60	2·11·60	—	13·5·52	16·5·
NORMAN. R. THC.	3·11·47	7·11·47	PYATT. A. (NILLS PATENT GLAZING)	1·10·45	9·10·
NICCOLLS. K. (NICO)	6·3·50	17·3·50	PACKA. H. (NICO)	19·2·46	22·2
NICCOLLS G (NICO)	4·9·50	15·9·50	PROSHO. H. (M.C.D.)	12·2·46	20·2
NOTT. R. (ACM)	14·8·51	22·8·51	PEARCE. W.A. (MCD)	25·11·47	3·12
NACHA D.B. (O)	5·2·52	4·4·52	POOLE. R. (JWR)	10·11·47	14·11
NEWTON. W. (W.M. DOCKS)	9·9·52	12·9·52	PRESCOTT. F. (KENYON)	27·10·47	6·11·
NEWMAN. C.J. (R. MERCER?)	3·9·53	16·9·53	PULLNESS. (H.M. DOCKYARD)	8·6·48	16·6
NIXON I. (O)	3·9·53	16·9·53	PARK. K. (KENYON)	9·2·48	20·2
NODROYK. H (HERTELYCO)	9·1·56	20·1·56	PHILP D. (WDM)	19·7·48	29·7·
NICHOLAS. E. (JWR)	7·2·55	18·2·55	PINB. R.J. (ACM)	20·9·49	28·9·
NEWELL G. (JWR)	6·1·58	–58	PONDIEFORD G. (ACM)	20·9·49	28·9
NORRIS. G. (ASBESTOS + RUBBER)	11·3·57	22·3·57	PARKER J. (PROCTOR)	16·5·49	27·5·
NELSON. H.M. (MANUFACTURING?)	4·2·57	14·2·67	PHOENIX. N. (NICO)	15·2·49	25·2·
NOVELLI. A (O)	25·2·57	8·3·57	PARSONS. F. (NICO)	24·1·49	6·2–
NOVAK. R. (O)	20·5·57	14·6·57	PICCHIOTTI. (O)	2·4·51	13·4·
NEWSOME. L. (NICO)	13·7·59	24·7·59	PLOWMAN. W.N. (ACM)	27·2·51	8·3·
NORRINGTON J. (DARL)	12·4·61	15·4·61	PARKINSON S. (NICO)	17·4·50	28·4
NOBLE. R. (NICO)	7·12·48	17·12·48	PERRYMAN. D. (ADM)	10·7·51	19·7·
			PEYENZY. R.H. (O)	11·12·52	22·12·
			PATTERSON. F. (CORK)	22·9·52	3·10·
			PERRY. G.W. (THC)	8·6·52	19·6·
			PEARSON. R.D. (O)	22·1·56	22·2·
ODD. E. CAPT. (O)	22·11·50	1·12·50	PIPER N. (JWR)	9·1·56	16·2·
O'REILLY. A (NICO)	7·2·61	9·2·61	PERETZ. J. (JWR)	2·12·57	9·12
OSGERBY. R. (RUBBER?)	11·3·57	22·3·57	PAYNE. W. (JWR)	16·9·57	20·9
O'REILLY. J.P. (NICO)	12·5·55	23·5·55	PERKS. E. (NICO)	15·7·57	19·7
ORLOWSKY. J. (JWR)	30·5·60	10·6·60	PITHOULIS G.J. (JWR)	10·9·56	14·9·
OLLIVER. O. (JWR)	17·8·59	21·8·59	POWER A. (JWR)	12·9·55	16·9
			PALMER J. (JWR)	13·6·55	24·6
			PERKS E. (NICO)	15·3·56	25·3
			PITHOULIS. I.N. (JWR)	3·2·[illegible]	
			PETERHOUSE. E. (RHITZWARE?)	7·1·57	21·1·

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NAME.	TRAINING DATES.		NAME.	TRAINING DATES	
PENNINGTON. J.D.(HWR)	7.1.5	21.1.57	RICHARDSON. H.W. (CORK)	15.5.50	26.5
PARTINGTON. J. (NICO)	10.10.6	21.10.60	ROUTH. T. (NICO)	17.6.50	28.6
PEDGE F. (NICO)	10-5	12.5.61	ROGER. E. (HDM)	8.10.51	19.10
PRATT. D (NICO)	29.5.61	9.6.61	RILEY. T. (NICO)	2.2.53	12.2
PRATT G. (NICO)	10.10.6	21.10.60	RABIAI. M. (O)	9.1.53	30.1
PASHKOWSKI. A. (O)	27.11.61	7.12.61	REUSE. A.E.W. (O)	19.5.52	30.5
			ROBERTS. A. (JWR)	9.9.52	18.9
			RILEY. F.J. (NICO)	27.4.53	2.5
			ROBINSON C. (NICO)	2.2.53	12.2
QUIGLEY. C. (NICO)	17.2.52	28.2.52	REINEKE. W. (O)	17.7.53	29.7
QUADFASEL G (O)	1.11.54	15.11.54	ROE. J. (JWR)	12.3.56	23.3
QUIGLEY. V. (NICO)	26.10.59	6.11.59	ROSE. S. JWR.	25.1.56	27.1
QUINN J. (JWR)	12.3.61	24.3.61	ROSE. J. (NICO)	30.9.57	11.1
			RILEY. H.G (JWR)	7.2.55	10.2
			REED J.W. (DARH)	11.1.54	22.1
			RUDDICK. J.W. (DARH)	11.1.54	22.1
ROBERTSON (MALES)	12.9.61	22.9.61	RELSHAW. R. (JWR)	11.3.57	15.3
RAWLIN E. (NICO)	20.2.61	4.2.61	RICKARD. P. (NICO)	11.10.60	21.10
RAPLEY. J.M. (NICO)	21.11.60	.12.60	RICHARDSON. H.		
REID. W. (MCD)	12.6.45	.6.45	ROBINSON. C. (NICO)	19.6.61	30.6
ROBINSON. H. (HDM)	28.5.45	.6.45			
ROBSON. S. (NICO)	19.2.46	2.2.46			
ROWABIC. R. (JWR)	25.11.46	- 46			
RYAN. J.R. (JWR)	3.6.47	.6.47			
RODWAY. G. (MCD)	13.5.47	.5.47	SZABADOS C. (O)	17.7.61	3.8
ROBERTS. W. (Kenya)	27.10.47	.47	STACEY (H.M. Dockyard)	11.5.64	15.5
RUNDLE. F.E. (MCD)	12.8.47	.47	SALES C. (NICO)	12.5.58	16.5
ROBINSON J (JWR)			SALES C. (NICO)	10.5.61	12.5
RICHARDS. H.J. (HDM)	12.9.48	.9.48	SARGENT. S. (NICO)	21.11.60	2.12
RONDEAU P. (O)	27.5.49	.5.49	SMITH R. (JWR)	13.7.59	17.7
REEDEN. A.E. (HDM)	2.5.49	.5.49	SHILLEN R (Colombo Commercial)	21.1.46	24.1
ROBERTS J. ([illegible] Department)	22.2.49	11.49	STEVENS H. ([illegible] Clearing Co)	1.10.45	9.10
RUSSELL. H.W. (NICO)	20.1.50	.1.50	STAFFORD. J	27.9.45	5.10
RICKS. J.E. (CORK)	5.6.50	11.6.50	SMITH. R. (HDM)	25.5.45	6.6

NAME.	TRAINING DATES		NAME	TRAINING DA…	
SMITH N.W. (TAC)	12·2·45	16·2·45	SOMERS. F. (Akron Rostrum Co., Perth)	17·9·52	30·9
STUBBINGS. SG. (MCD)	12·3·46	20·3·46	ŠKROBICA. J. (0)	15·2·55	4·3
SKINNER J. (Asbestos Engineering Co)	24·6·47	1·7·47	STANSFIELD. E. (JWR)	10·9·56	14·9
SNELL. H (MCD)	12·5·47	21·5·47	SHAW. R. (CARL)	11·6·56	22·
STEPHENSON. G.W. (MASKALL)	10·11·47	19·11·47	SHAW RA. (TAC)	11·6·56	22·
SUMMERFIELD. J. (TAC)	29·9·47	3·10·47	SCHULTZ. W. (0)	20·10·54	2·11
SHACKLEFORD. S (NICO)	22·9·47	3·10·47	SPENCER. D. (0)	22·8·55	30·
SUTHERLAND J. (MASKALL)	21·6·48	2·7·48	SHERWOOD. D. (JWR)	4·7·55	15·
SWALLOW. J. (KENYON)	9·2·48	20·2·48	SCHRODER-PETERSON. F (0)	12·9·55	30·
SOUTH. W. (NICO)	19·1·48	30·1·48	SHERRATT. B. (JWR)	13·6·55	24·
STEWART. J. (ADM)	19·7·48	29·7·48	SCWAB. R. (0)	18·6·55	29·
SMITH. C. (MCD)	22·11·48	1·12·48	SCHONFELD. K. (0)	23·3·55	1·4
SILVER. L. (TAC)	27·11·48	3·12·48	SEDDON. W. (G.D. Insulating Co. Ltd)	22·2·54	5·3
SOUTH W.J. (MCD)	22·11·48	1·12·48	STEWART. CG. (0)	24·5·54	20·
SHERGOLD. AE. (ADM)	20·9·49	28·9·49	SCHRAMBOECK. L. (0)	19·7·54	6·8
SMITH. J.W. (KENYON)	18·7·49	29·7·49	STEEL. R. (TAC)	10·5·54	21·5
SEYMOUR. G. (TAC)	18·7·49	29·7·49	SUTTON H (TAC)	29·11·54	10·12
SPENCE. H. (ADM)	31·5·49	8·6·49	SHARMAN. B.F. (TAC)	29·11·54	10·12
STOWEN. D.G. (ADM)	3·5·49	11·5·49	SCHULZ. W. (0)	20·10·54	2·11
SMITH J.W. (KENYON)	20·4·49	29·4·49	SINGLETON G. (JWR)	4·10·54	15·
STANNARD. J.W. (JWR)	19·11·51	30·11·51	SKINNER. J. (CARL)	23·6·55	4·6
STRAIGHT G. (NICO)	19·11·51	30·11·51	STARKEY G (Asbestos & Rubber Co)	11·3·57	22·3
SVETLICK. J. (0)	4·3·52	21·3·52	SLEEMAN. G.J. (TAC)	7·1·57	21·1
SUDSBERRY J (NICO)	8·12·52	19·12·52	SMITH. H. (JWR)	26·10·59	30·10
SMITH. F. (Am. Lock/Aero)	9·9·52	18·9·52	SMITH A. (NICO)	26·10·59	6·11
SWAIN. J. (TAC)	13·4·53	24·4·53	SUMNER. G. (TAC)	22·8·60	1·9
STOREY. C.A. (NICO)	13·4·53	24·4·53	SUMNER G (TAC)	10·10·60	14·1
SHAW. RA (TAC)	11·6·56	22·6·56	SWINNEY G. (TAC)	10·10·60	21·1
SUTTON. W. (TAC)	12·3·56	23·3·56	STENZUREK J.F.H (NICO)	25·1·60	5·2
SAUNDERS B. (JWR)	2·12·57	9·12·57	SAINT. L (JWR)	20·1·59	23·1
STANSFIELD G. (JWR)	2·12·57	9·12·57	SINGLETON. J. (JWR)	29·6·59	2·7
ŠORE. I. (0)	12·8·57	30·8·57	SMITH S. (JWR)	16·2·59	20·
STEWART. W.L. (0)	17·6·57	25·7·57	STOKOE. J. (NICO)	29·2·64	9·4
SWEENEY. W. (0)	1·10·53	14·10·53	SCOTT. G. (NICO)	29·5·64	9·6

NAME.	TRAINING DATES		NAME.	TRAINING DATES	
SHAMIYEH Y. (O)	[illegible]·5·61	16·6·61	TYLER. D. (JWR)	28-9-59	9-10-
STAUNTON. P. (U.S.I.)	24·7·61	26·7·61	TOMKINS. G. (JWR)	26-10-69	30·1
SMITH R. (JWR)	9·10·61	20·10·61	TITMUS. H. (NICO)	19·1·59	30·1
SCARTH. J. (S.O. INSULATION)	22·10·61	3·11·61	TOMC. M. (O)	10·10·60	21·
			UNDERDOWN. J.W.P. (ADM).	11·2·52	22·2
TIGHE. J. (NEW GRAZEBROOK)	3·11·58	7·11·58			
TRACEY. J. (NICO)	15·7·57	26·7·57			
TREGASKIS. C.G. (MCD)	20·11·45	5·12·45			
THORDARSON. G. (O)	6·5·46	15·5·46	VENNING. R.H.I. (MCD)	27·11·45	5·12·
THOMPSON. R.H. (JWR)	13·5·57	24·5·57	VANSTONE. C.G. (MCD)	25·11·47	3·12·
THOMAS. F.W. (NICO)	2·6·47	12·6·47	VOYSEY. H. (ADM.)	3·5·49	11·5·
TIBBS. W. (MCD)	7·1·47	15·1·47	VOKINS. C. (TAC)	10·5·54	21·5·
TILLEY. S.G.H. (TAC)	22·9·47	26·9·47	VALENTINE. J. (JWR)	9·10·6	20-10-
THOMPSON. F. (NICO)	8·6·48	18·6·48			
TAYLOR. L.D. (ADM)	13·9·48	22·9·48			
TINDALL. E.S. (MCD)	25·10·48	3·11·48			
THORNTON. H.S. (NICO)	24·1·49	4·2·49			
THOMPSON. S.A. (R.A.E. FARNBOROUGH)	5-3·51	9·3·51	WHITEHOUSE. R.G. (HAYWARDS OF TAUNTON)	14·8·45	20·8·
TORRIBLA. (O)	22·11·50	1·12·50	WILLIAMS. C.E. (TAC)	16·7·45	20·7·
TRELOAR. D.N. (ADM)	14·8·51	23·8·51	WALKER. J. (TAC)	8·4·46	13·4·
TOGER. V. (ADM)	10·7·51	19·7·51	WATSON. F. (MCD)	26·2·46	6·3·
THOMPSON H. (NICO)	17·3·52	28·3·52	WILSON. R.H. (NICO)	13·5·47	22·5
TAYLOR. G. (NICO)	13·10·52	24·10·52	WACKLEY. E. (MCD)		16·1
TUTTON. N. (O)	1-10·53	10·10·53	WARD. H.E. (MCD)	2·9·47	10·1
THOMPSON. J.W. (O)	17·9·53	30·9·53	WEAVER. A.M. (MCD)	2·9-47	10-
THIEL L. (O)	23·2·56	1·4·55	WINNING G. (ADM)	19·7·48	29
TEMPORAL. A. (O)	10·1·55	22-1-55	WATERS. G. (ADM)	19·7·48	2
TAYLOR. J. (DARL)	22·1·54	5·2·54	WHITE. L.F. (H.M. DOCK)	8·6·48	16
TRANSTON. J.H. (NICO)	2·6·58	10·6·58	WREN. S. (KENYON)	9-2·48	2
TAHSIN. H (NICO)	12·5·58	23·5·58	WINCHESTER. W. (ADM)	13·9·48	22
TATTERSFIELD. R.S. (SLC)	3·2·58	- 58	WESTON T (J. LAING)	20·2·48	10·

NAME.	TRAINING DATES		NAME	TRAINING DATES	
WATERS A. (MCD)	26·10·48	3·11·48	WILLIAMS (H.M. DOCKYARD)	14·8·61	18·8·
WRIGHTSON H.S. (ACM)	4·8·49	12·8·49			
WILTSHIRE RE. (ADM)	20·9·49	28·9·49			
WANT. H.C.C. (TAC)	18·7·49	29·7·49	YENDLE.W.J. (TAC)	18·7·49	29·7·
WACEY. F (TAC)	4·4·49	14·4·49	YOUNG. J. (PRESTON STORE KEEPER)	1·9·58	11·9·
WILLIAMS L.S. (NICO)	21·5·49	1·6·49			
WILLIAMS J.S. (NICO)	24·10·49	28·10·49			
WAUGH. W.F. (TAC)	17·10·49	28·10·49			
WESCOTT. W.H. (ADM)	27·2·51	8·3·51	ZIELKE. D. (O)	25·3·55	1·4·
WALKER G. (NICO)	5·6·50	16·6·50	ZOLYOMI. L. (O)	17·7·61	31·7·
WARNOCK H. (NICO)	24·9·51	5·10·51			
WOOLLEY. K. (JWR)	27·8·51	31·8·61			
WERBERLEY. M. (ADM)	14·8·51	23·8·51			
WYATT. I. (ADM)	14·8·51	23·8·51			
WARD. J.R. (NICO)	19·11·51	30·11·51			
WILDE. D.R. (ADM)	8·10·51	19·10·51			
WILLIAMSON W.H. (NICO)	2·2·53	13·2·53			
WOOLLEY. D. (O)	3·9·53	16·9·53			
WHITE. A. (HALLEE)	7·5·56	18·5·56			
WALKER B. (JWR)	23·1·56	27·1·56			
WHITECROSS. A (NICO)	25·6·56	6·7·56			
WUNDERLICH C. (O)	20·10·54	2·11·54			
WALLIS J. (CARL)	25-1-54	5·2·54			
WALTER. H. (O)	1-11-54	15·11·54			
WESTCOTT. P.M (TAC)	15·9·58	26·9·58			
WALKER A (JWR)	11·8·58	15·8·58			
WILLIAMS. R.D. (MCD)	27·11·45	5·12·45			
WILLIAMS. P.N. (TAC)	8·4·57	19·4·57			
WALTER. H. (O)	3·6·59	19·6·59			
WILLIAMS. P.R (TAC)	13·4·59	24·4·59			
WOOD H. (JWR)					
WHEATLEY (NICO)	29·5·61	9·6·61			
WOODCOCK. W. (JWR)	29·5·61	9·6·61			
WALKER. R (T.O. INSTRUCTOR)	22·10·61	1·11·61			

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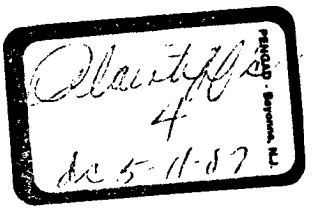

November 7, 1961

Mr. Robert R. Porter, President
Keasby & Mattison Company
Ambler, Pennsylvania

Dear Bob:

I enjoyed very much our brief meeting in Washington last Friday and am pleased to record the interest expressed, both by Bert Levine of Asbestospray and Leonard Diemer of Smith & Kanaler in discussing the desirability of a sprayed fiber trade association in the United States. It was their opinion that a preliminary meeting during the first week of December for the purpose of exploring the idea, would be practical. Please let me know who in your organization would plan to attend this meeting and give perhaps two or, if possible, three dates on which he might be available. It would appear most practical that the meeting be held in Newark.

With respect to the problem in San Francisco, we are enclosing a copy of report which we believe is generally self-explanatory. The question involved is basically whether only hard, dense materials will be approved for use in San Francisco. If you can arrange to have your distributor or representative of your company there, this could be of benefit to the entire industry.

We appreciate your cooperation and look forward to seeing you again soon.

Sincerely,

UNITED STATES MINERAL WOOL COMPANY

J. P. Verhalen,
Executive Vice President

JPV/dec
Enc.

cc: Mr. Herbert Levine
Asbestospray Corporation
cc: Mr. Leonard Diemer

NOV 13 1961

KEASBEY & MATTISON COMPANY

MFRS. OF ASBESTOS, ASPHALT AND HEAT INSULATING PRODUCTS

AMBLER, PENNSYLVANIA

02365

EXECUTIVE OFFICES

November 10, 1961

Mr. J. P. Verhalen, Ex. V. P.
United States Mineral Wool Company
Stanhope, New Jersey

Dear Jim:

I too was very pleased we finally met at Washington, and it gives me a number of things now to write about, partially in answer to your letter of November 7.

To take them in reverse order, we will have a representative present at the hearing on November 14 in San Francisco. The man to attend will be Myron Fuller, who is our District Sales Manager in San Francisco. His primary function at the moment is in the sale of pipe, but he has had long experience with the Company in its other products and will be pretty thoroughly briefed by Andy Richardson, Sprayed "Limpet" Merchandising Manager.

As to the proposed trade association, both Mr. N. L. Barr, our Vice President-Sales, and Andy Richardson have expressed interest and would like to attend such an organizing meeting. They suggest any time during the week of December 4 and will be pleased if you'd let them know both the time and place in Newark.

To that I might add a respectful suggestion. Having had some sad experience with antitrust investigation and some with trade associations, I think if you are serious about the organization of such an association, it might be highly advisable to have an attorney on hand even at this first meeting, lest everybody get accused later of conspiracy, "phases of the moon", etc. I think you are well acquainted with Bradley Walls who seems to be involved in most of the trade associations we get near, and I should imagine he might be quite willing to attend on a tentative basis. Please believe I don't mean this is an absolute necessity, but think it might be advisable.

As to one further matter I mentioned in Washington, we do wish you'd come down and visit us, and Barr, Richardson, and myself all join in asking if you might not make it on November 16 or 17 in time to spend a little while here and have lunch with us.

Sincerely,

R. R. Porter

02356

NOTICE OF MEETING

Purpose: To determine the advisability of organizing a sprayed fiber manufacturers trade association.

Place: Jersey Room, Newarker Restaurant, Newark Airport Terminal

Time: 11:00 a.m.

Date: Monday, December 11, 1961

Attendance: Asbestospray Corporation, 1060 Broad Street, Newark 5, N. J.
Mr. Bert Levine

Columbia Acoustics and Fireproofing Company, Stanhope, N. J.
Mr. John F. O'Rourke - Mr. J. P. Verhalen

Keasby & Mattison Company, Ambler, Pennsylvania
Mr. N. L. Barr - Mr. Andy Richardson

Smith & Kanzler Corporation, 1414 E. Linden Avenue, Linden, N. J.
Mr. Leonard Diener - Dr. Morris Lief

Cadwalader, Wickersham & Taft, 14 Wall Street, New York, N. Y.
Mr. Bradley Walls

Recommended Agenda

1. Federal Specifications
2. Application Standards
3. Product Approvals by Governmental and Building Code Authorities
4. Industry Promotion
5. Industry Statistics
6. Underwriters Laboratories Label Service Cost Reduction
7. Uniform Freight Classifications

Luncheon

An a la carte lunch will be served about 1:00 p.m. Adjournment scheduled - 2:30 p.m.

NOTE: Please confirm your planned attendance to J. P. Verhalen, Columbia Acoustics and Fireproofing Company, Stanhope, N. J.

decided not to organize - can't do more & see whether full practice demonstrates good faith on part of suppliers to do good quality work - any complaints about work are freely solicited -

DEC 18 1961

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Cadwalader, Wickersham & Taft

14 Wall Street
New York 5

Telephone, Rector 2-5100
Cable address, Labellum

Cornelius W. Wickersham
R. Keith Kane
Charles W. McConaughy
John J. Redfield
Benjamin A. Javords
Catherine Noyes Lee
Robert E. Lee
H. Lee White
Richard N. Crombett
H. Gilmer Wells
Henry Allen Mark
J. Franklin Van Dorn
John A. Sullivan
Richard T. Taylor
Harold W. Conroy
William N. Clarke
William J. Mass
Peter Meyerger Brown

Merrill M. Manning

December 14, 1961.

Mr. James P. Verhalen,
Columbia Acoustics &
Fireproofing Company,
Stanhope, New Jersey.

Dear Jim:

I am enclosing herewith a draft of some minutes which I conjured up of the sprayed fibers manufacturers meeting at the Newarker Restaurant, Newark Airport. If these minutes accurately reflect the substance of the meeting, I will be happy to send copies to the participants at your request.

Wishing you the very best for the Christmas holidays,

Yours sincerely,

Bradley Wells

BMW/hw
Enclosure

02360

MEMORANDUM OF MEETING OF REPRESENTATIVES OF FOUR SPRAYED FIBER MANUFACTURERS

A meeting was held in the Jersey Room of the Newarker Restaurant, at the Newark Air Terminal, at 11:00 A.M. on Monday, December 11, 1961, to determine the advisability of organizing a sprayed fiber manufacturers trade association. In attendance at this meeting were:

Messrs.	Bert Levine	Asbestospray Corporation
	John F. O'Rourke J. P. Verhalen	Columbia Acoustics and Fireproofing Company
	N. L. Barr Andy Richardson	Keasbey & Mattison Company
	Leonard Diener Dr. Morris Lief	Smith & Kanzler Corporation
	Mr. Bradley Walls	Cadwalader, Wickersham & Taft

Mr. Verhalen acted as Chairman of the meeting and began the proceedings by summarizing a 1961 survey of association activities and business problems prepared by the Chamber of Commerce of the United States. After a number of possible association activities as outlined by the aforementioned survey had been briefly outlined, a general discussion followed with reference to the advisability of organizing a trade association of sprayed fiber manufacturers.

Mr. Diener asked whether the persons present had sufficient continuity of interests to form a trade association. He asked what benefits would accrue to the individual members

from such an association and what benefits would such an association yield to the sprayed fiber industry. He noted that at present the individual manufacturers are inclined to disparage one another before engineers and architects. He questioned whether the products made by the individual manufacturers are of such uniformity as to warrant the manufacturers considering themselves as an industry.

Mr. O'Rourke stated that there is now an opportunity for sprayed fiber manufacturers in the market for fireproofing structural steel and cellular floors. He stated that a trade association could represent the industry in advocating the fireproofing of structural steel and could respond to the claims made by the reinforced concrete industry in opposition to the structural steel industry. He stated that other associations in this fireproofing field may be disparaging sprayed fibers and that a trade association could speak for the industry in responding to such activities. He also suggested that a trade association might assist in publicizing acceptability of contact fireproofing as opposed to fireproof rated membrane tiles. In his opinion the internal difficulties among the individual manufacturers are less than the resistance experienced from markets and competitors outside of the sprayed fiber manufacturing industry.

In the opinion of Dr. Lief, the internal problems in the industry appeared to be greatest. It was not, he

said, a question of competition or lack of it, but a problem of divers standards of quality and of ethical behavior. Both Dr. Lief and Mr. Richardson felt that the industry members needed to adhere to some kind of a code of ethics first. They felt that individual manufacturers should attempt to see that their applicators operated according to the applicating instructions given to them by the manufacturers. It was also their belief that manufacturers should be free to report to one another when it came to their attention that jobs were not being properly applied.

Mr. Verhalen felt that there is perhaps a basis for industry minimum standards, that promotion of the sprayed fiber industry as a whole is needed, and that the concept of sprayed fibers for fireproofing is of sufficient importance to warrant support for a trade association.

Mr. Barr stated that there were areas of joint interest among manufacturers of sprayed fibers concerning industry statistics, application standards, product approval by government authorities and, possibly, minimum specifications. It was also thought that a trade association might be useful in developing standards tests for thickness abrasion and other characteristics of applied sprayed fibers. It was Mr. Barr's feeling that Keasbey & Mattison would act only as an observer at first in the event that a trade association were formed.

Mr. Walls discussed some of the procedures for creating trade associations and some of the areas of activity in which a trade association might lawfully operate.

The consensus of the meeting was that a sprayed fiber manufacturers trade association would not be formed at this time but that individual manufacturers would welcome correspondence and reports from other manufacturers about particular jobs which may have come to their attention and which may appear, by virtue of being improperly done, to jeopardize the integrity and reputation of the entire sprayed fiber industry.

There being no further business to come before the meeting, it was adjourned at 2:30 P.M.

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Post Office Building	Batesville	Ark.	A	3/4	800
Bath House	Hot Springs	Ark.	A	3/4	1,200
Berkeley Savings & Loan Co.	Berkeley	Calif.	A	3/4	1,000
Hillsdale Shopping Center	San Francisco	Calif.	A & T	1	24,000
Prudential Insurance Co.	Jacksonville	Fla.	T	1-1/2	5,000
Independent Life Ins. Co.	Jacksonville	Fla.	T	1-1/4	14,240
North West Jr. High School	Shawnee	Kansas	T	1-1/2	2,500
South West Jr. High School	Merrian	Kansas	T	1-1/2	3,411
North East Jr. High School	Johnson County	Kansas	T	1-1/2	3,411
Smith College	North Hampton	Mass.	A	1-1/4	4,306
WORL Radio Station	Boston	Mass.	A	1-1/2	2,258
Runels Construction Co.	Lowell	Mass.	A	3/4	4,850
Sanitarium, SW Mich. State	Kalamazoo	Mich.	S	3/4	4,000
Detroit Arsenal, U.S. Army	Detroit	Mich.	T	3/4	5,500
Bay State Abrasive Co.	Detroit	Mich.	S	1	1,850
St. Louis Ordnance Plant	St. Louis	Mo.	S	1/2 to 1-1/2	7,500
St. Louis Ordnance Plant	St. Louis	Mo.	S	1/2 to 1-1/2	10,000
St. Luke's Hospital	St. Louis	Mo.	S	1-1/2	400
St. Louis Ordnance Plant	St. Louis	Mo.	A	1 to 2	50,000
Inter-City High School	Kansas City	Mo.	T	1-1/2	2,448
Inter-City High School	Kansas City	Mo.	A.C.	1-1/2	4,951
Linda Hall Library	Kansas City	Mo.	T	1-1/2	1,635
Better-Bilt Door Co.	Egg Harbor City	N. J.	T	1-1/2	3,000
E.I. DuPont de Numours Co., Inc. (Chambers Works)	Deepwater	N. J.	T	1	500
Woodbridge High School	Woodbridge	N. J.	A	1	25,000
Tenacre Foundation	Princeton	N. J.	T	1	750
Mohawk Manor	Buffalo	N. Y.	T	1-1/2	748
66th St. School	Niagara Falls	N. Y.	T	1	870
Airway Motel	Cheektowage	N. Y.	S	1-1/2	430
Seaman's Bank Bldg.	New York	N. Y.	A	1	5,200
Towne House Hotel	Buffalo	N. Y.	T	1-1/2	1,979
Board of Education (Administration Bldg.)	Niagara Falls	N. Y.	T	2	528
Temple Emanuel	Great Neck	N. Y.	A	3/4	18,600
Leonard Ave. School	Columbus	Ohio	T	1	650
Green Cross Hospital	Cuyahoga Falls	Ohio	T	1	900
Holy Angels School	Sidney	Ohio	T	2	2,000
Veterans Hospital WPAFB	Dayton	Ohio	T	1	1,000
Cameron Office Bldg.	Olkahoma City	Okla.	T	3/4	1,837
Sanders Office Bldg.	Olkahoma City	Okla.	T	3/4	1,200
Hillcrest Country Club	Oklahoma City	Okla.	A	3/4	3,800
Lake Murray Lodge	Ardmore	Okla.	A	1-1/2	2,000
Norman Municipal Hospital	Norman	Okla.	T	3/4	880

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS (CONTINUED)

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Geare-Marston, Inc.	Philadelphia	Pa.	A	1	400
Bradford Supply Co.	Bradford	Pa.	T	3/4	4,700
First National Bank	Philadelphia	Pa.	T	1-1/2	1,700
The Hill School	Pottstown	Pa.	A	5/8	400
U.S. Signal Depot (Vehicular Process Bldg.)	Tobyhanna	Pa.	S	3/4	7,000
U.S. Signal Corps (Administration Bldg.)	Tobyhanna	Pa.	S	3/4 to 1/2	200,000
St. Bernard's Church	Mt. Lebanon	Pa.	A	3/4	5,000
Stricklands Hotel	Mt. Pocono	Pa.	A	1	300
Weston Field	Scranton	Pa.	A. C.	3/4	6,000
Chambersburg Market	Chambersburg	Pa.	A	3/4	4,400
West Side School	Scranton	Pa.	A	3/4	2,400
Radio Station WMCA	Chambersburg	Pa.	A	1	300
Penhurst State Institute	Spring City	Pa.	A	3/4	1,300
State College	Altoona	Pa.	A	3/4	1,300
Quaker City Iron Works	Philadelphia	Pa.	S	2	350
Sullivan County High School	Kingsport	Tenn.	A	1/2	4,500
Stuarts Draft Elementary School	Waynesboro	Va.	A	1 to 1-1/2	1,100
Sardino's Inn	Milwaukee	Wisc.	A	1-1/2	1,000
A.P. Woodson House	Wausau	Wisc.	S	1/2	2,500

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation
F - Fire Protection

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Holy Family High School	Birmingham	Ala.	S	1	17,000
C. Y. O. Camp	Mt. Bullion	Calif.	S,T,A-C	3/4	24,000
High School	Manchester	Conn.	A	3/4	2,682
St. Mary's School	Ridgefield	Conn.	T	1	800
Mills, Peddicord & Mills	Washington	D. C.	S	3/4	3,000
Woodward & Lothrop	Washington	D. C.	S	3/4	900
Laboratory Facilities Bldg.	Panama City	Fla.	T	1-1/2	4,000
First Presbyterian Church	Ft. Myers	Fla.	A	1	2,800
Ringling Museum	Sarasota	Fla.	S	3/4	4,000
Industrial Bank Bldg.	Miami	Fla.	S	1	9,000
Gwyn Falls School	Baltimore	Md.	T	1	3,000
Cherry St. School	Gloucester	Mass.	T	1	1,034
St. John's Hospital	Lowell	Mass.	A	3/4	2,825
State of Michigan Bldg.	Detroit	Mich.	S	3/4	20,000
Detroit Securities Co. Cass Bldg.	Detroit	Mich.	S	3/4	1,200
Detroit Securities Co. Cass Bldg.	Detroit	Mich.	S	3/4	2,000
Linde Air Products Co.	Montague	Mich.	T	1-1/2	24,000
Mich. Nat'l. Drive In Bank	Port Huron	Mich.	S	3/4	1,600
Union Hospital	New Ulm	Minn.	T & F	1-1/2	1,204
Bur. of Mines Pilot Plant	Minneapolis	Minn.	T & F	1-1/4	4,080
Albert Lea Savings & Loan	Albert Lea	Minn.	T & F	1	651
May Bros. Co.	Minneapolis	Minn.	T	1	1,200
Austin Savings & Loan	Austin	Minn.	T & F	1	860
Hastings Nat'l. Bank	Hastings	Minn.	T	1-1/2	5,800
W.T. Grant Store	Minneapolis	Minn.	F	2	1,200
Empire Nat'l. Bank	St. Paul	Minn.	T & F	1	1,000
American Hoist & Derrick	St. Paul	Minn.	F	1-1/2	5,050
S.W. High School	Minneapolis	Minn.	A	1-1/2	1,200
Lincoln Jr. High School - Swimming Pool	Kansas City	Mo.	T & S	1	8,250
Lincoln Jr. High School - Boiler Room	Kansas City	Mo.	T & S	1	2,100
Dunnleith Apt. Boiler Room	Kansas City	Mo.	T	1	1,580
Schweiger Construction Co.	Kansas City	Mo.	T	1	7,600
Radio Corp. of America	Harrison	N. J.	S	3/4	4,000
Federal Telephone & Radio Corp.	Clifton	N. J.	S	3/4	20,000
Passaic Valley Regional High School	Little Falls	N. J.	T	1	1,200
American Academy Arts & Letters	New York	N. Y.	S	3/4	1,300
Merchants Midtown Bank	New York	N. Y.	S	3/4	2,000
F.H. McGraw & Co.	New York	N. Y.	S	3/4	3,000
Railway Express Co.	New York	N. Y.	S	3/4	8,000

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS (Continued)

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Onondaga County Sanitorium	Syracuse	N. Y.	T	3/4	6,000
Horn & Hardart Restaurant	Flushing	N. Y.	T	1	2,100
General Electric Trans. Plant	Hickory	N. C.	A & F	3/4	6,615
Charlotte Public Library	Charlotte	N. C.	S	1	16,200
Harshaw Chemical Co.	Cleveland	Ohio	S	3/4	14,000
Commerce Bldg. Ohio Univ.	Athens	Ohio	T	1	2,000
Mansfield Tel. Co.	Mansfield	Ohio	A	1	5,000
Sequoyah Lodge	Sequoyah Nat'l. Park	Okla.	A	1	1,200
Officers Club, Tinker Field	Oklahoma City	Okla.	A	1/2	15,000
Nazarene Church	Oklahoma City	Okla.	A	1/2 to 3/4	5,500
Cafeteria, Central State College	Edmond	Okla.	A	3/4	1,600
Valley Forge Hospital	Phoenixville	Pa.	S	3/4	2,500
State Police Office, Capitol Bldg.	Harrisburg	Pa.	S	1	900
Double Woven Corp.	Scranton	Pa.	A.C.	1	4,000
Christ Evangelical Ref. Church	Norristown	Pa.	A	1-1/2	2,800
Abington High School	Abington	Pa.	T	1	4,600
Veterans Hospital	Fort Meade	S. D.	T & F	1-1/2	1,431
Colonial Country Club	Ft. Worth	Tex.	A	3/4	3,000
Chesapeake & Potomac Tel. Co.	Richmond	Va.	T	3/4	3,000
Richmond Memorial Hospital	Richmond	Va.	T	3/4	1,200
Ginter Park Methodist Church	Richmond	Va.	T	3/4	1,200
Linde Air Products Co.	Moundsville	W. Va.	T	1-1/2	10,300
Celanese Corp.	Pt. Pleasant	W. Va.	T	1	4,000
Washington State Bank	Bellevue	Wash.	S	3/4	4,030
Mulkelteo Jr. High School	Mulkelteo	Wash.	S	3/4	3,600
Medical Dental Bldg.	Everett	Wash.	F	3/4	24,900
Skyline Apt. Bldg.	Seattle	Wash.	S	3/4	3,400
Frederick & Nelson Dept. Store	Bellevue	Wash.	F & T	3/4	6,000

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation
F - Fire Protection

Elmendorf A. F. B.	Anchorage	Alas.	A. C.	3/4	6,800
Merchants Nat'l. Bank	Ft. Smith	Ark.	A, C.	3/4	4,500
Potomac Plaza Apt.	Washington	D. C.	T & F	3/4	10,000
Dalecarlia Pumping Station	Washington	D. C.	T	3/4	15,000
Junior College	St. Petersburg	Fla.	A	3/4	28,000
Peninsular Telephone Co.	Tampa	Fla.	A	3/4	20,000
W. T. V. T. Studio	Tampa	Fla.	A	1-1/2	2,200
Laboratory Facilities Building U. S. N.	Panama City	Fla.	A	1/2 to 3/4	30,000
Leon Co. Gymnasium	Tallahassee	Fla.	A & T	1	9,000
Female Correctional Inst.	Ocala	Fla.	T	2	1,200
Fairvilla Lanes Bowling Alley	Orlando	Fla.	S	3/4	4,500
Olin-Mathieson Chem. Corp.	East Alton	Ill.	S	1&1-1/2	3,500
Aberdeen Proving Grounds	Aberdeen	Md.	S & T	3/4	8,000
Fidelity Baltimore Nat'l. Bank	Baltimore	Md.	F	1-1/4	15,000
Big Savage Refactory Co.	Frostburg	Md.	A. C.	3/4	6,000
State Hospital	Crownsville	Md.	T	1-1/2	3,000
Officers Club A. F. B.	Westover	Mass.	A	1/2	3,800
Lecture Hall, Compton Lab. M. I. T.	Cambridge	Mass.	A	3/4	2,800
Central Savings Bank	Lowell	Mass.	A	3/4	1,200
Jr. -Sr. High School	W. Boylston	Mass.	A	3/4	2,300
Jr. -Sr. High School	Lunenburg	Mass.	A	1/2	2,800
Parochial School	N. Beverly	Mass	T	1	800
Home for Aged	Fairhaven	Mass.	T	1-1/2	500
St. Like's Hospital	St. Louis	Mo.	A, C & T	1-1/2	1,000
Anheuser-Busch Inc.	St. Louis	Mo.	A	1-1/2	1,500
Schober's Restaurant	St. Louis	Mo.	A	1	1,200
McGuire Air Force Base	Ft. Dix	N. J.	T	3/4	5,000
Crotched Mt. Hayden Bldg.	Greenfield	N. H.	T	2	700
Deering-Milliken Bldg.	New York	N. Y.	T & F	1-1/4	15,000
Roehrig Insurance Agency	Kenmore	N. Y.	A & T	.. 3/4	800
Continental Inn	Kenmore	N. Y.	F & S	1	2,400
University of Buffalo	Buffalo	N. Y.	T	1	1,000
M & T Bank	Buffalo	N. Y.	A	3/4	4,600
Park School	Snyder	N. Y.	A	3/4	1,800
Greiner Bowling Alley	Cheektowaga	N. Y.	A	3/4	16,000
Derrick Mfg. Co.	Cheektowaga	N. Y.	T	1-1/2	3,200
Ohio State University	Athens	Ohio	T	3/4	650
Darling Store	Steubenville	Ohio	F	1	1,000
Temple of Healing Stripes	Akron	Ohio	A & F	1	11,000
Katherine Boswell Mem. Chapel	Ada	Okla.	A	3/4	1,800

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS (CONTINUED)

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Cain's Chris-Craft Sales Co.	Oklahoma City	Okla.	S	3/4	4,000
First Nat'L Bank	Clinton	Okla.	T	1-1/2	575
Chester A. Arthur School	Oklahoma City	Okla.	A	3/4	4,800
Nichols Hills Grade School	Nichols Hills	Okla.	A	3/4	4,700
Capri Motor Hotel	Oklahoma City	Okla.	A	3/4	1,600
Piluso's Supper Club	Portland	Ore.	A	3/4	11,000
Crucible Steel Co.	Primos	Pa.	T	3/4	10,000
Stricklands' Hotel	Mt. Pocono	Pa.	A	3/4	3,000
Elliott Company	Ridgway	Pa.	S & A	1	8,500
YMCA Auditorium	Dallas	Tex.	A	3/4	2,800
Monarch Realty Co.	Pawtucket	R.I.	A	1/2	2,600
Civic Auditorium	Dallas	Tex.	A	3/4	7,500
Women's Club	Richmond	Va.	A	3/4	2,700
Ivy Memorial Baptist Church	Newport News	Va.	A	3/4	3,200
Information Bldg. Colonial Williamsburg	Williamsburg	Va.	S	3/4	5,200
Cafeteria Bldg. Motor Hotel	Williamsburg	Va.	S & T	3/4	4,500
Dean's Tavern	Tacoma	Wash.	A	3/4	1,200
Jefferson Golf Club	Seattle	Wash.	A	3/4	1,500
Palladium Bowl	Seattle	Wash.	A	3/4	10,100
Sunset Bowl	Seattle	Wash.	A	3/4	19,300
Bob's Restaurant	Seattle	Wash.	A	3/4	1,200
Olympic Hotel	Seattle	Wash.	T & F	3/4	7,600
O. Cohen Res.	Seattle	Wash.	A	3/4	450
University Store Bldg.	Seattle	Wash.	A	3/4	1,700
General Insur. Co.	Seattle	Wash.	A	3/4	2,000
Broadway Bowl	Seattle	Wash.	A	3/4	7,200
State Office Bldg.	Bellingham	Wash.	A	3/4	8,700
R. Fiford Res.	Bellingham	Wash.	A	3/4	500
Band Box Cafe	Renton	Wash.	A	3/4	500
Naval Torpedo Station	Keyport	Wash.	A	3/4	4,500
Kohler High School	Kohler	Wisc.	T	2	2,000
Telephone Service Bldg.	La Crosse	Wisc.	A	3/4	3,000

1. OPERATING EQUIPMENT

The equipment normally required for the application of "Limpet" is as follows:

1 Spray Machine
1 Multijet Spray Gun (6 Jet or 9 Jet)
1 Fiber Blowing Hose
1 Hose for Air (to the gun)
1 Hose for Air (from the gun)
1 Hose for Air (to the regulator)
1 Hose for Water (to the gun)
1 Air Regulator
1 Fluid Regulator
1 Fluid Filter
1 Set of Pressing Tools for Tamping and Finishing

Additional equipment may be necessary depending on the job location and requirements.

If compressed air is not readily available, a compressor is necessary to supply air with which to atomize the fluid and to operate the spray machine. The compressor must be one which can supply at least 5.5 cubic feet per minute with a displacement of 8.8 C. F. M. and an operating pressure of 50-80 pounds per square inch. One such compressor would be model 33-1128 as manufactured by the Binks Manufacturing Company, Chicago, Illinois.

Occasionally, the applicator may find it necessary to spray to porous surfaces or toughen up the surface of the "Limpet" application by using TS.2. When this condition occurs, a pressure tank with an additional fluid hose and a two- way valve at the gun will be necessary. It is recommended that the pressure tank have at least a ten (10) gallon capacity, a double regulator, and an agitator to keep the emulsion in suspension.

All the above auxiliary equipment, with the exception of the pressing tools, are available from Armstrong. A sketch of the suggested tools and their dimensions is shown in Exhibits 8 and 9.

It is strongly recommended that each member of the spray crew wear a dust respirator at all times during the application process. Respirator must have U. S. Bureau of Mines approval.

2. PROCEDURES

A. Organization

Proper organization is necessary. The following should be thoroughly investigated before workmen arrive to start the operation.

1. Is water available nearby? Will it be sufficient in pressure and volume?

   A volume of .5 gallon per minute and a pressure of at least 10 pounds per square inch is necessary for each machine.

2. Is compressed air available? Will it be constant?

   If compressed air is available at the job site, make sure the delivery is 5.5 cubic feet per minute at a pressure of 50 to 80 pounds per square inch for each machine in use. If compressed air is not available, a compressor capable of delivering the required air is necessary.

3. What voltage electricity is available and how many machines are being carried on one supply line?

   While most machines are equipped with 115-230 volt single phase motors, make certain the motor on the spray machine is wired to match the voltage supplied. Where only 440 volt power is available, a three phase motor must be installed on the spray machine. Caution must be exercised to avoid overloading the power available or there will be overheating and possible shutdown.

4. Will any scaffold be needed? If so, what kind and how much?

   If the unit or units to be sprayed are easily accessible, scaffolding may not be necessary. If the surfaces to be sprayed are above the average height and not within easy reach, see that adequate scaffolding is provided.

5. Is the material and spray equipment on the job site? If not, will it be there in time?

Not getting material and equipment to the job site can prove very costly especially when several machines and men are involved.

It is good practice for the foreman or job superintendent to have all the equipment assembled and have a trial run made before job start-up.

B. Assembly and Connection of Equipment

A sketch with the operational hookup arrangement is shown in Exhibit 10. Identification of the different connections are as follows:

1. Air Connection at the Gun - The male fitting on the gun is a 9/16", 20 threads to the inch. The red hose (Binks 71-105) to be connected at this point should have a 9/16", 20 thread female fitting (Binks 72-318).

2. Fluid Connection at the Gun - The male fitting for the fluid connection is a 9/16", 20 thread also. The water regulating valve which is connected at this point should be equipped with 9/16", 20 male and female connections.

2A. Fluid Connection with the Two Way Valve - The two way valve called "C-22" in the parts section is used whenever another material such as TS.2 is used in connection with the application of "Limpet". This whole unit is installed in place of the regulating valve used when water only is being used. The male fittings on the two way end are ¾" straight pipe thread.

The black fluid hoses (Binks 71-208) come equipped with a Binks 72-326 female 9/16", 20 on one end and a Binks 72-323 3/8" straight pipe thread on the other. Care should be exercised when using the two way valve since a Binks 72-18 adapter must be used to change the fitting from ¾ St. P to 9/16", 20 thread.

3. Air Connection at the Gun - This connection with the slip-on fitting is used to connect the clutch control unit on the spray machine with the gun. The air hose (Binks 71-110) has no fittings on either end.

4. Air Connection at the Compressor or Air Supply Line - Depending on the source of compressed air (either the compressor or plant supply) this 71-105 air hose has a Binks 72-317 ¼" straight pipe thread connection on this end. It should be connected to the outlet end of the air regulator (Binks 85-101) which is attached to the air supply.

5. Air Connection (Pressure Tank Inlet) When TS.2 Is Used In Connection With The "Limpet" Application - A supply of compressed air is needed for the pressure tank as well as the gun and machine. Use a hose (Binks 71-108) with (72-333) 3/8" straight pipe thread fittings to connect the air supply with the tank. The pressure tank has a double air regulator (Binks 85-104) which controls the pressure in the tank and permits individual regulation of air to the gun and machine. The pressure in the tank (the regulator on the left) is the same as that for the water.

6. Air Connection Outlet (Second Regulator on the Pressure Tank) - The male fitting should be a ¼" straight pipe thread in order to connect with the spray gun by means of the same hose (Binks 71-105), previously noted in Connection 1.

7. Fluid Connection Pressure Tank - The fluid outlet has a 3/8" straight pipe thread fitting, and it is connected to the second black or fluid hose previously noted in 2A.

8. Air Connection - Clutch Control - The hose (Binks 71-110) with no fittings leading from the slip-on connection at the gun is connected to the machine at this point. Sufficient air must pass through it at all times in order to operate the machine properly.

9. Fiber Hose Connection - Gun - The 2" fiber hose slips over the end of the gun and over the outlet tube at the fan unit (10).

10. Fiber Hose Connection - (10) - same as # 9

11. Water Inlet Connection - Fluid Regulator - The fluid regulator with a 3/8" female fitting is connected to the water supply point.

12. Water Outlet Connection Fluid Regulator - The outlet fitting of the fluid regulator is 3/8" straight pipe male and it is connected to the black fluid hose (Binks 72-208) with a (Binks 72-325) used in No. 2.

SPRAYED "Limpet" ASBESTOS

MACHINE OPERATING INSTRUCTIONS

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C. The Machine

To apply Sprayed "Limpet" Asbestos successfully, the asbestos fibers must be delivered to the spray gun in a constant stream and at a constant speed. The specially designed machine licensed by Armstrong Contracting and Supply Corporation assures uniform application. It is the only machine which can be used to apply Sprayed "Limpet" Asbestos economically.

The basic operation involves an endless belt with spikes called the creeper sheet (noted as part A-45, Exhibit 2), which lifts asbestos fibers from a hopper and passes beneath an adjustable revolving brush (noted as A-57, Exhibit 3). This control brush regulates the amount of fiber permitted to pass through the machine by increasing or decreasing the distance between the creeper sheet (A-45) and the brush (A-57). This is done by turning the control wheel (Part A-60, Exhibit 3, shown by part A-53, Exhibit 2). The control wheel operates on a cam principle, and when the wheel is turned to the left, the fiber flow is decreased. When the wheel is turned to the right, the fiber flow is increased. Any excess fiber is thrown back into the feed hopper due to the counterclockwise motion of the control brush (A-57). The fiber is then carried forward and stripped from the creeper sheet by the front or stripping brush. (Noted as part A-48, Exhibit 3, located by A-49, Exhibit 2). Dropped down the fan chute (A-89, Exhibit 2) and on through the fan (A-67) to the gun.

D. The Spray Gun

The spray gun is operated by a single trigger having three working positions. (See Exhibit 11). When the trigger is pushed to the full forward (#3) position, it permits air to flow to the clutch control (part A-107, Exhibit 4) shown near parts A-126 and A-127, Exhibit 2, which pushes down the plunger (part A-109, Exhibit 4) into the output disc (part A-39, Exhibit 5) starting up the creeper sheet (A-45) and the flow of fiber to the fan and, eventually, through the gun.

As the asbestos fibers leave the gun nozzle, they are intercepted by an atomized spray of water from the jets on the gun. This interception takes place approximately nine (9) inches away from the gun. In order to apply the coating properly, the gun should be held 18 to 20 inches from the surface and at an angle of approximately 45 degrees. The operator should seek to achieve the desired thickness as soon as possible rather than in thin laminations. Each advancing layer of "Limpet" should overlap the preceding layer slightly as the strength of the applied "Limpet" depends as much on the interlacing or felting of the fibers as upon the bonding materials it contains. A slight excess of 3/8" thickness is sprayed on, and the surface is pressed to the

specified thickness. A final overspray of plain water will toughen the surface.

E. Preparation of Surfaces

All surfaces should be thoroughly cleaned to remove dust, dirt, grease, rust, or loose paint. "Limpet" will adhere to the surface to which it is sprayed; if the surface is loose, the "Limpet" coating will also be loose.

F. General Cleanliness

Failure to keep the end of the spray gun clean results in the fiber being blown out of the main air stream and adversely affects the appearance of the finished spray application.

Careless handling of spray equipment can create the erroneous impression that a "Limpet" application is not a clean one. If, for instance, the gun is held too far from the surface sprayed, the results are not satisfactory.

Bags of fiber should be stacked neatly out of the way of usual plant or other traffic.

At the end of each day's spraying, all excess damp fibers should be cleaned from surrounding surfaces. If allowed to set, the material cannot be brushed off but can be removed only with difficulty.

G. Identification of Improper Application

In the application of Sprayed "Limpet" Asbestos, conditions may develop in the mechanical operation of the spray machine which must be quickly identified and corrected by the operator to assure a high quality finished job.

To assist the operator in recognizing such conditions and to enable him to make the necessary adjustments, the following check list will be found helpful:

FAULTS	CORRECTION
Fiber Too Wet	
1. Water pressure too high	Reduce pressure to 5 PSI plus 1 PSI per each 2 feet above level of machine (Avg. 12 PSI).

2. Fiber stream too weak	Check amount of fiber in hopper - should be 1/3 full.
3. Wrong setting on control brush	Rotate control wheel (A-60) to the right.

Fiber Too Dry

1. Water pressure too low	Increase PSI to 5 PSI plus 1 PSI per each 2 feet above level of machine (Avg. 12 PSI).
2. Water jet or jets choked	Clean out jets with small piece of wire. If this does not work, remove nozzle and blow air through front of jets.
3. Fiber stream too heavy	Check hopper—may be overfilled or reduce flow of fiber by turning control wheel (A-60) to left.
4. Gun held too near to surface being sprayed	Gun should be 18-20 inches away.

Fiber Too Slow

1. Wrong setting of control brush	Increase fiber feed by adjusting control wheel (A-60).
2. Belt skipping	Shorten belt by cutting and clipping together.
3. Hose choked	Straighten hose, check for kinks, loosen fiber by shaking hose, clear hose by blower action of fan.
4. Fan Speed too low for length of hose	Increase motor pulley to 7" or reduce fan pulley to 1-3/4".
5. Too many bends in fiber hose	Straighten hose so there are no bends.
6. Fan impeller or casing worn	Replace.

Fiber Too Fast

1. Wrong setting of control brush	Reduce by turning control wheel (A-60) to left.

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M123

2. Fan speed too high for length of hose	Reduce motor pulley to 6"/50 ft. fiber hose, or increase fan pulley to 2½" P.C.D.
3. Too much fiber in hopper	Take out excess--should be 1/3 full.

Fiber Erratic

1. Belt skipping	Shorten belt.
2. Hose choked	Clean out as noted above.
3. Hose crushed	Either repair or cut out damaged end and reconnect by 2" O.D. tube no less than 1-7/8" I.D.
4. Too much fiber in hopper	Remove excess—should be 1/3 full.
5. Pneumatic control not working properly	Check control cock at gun or check clutch control (A-107).

Fiber Stream Distorted

1. Gun end blocked	Turn off fiber and water supply at gun. Run finger around inside diameter of gun end.
2. Gun end distorted	Repair—face mat must be circular
3. Air pressure to gun too high	Reduce air pressure (maximum 35 PSI).
4. Air or water jets choked	Remove nozzle and clean.

Fiber Flying About

1. Gun held too far from surface	Should be no more than 18-20" away.
2. Fan speed too fast	Reduce motor pulley diameter. Increase fan pulley diameter.
3. Air pressure too high	Reduce to 30-35 PSI.
4. Gun end blocked	Clean out as above.
5. Gun being waved about	Spray in straight uniform pattern.

No Fiber Issuing from Gun

1. Fan duct or hose choked	Shut off machine--clean out by hand before starting up.
2. Foreign body in fan or hose	Same as above.
3. Creeper sheet loose or jammed	Correct by adjusting belt at adjusting screw. (A-24, Exhibit 2)
4. Pneumatic clutch control not working	Check and repair.

Uneven Surface on Sprayed Coating

1. Each row of fiber not carefully overlapped	Spray so that rows are overlapping.
2. Gun pointed at right angles to surface	Should be 45°
3. Gun not moved at even rate	Move gun slowly and evenly.
4. Fiber too fast	Check control brush setting, fan speed and amount of fiber in hopper. Make proper adjustment.
5. Fiber erratic	Check belting, condition of hose, fiber in hopper or clutch control. Make proper adjustment.
6. Gun too near surface	Move gun back so that nozzle is 18" to 24" away.
7. Gun too far from surface	Move gun so that nozzle is 18" to 24" away or closer when spraying with crosswind.
8. Fiber too wet	Reduce amount of water or increased amount of fiber.

H. Pressing

All Sprayed "Limpet" Asbestos must be pressed. Pressing links the fibers to form a monolithic coating and assures good contact with the surface sprayed.

The amount of pressing required should be even and firm enough to integrate hanging fibers. Too much pressing reduces the thickness, and additional fiber must be applied. An uneven pressure will produce marks on the pressed surface. Proper pressure is achieved only with practice.

On exposed work, appearance is important, and the "Limpet" surface should be pressed twice. The first pressing should be done parallel to the line of spray. The second pressing should be made perpendicular to the first as shown below. It is sometimes necessary to overspray sections to attain a straight smooth surface. Straightness should be checked with the straightedge described in Exhibit 9.

Pressing is the final phase of the "Limpet" application; therefore, it is most important that it be done with utmost care. It must be remembered that the "Limpet" spray must be constant and the fibers applied in a uniform coat. No amount of pressing can, in itself, compensate for faulty spraying.

I. Pressing - Hand Tools

Pressing tools should be so designed that they are easily handled. Much of the pressing is done overhead so a good tool has to be lightweight; it should be correctly balanced and should fit the hand comfortably.

Spray operators should have the following working tools:

Flat surfacing tool	-	1
Hand surfacing tool or floater	-	2
Plasterer's steel finishing trowel	-	1
Corner pressing tool	-	1
Steel pointing trowel	-	1
Straightedge	-	1

All tools should be kept clean.

It is recommended that each presser carry a small whisk broom in his pocket and use it frequently to clean tools and the areas around the sprayed surface.

Regulating Thickness

The gauging of thickness is a factor which must be gained through time and experience. Thickness can be measured with a simple tool made from

a piece of wood and a finishing nail driven into the wood to the desired length. From time to time the presser can check the thickness by pushing the nail into the "mat".

J. Safety Precautions

See that machine is properly grounded.
Stop machine before making adjustments.
Keep all hoses free from kinks and bends.
Do not point gun at another person.
Do not look down the gun while machine is running.
Do not tamper with compressed air.
Always wear a respirator; see that the man feeding the machine also wears one.
Do not remove fiber from the feed hopper while the machine is running.
Do not remove belt guards unless absolutely necessary. Replace before starting machine.

K. Cleaning of the Spray Machine

1. Clean-Out Door. Every few hours during operation, the hinged door at the rear of the machine near the floor should be opened and surplus fiber cleaned out after first disconnecting the power. Use a stick (do not use hands).

2. Drum Faces. Disconnect power - The hinged door at the sides of the machine should be opened every day and any loose fiber on the inside of the spiked belt (creeper sheet) or against the drum face should be removed by hand. If this is not done, the packed fiber building up on the drum face can cause the belt to be stretched out of alignment. When using white surface fiber, special attention should be given to this cleaning operation, since this finer fiber works down the belt more readily.

3. Guide Strips. Above the side doors there is a metal guide strip for the spiked belt. These strips should be inspected for fiber dust and kept clean by running the hand along them from the underside of the spiked belt. Please disconnect machine before cleaning.

4. Spiked Belt or Creeper Sheet. This belt should be kept free from water or wet fiber.

5. Fan Impeller Blades. These blades should be cleaned of any fiber sticking to them by lifting the flap to the fan air inlet and reaching the blades with the hand. Always be certain the machine is shut down for this job. Disconnect power.

6. Rear Control Brush. This brush is kept clean of fiber by an adjustable comb attached to the frame of the machine. The comb is set so that its teeth just enter the brush. The rear control brush can be used to clean the fiber from the spiked belt simply by turning the control knob to the left (counterclockwise) for a few seconds while the belt is moving. Such action brings the brush against the spikes and clears the fiber which is then discharged through the fan.

7. Front Stripping Brush. This brush strips or clears the fiber from the spiked belt and throws the fiber into the fan duct. The brush should enter the spikes but should just clear the belt fabric. Permanent setting is made at the factory. Side brackets, however, permit adjustments which may be necessary to compensate for wear from continued use.

L. Maintenance of Spray Machine

Daily Maintenance

Remove waste fiber from underneath front of Creeper Sheet. (Blow air through side doors.)

Check grease cup on housing of fan bearings.

Check tension of both fan and driving drum belts. Adjust if necessary. Belts that are too tight will place an overload on motor, fan bearings, and oilite bushings of driving drum assembly. Flush T. S. 2 line with water.

Weekly Maintenance

Check condition of impeller blades. This can be done by looking into the fan outlet with the help of a flashlight (or match) and turning the impeller slowly at the same time. If the blades show wear, replace entire fan impeller assembly. Make sure machine is disconnected.

Dismantle pneumatic control cylinder and check condition of its component parts. Replace all worn parts. Before reassembling, clean cylinder carefully. Oil the cup washer lightly with castor oil. Thoroughly dry all other parts.

Check tension of creeper sheet. Adjust if necessary—it should be just enough to move the creeper sheet at a regular speed without slipping.

Remove belt guards and check condition of chains and chain sprockets. Clean chain and sprockets with solvent. Lubricate and replace guard.

Check multi-jet spray gun for air and water leaks. Replace rubber joint and other parts if necessary. Rub graphite on interior surface of fan chute to prevent fiber accumulation.

Monthly Maintenance

Observe operation of all oilite bushings carefully. If noticeably worn they should be replaced. (Note: Oilite bushings do not require lubrication.)

Check:

The front stripping brush should be checked periodically to note any wear. Any uneven surfaces will result in an uneven spray. The rear controlling brush also must be checked to observe the amount of fiber being fed to the fan impeller. When either is worn it must be replaced.

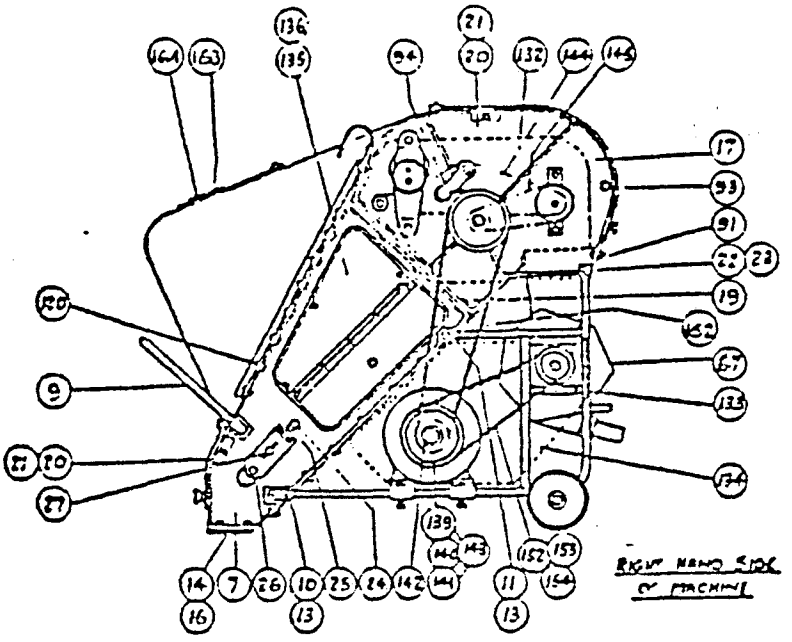
Check multi-jet spray gun and replace nozzle, back plate and control cock assembly, should this be required. Careful handling of the spray gun will assure its trouble-free, efficient operation.

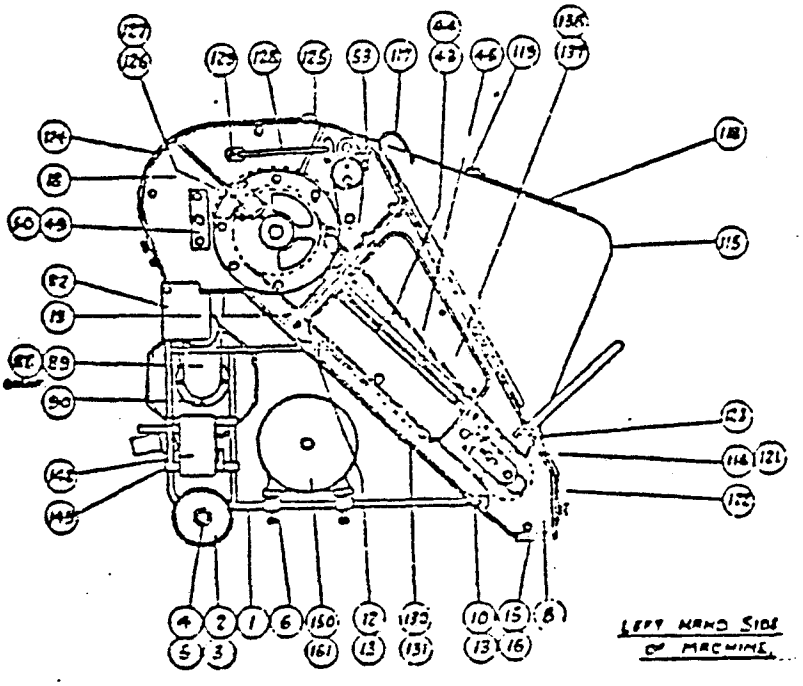
Check fiber hose for leaks, breaks and general condition. Also check air and water hoses for leaks—fittings and joints for efficiency.

Check condition of pressure tanks and performance and operation of pressure regulators and gauges.

M. Main Drum Reduction Gear. There are three plugs--one for filling, one for oil level, and one for draining. Inspection should be made every 2 to 3 weeks to see that oil flows from the middle or oil level opening. At the end of each 6 months, oil should be drained and refilled with S.A.E. 30 or winter grade motor oil until the level is reached.

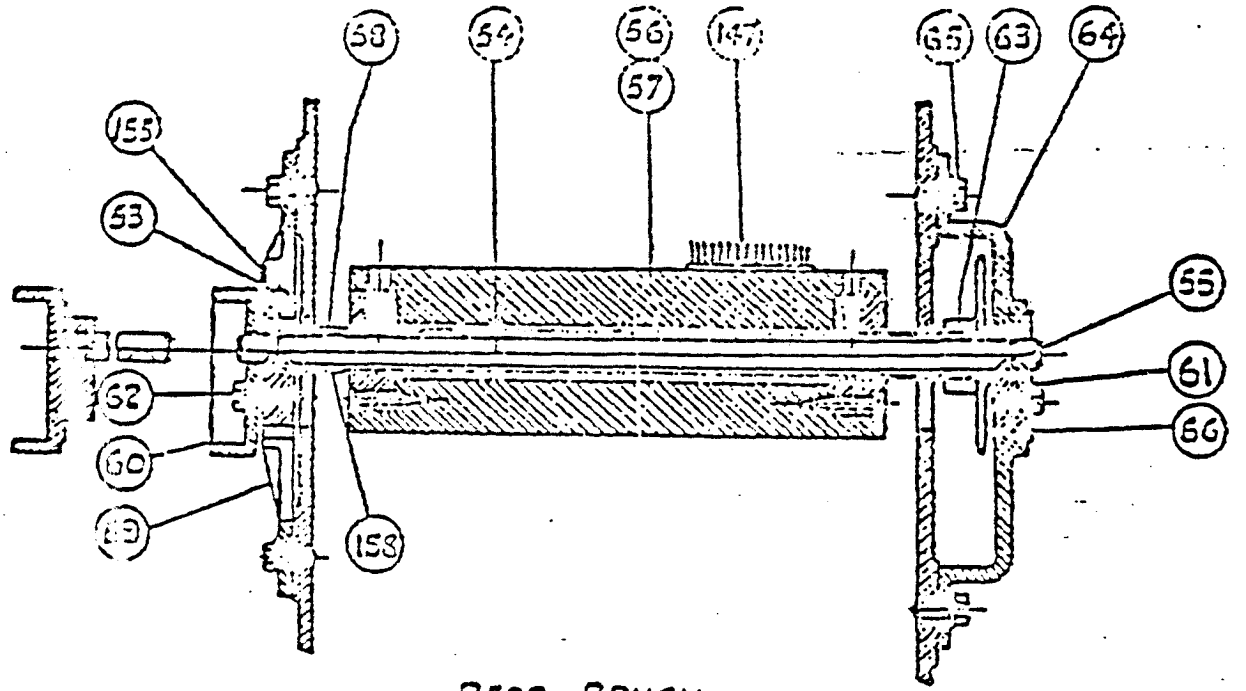
IIA TYPE SPRAY MACHINE



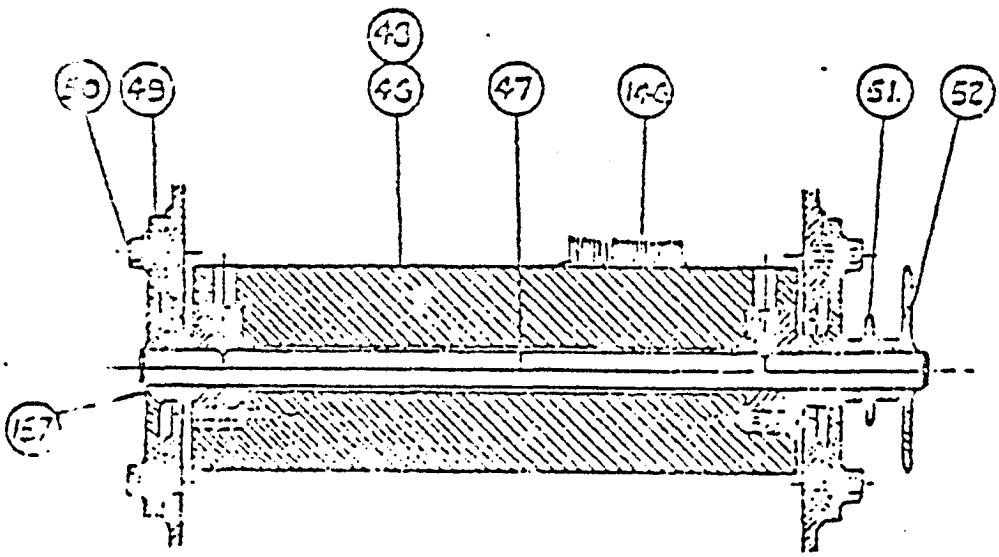


USE PREFIX LETTER "A" WITH PART NUMBERS

EXHIBIT 2



REAR BRUSH.



FRONT BRUSH

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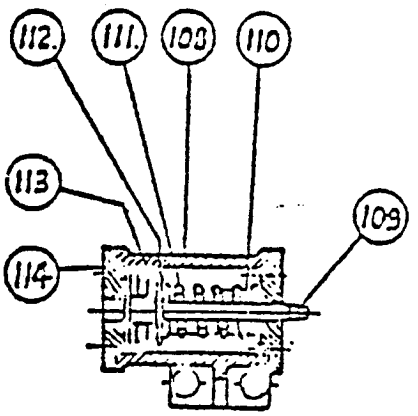
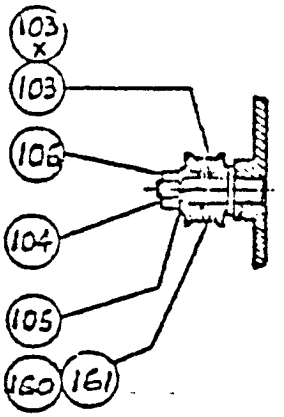


COMPLETE ASSY PT. Nº 107.

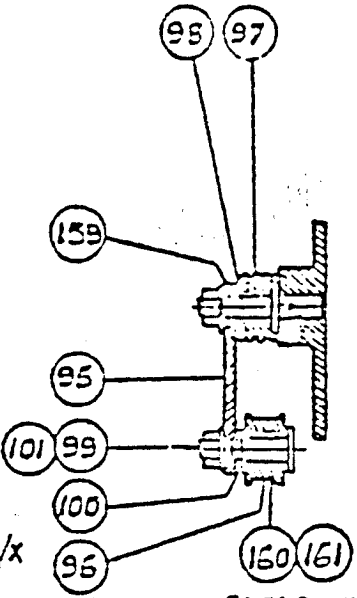
PLUNGER ASSEMBLY.



PT Nº 102/X

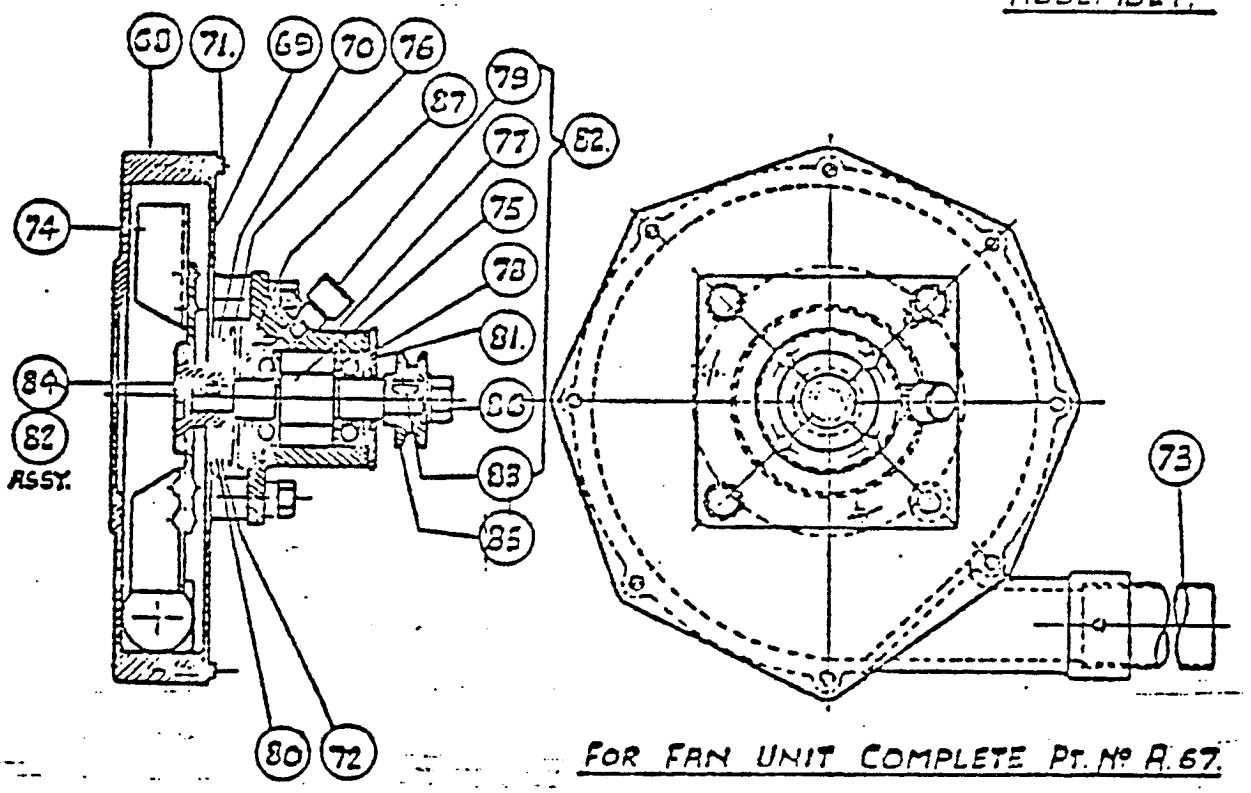
COMPLETE ASSY PT. Nº 102.

ROLLER ASSEMBLY.



COMPLETE ASSY PT. Nº 94.

JOCKEY LEVER ASSEMBLY.



FOR FAN UNIT COMPLETE PT. Nº A.67.

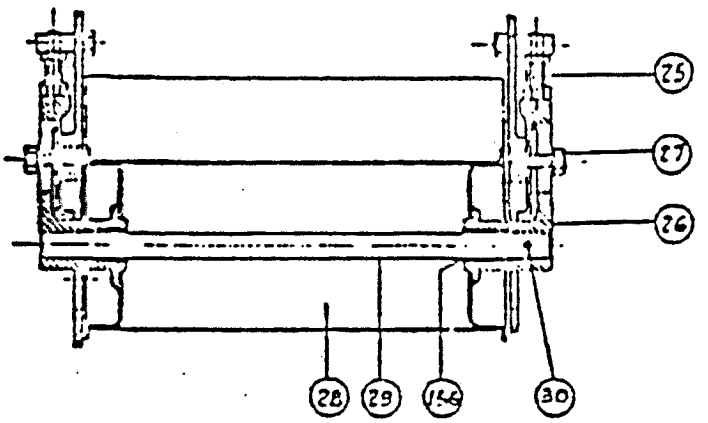
FAN UNIT.

USE PREFIX LETTER "A" WITH PART NUMBERS

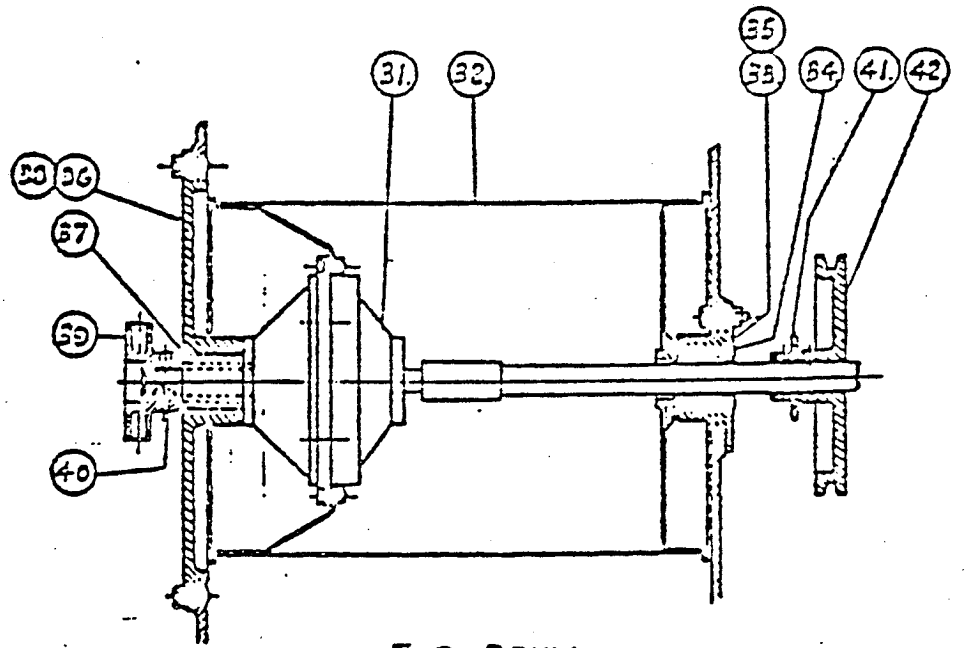
EXHIBIT 4

IIA TYPE SPRAY MACHINE

- CONTINUED -



BOTTOM DRUM.



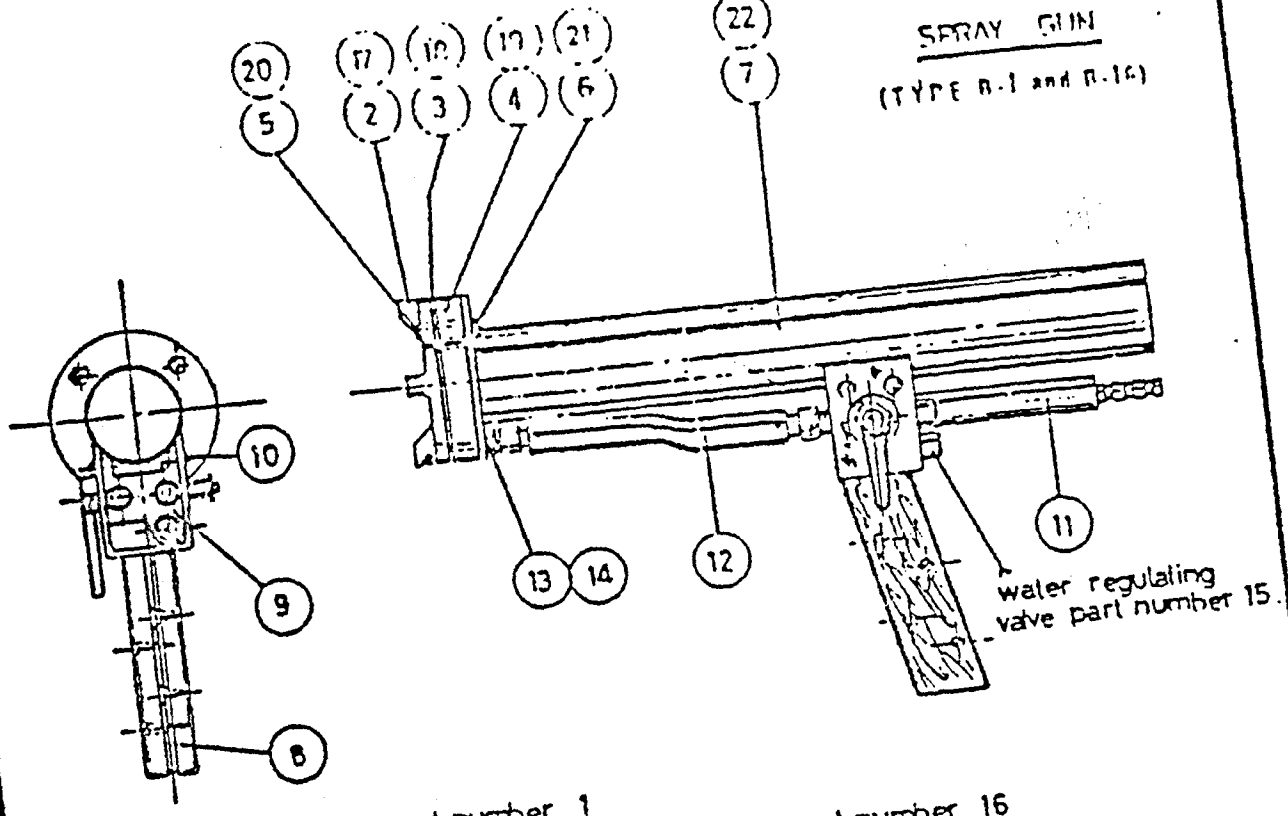
TOP DRUM.

USE PREFIX LETTER "A" WITH PART NUMBERS

EXHIBIT 5

SPRAY GUN

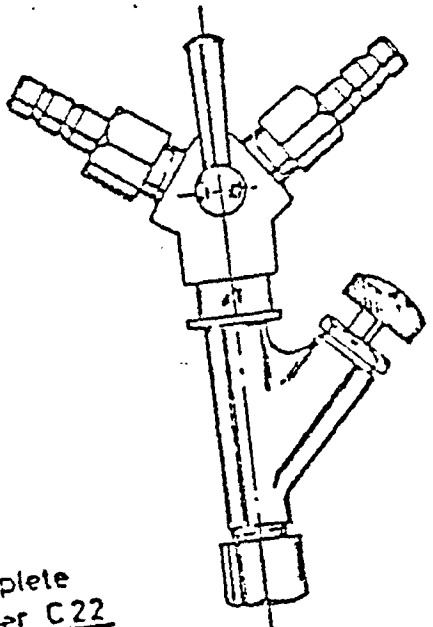
(TYPE B-1 and B-1A)



2" spray gun complete part number 1

1¾" spray gun (made only to special order) complete part number 16

Use Prefix Letter 'B' With Part Number

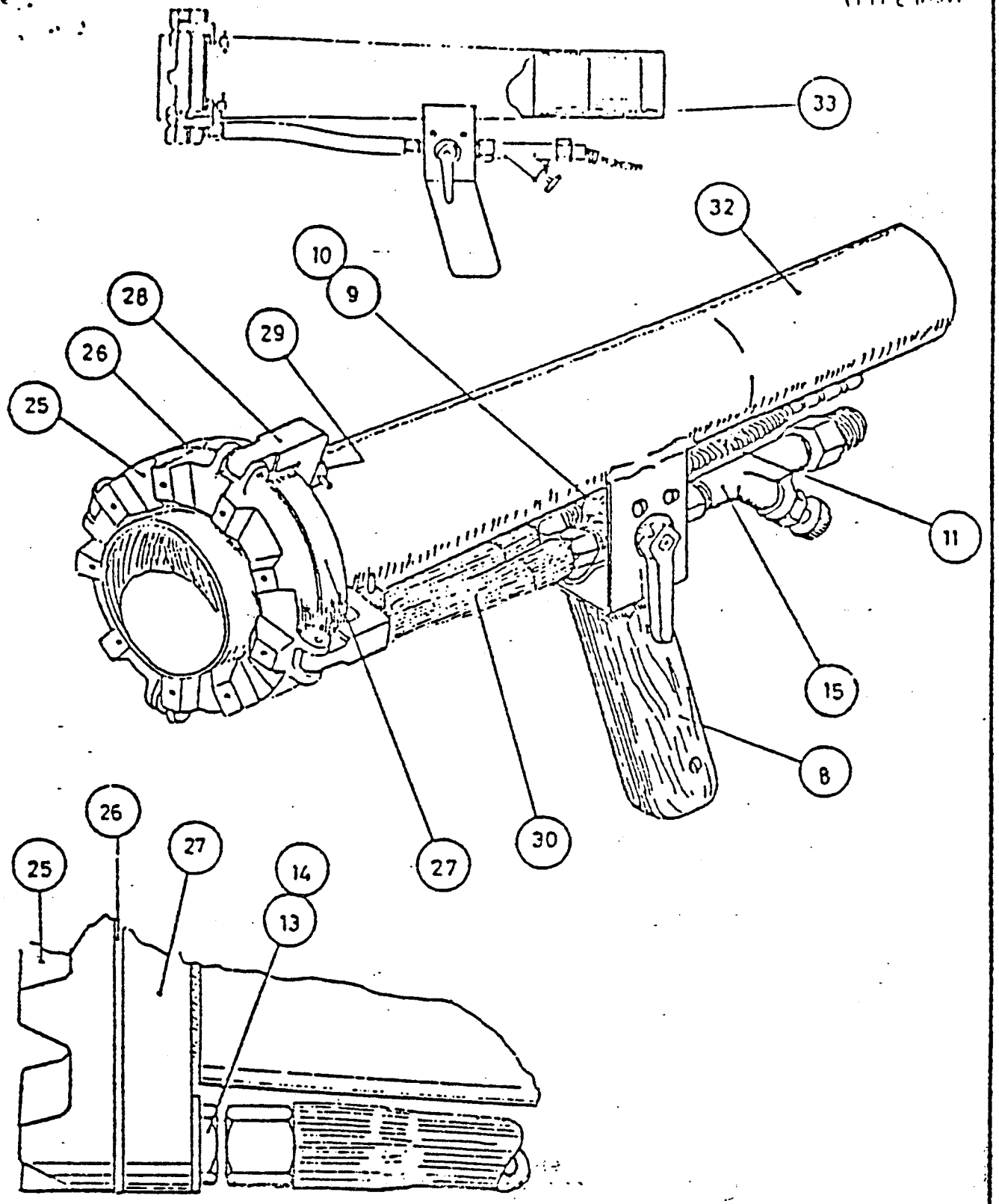


Item complete part number C22

N° 43 TWO WAY CONNECTION

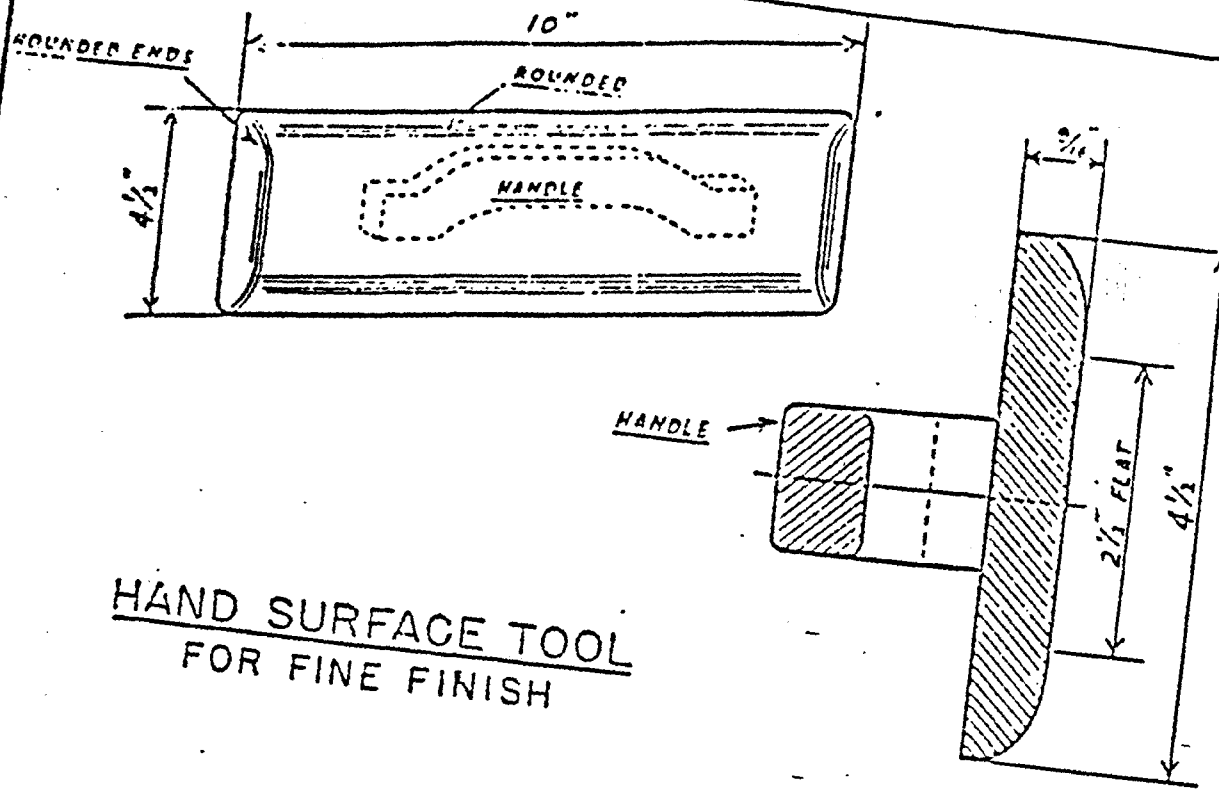
Use prefix letter 'C' with part number

EXHIBIT

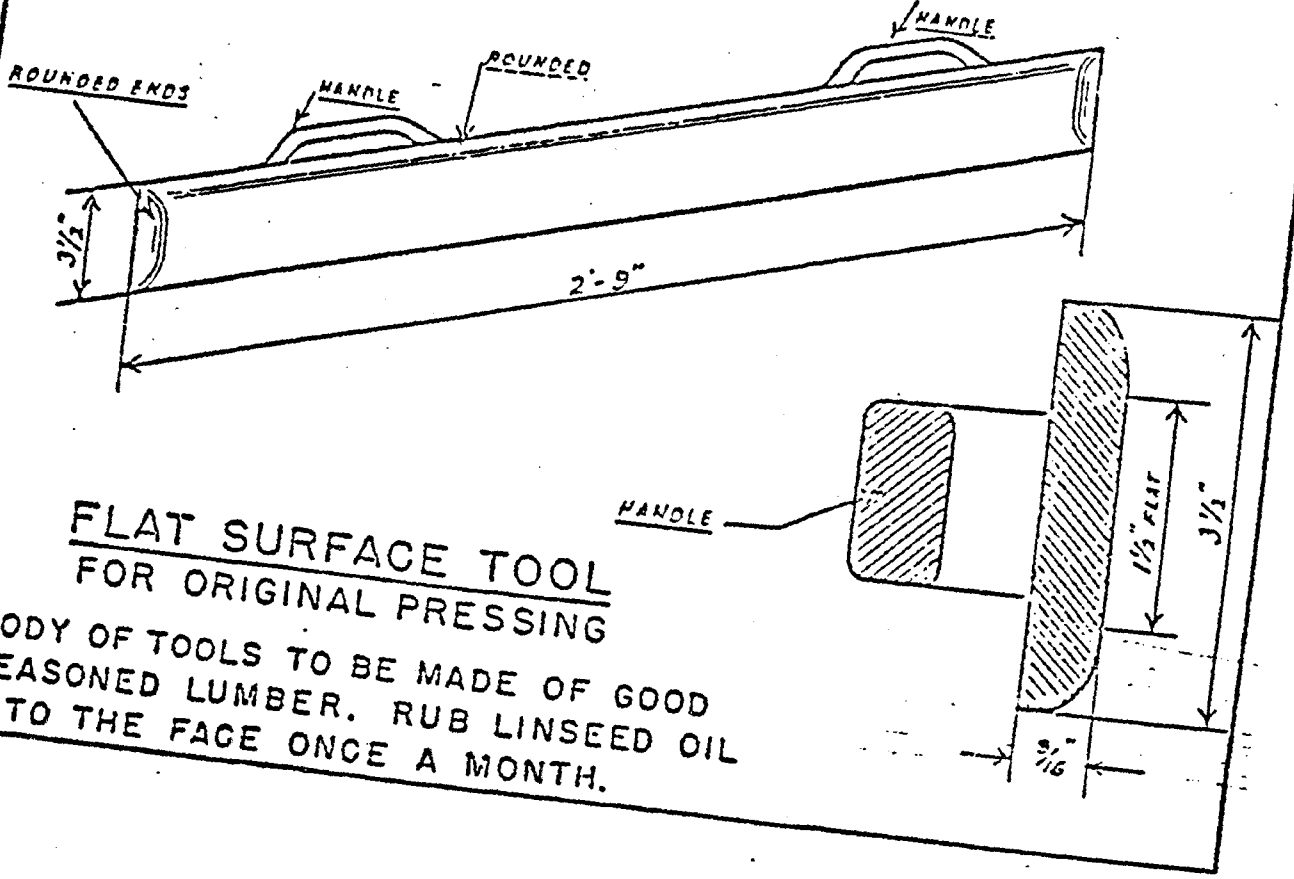


USE PREFIX LETTER 'B' WITH PART NUMBER

EXHIBIT 7



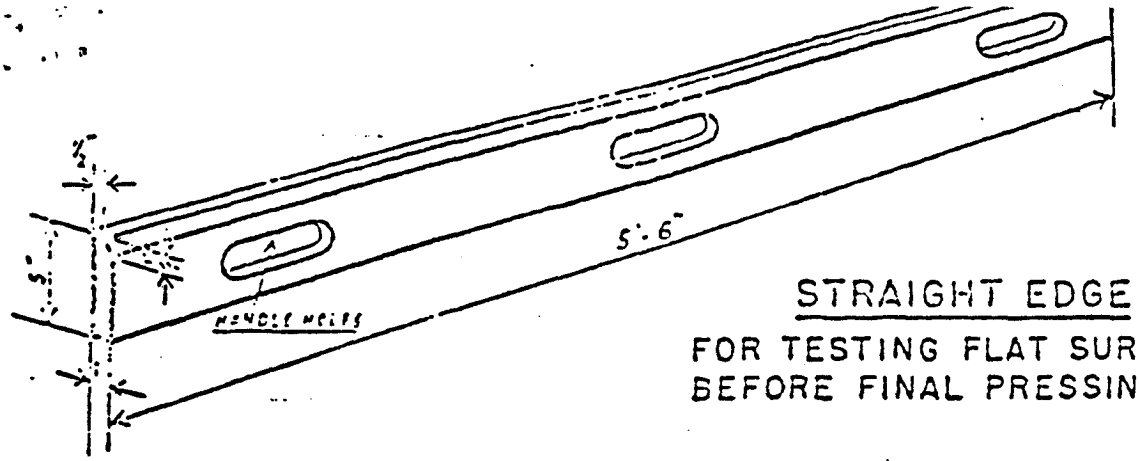
HAND SURFACE TOOL
FOR FINE FINISH



FLAT SURFACE TOOL
FOR ORIGINAL PRESSING

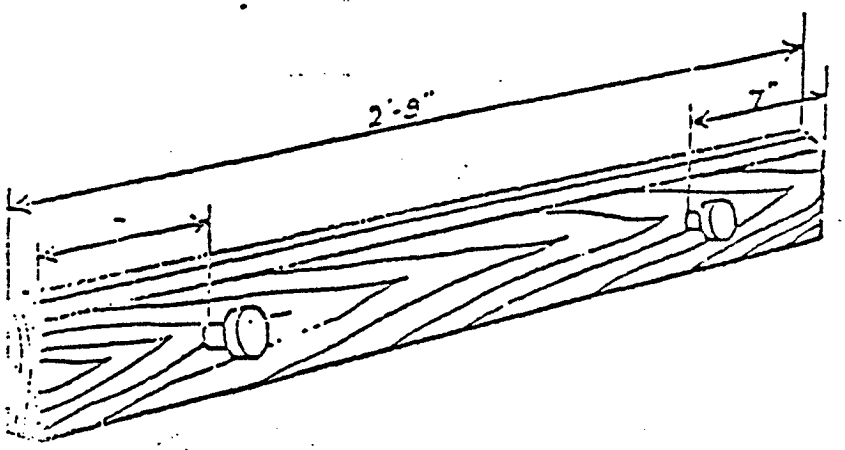
BODY OF TOOLS TO BE MADE OF GOOD SEASONED LUMBER. RUB LINSEED OIL INTO THE FACE ONCE A MONTH.

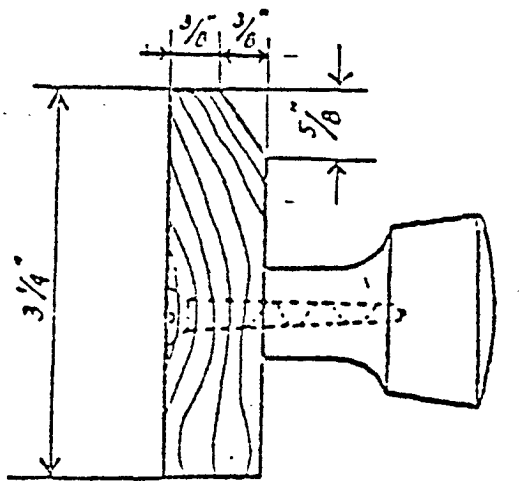
EXHIBIT 8



STRAIGHT EDGE

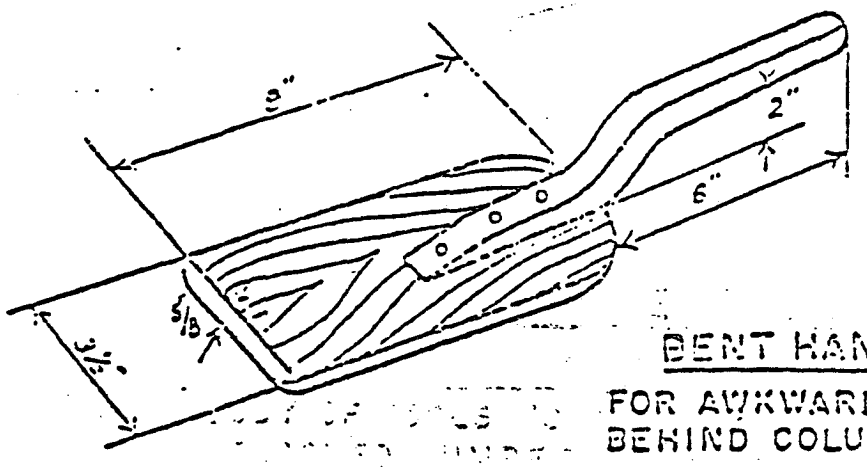
FOR TESTING FLAT SURFACES
BEFORE FINAL PRESSING





CORNER PRESSING TOOL

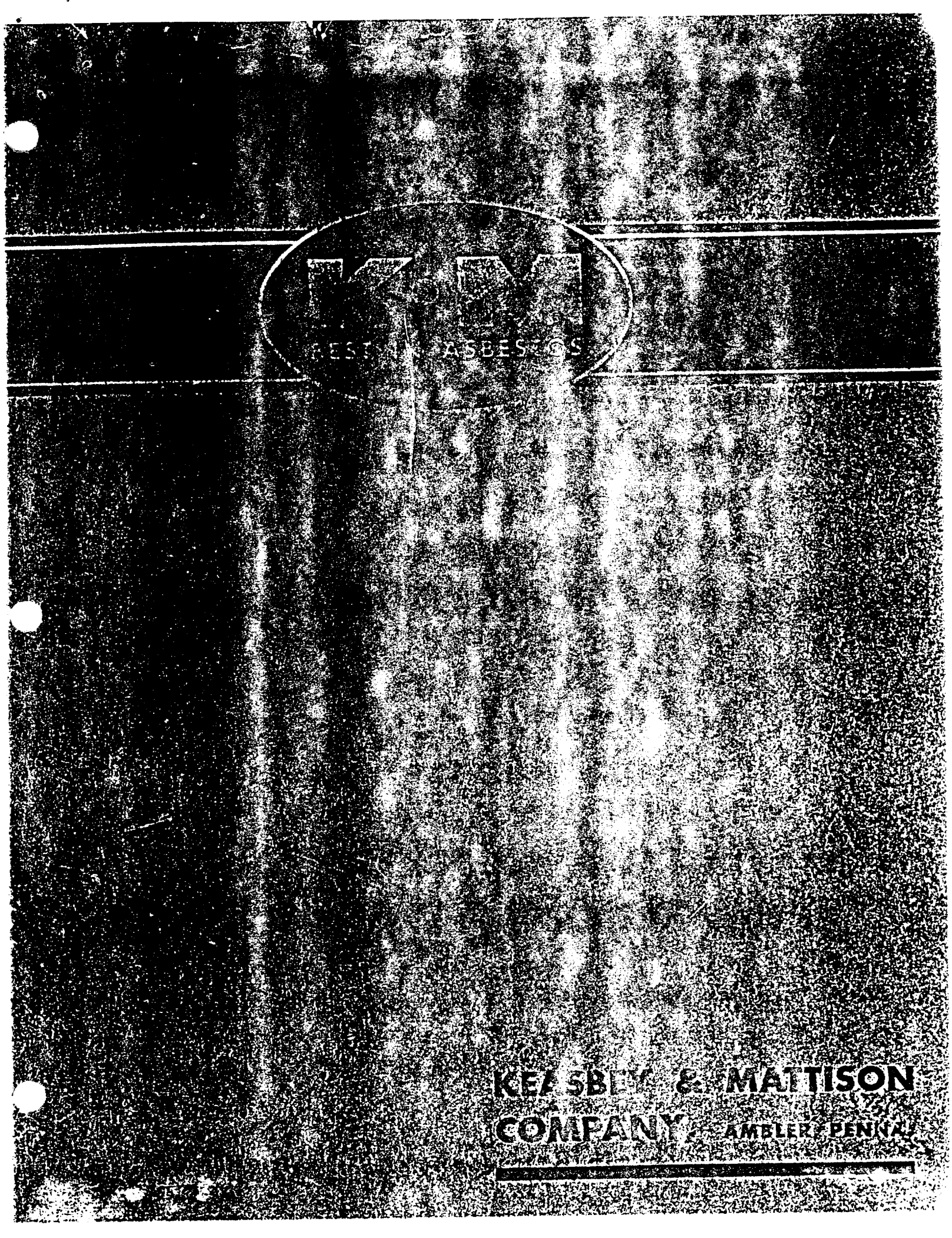
FOR INTERNAL CORNERS
BEVELLED FOR BETTER VISION



BENT HANDLED TOOL

FOR AWKWARD WORK SUCH AS
BEHIND COLUMNS OR BRACKETS—

EXHIBIT 9


KEASBEY & MATTISON
COMPANY
AMBLER, PENNA.

SPRAYED "LIMTET" ASBESTOS

LW.25 INSULATION FIBER

LW.25 Insulation Fiber replaces the LB.4 and LW.4 Insulation Fibers. It is a blend of thoroughly tested 100% mined asbestos fibers specially developed for insulation and anti-condensation purposes. The appearance of the finished application is similar to the LW.21 Acoustical Fiber. A dry, inorganic binder is incorporated with the asbestos fibers. Thus, one fiber grade, LW.25, now produces a complete coat.

The covering capacity of LW.25 is 12-oz. per sq. ft. per 1" thick. The conductivity or "K" factor is 0.32 BTU/hr./ft.^{2}/$^\circ$F./in. at 50° F. mean temperature. The rate of application is 100 sq. ft. per hr. per 1" thick.

Instructions for Spraying LW.25.
These follow closely the instructions for LW.21. Refer to those instructions for:

1. Air and Fluid Pressures.
2. Setting of control brush.
3. Application of adhesive coat.
4. Spraying the main thickness coat.
5. Pressing the surface.

The exposed surface of LW.25 can receive the color process or can be left in its natural color. Pressing can be done with either the plain wood tool or with the hobnail pressing tool. If the color process is not used, the finished surface should receive a final overspray with water or preferably, an overspray with TS2 solution. This sets and toughens the surface.

The following table has been established from weights obtained by skilled spray operators. For estimating purposes, allowance should be made for variations in take-off, skill of operator, and overall material requirements.

LW.25

Thickness Finished	Thickness Unpressed	Ounces Per Sq. Ft.	Lbs. per 100 Sq. Ft.	Sq. Ft. per 70 lb. Bag
1/2"	1"	8	50	140
3/4"	1-1/4"	10	63	112
1"	1-1/2"	12	75	93.25
1-1/4"	1-3/4"	14	88	80
1-1/2"	2"	16	100	70
2"	2-1/2"	20	135	56

SPRAYED "LIMPET" ASBESTOS

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*SPRAYED "LIMPET" ASBESTOS

Nothing Quite Like It Anywhere

Sprayed "Limpet" Asbestos forms a seamless blanket of asbestos fiber. It adheres to all clean surfaces of wood, metal, masonry, plaster or glass and whether straight, curved or irregular surfaces. The blanket is formed by spraying self-bonding asbestos fiber on the surface which is to be covered. It adheres as tightly as the famed rock-clinging marine mollusk from which Sprayed "Limpet" Asbestos gets its name. As an added measure to insure that the initial bond is made, a primer is applied to the surface prior to application of fiber.

A blanket of this unique material possesses remarkable acoustical, sound deadening and insulating properties. It is light in weight, highly fire resistant, and it will not attract nor harbor vermin. Murals, stenciled patterns, or flat, pastel tones can be painted on the seamless surface of this material. Thus Sprayed "Limpet" Asbestos is adaptable to a wide variety of decorative treatments. These properties, plus the ease and simplicity of application, make it ideal material for many varied acoustical and insulating jobs which are covered in detail under the following sections headed "Acoustical" and "Building Insulation."

World-Wide Acceptance

Sprayed "Limpet" Asbestos was placed on the world market in the late twenties. Applications of Sprayed "Limpet" Asbestos have since been made in the most trying climatic conditions in countries both North and South of the Equator. These countries include —

Argentina	France	New Zealand
Australia	Germany	Norway
Belgium	Great Britain	Poland
Canada	Iceland	South Africa
Czechoslovakia	India	Spain
Denmark	Italy	Sweden
Egypt	Malay States	The Netherlands
Finland	Mexico	United States

Many applications have been made in the U. S. A. by approved Keasbey & Mattison Company contractors. Even though Sprayed "Limpet" Asbestos may be new to many prospects, its properties and advantages have been tested and proved under many varied conditions through actual use.

How "Limpet" is Prepared and Applied

The asbestos fibers for use in "Limpet" applications are prepared, treated and blended by a special manufacturing process. This process, like all K&M manufacturing processes, is subject to strict laboratory control and inspection. When "Limpet" leaves the factory the fibers are self-bonding, and the only liquid required to make them stick is water.

When an application is made, "Limpet" is applied to the surface to be covered by simply blowing it through a spray machine. The fibers leave the nozzle of the spray gun in a dry and well opened state. They combine in mid-air with a fine, misty water spray which makes the fibers stick tightly when they come to rest on the surface. This unique method of application produces a continuous, felt-like coating which is extremely light in weight. The method of spraying both the water and the fiber makes "Limpet" much more suitable for the purposes intended than if the fiber were mixed with water in advance.

*Trademark Registered in U. S. Patent Office.

SPRAYED "LIMPET" ASBESTOS CONDENSATION CONTROL

Atmospheric air always contains a certain measure of moisture in the form of invisible vapor, even when the air appears to be perfectly dry. At a certain given temperature air cannot carry more than a definite amount of water vapor. In this condition the air is said to be "saturated with moisture." The degree of saturation of air is called its relative saturation, or, as it is better known, "relative humidity." If air contains less water vapor than it could actually carry at a given temperature the air is "unsaturated." Saturated air has a relative humidity of 100 per cent and perfectly dry air a relative humidity of 0 per cent. Warm air can carry more water vapor than cold air. Therefore, if saturated air is cooled off, some of the water vapor is precipitated from the air in the form of visible water. This process is called "condensation of moisture." Everyone is familiar with the "sweating" of a glass of cold water or the condensation on a window pane in the home. Water which is condensed from the air, will, depending on circumstances, appear either as dew, fog, rain, snow, hail, frost or as dripping condensation. When unsaturated air is cooled off, its relative humidity rises until, at a definite temperature it becomes saturated. Upon further cooling, dew or fog condenses from the air. This temperature, at which a certain sample of unsaturated air would become saturated, when cooled, is called the "dew point" of the air.

Sprayed "Limpet" Asbestos is the only form of insulation that fits any contour or shape perfectly without an air space in back of it, and this fact, coupled with its high resistance to the transfer of heat, makes it the perfect material for the prevention or control of condensation. This control is carried out by spraying sufficient thickness, usually ½" to 1", directly to the ceiling, roof or walls of a building so that the inner surface of the insulation remains at a temperature above the dew point of the surrounding air. Attempts have often been made to prevent condensation by suspending ceilings of various types of insulating boards under the roof or attaching interior linings to the walls. However, since it is impossible to render this lining air-tight, condensation will continue to take place behind it as the vapor-laden air comes into contact with the cold roof or outer wall. So-called vapor sealing or waterproofing of the inner surface of the insulation actually makes matters worse since it forms a trap for the moisture condensed behind it and prevents it from getting out.

By spraying the insulation directly to the underside of the cold roof or to the inner portion of the wall surface, air spaces between the insulation and these surfaces are eliminated; therefore, no condensation can take place behind the insulation. Owing to the exceptionally strong capillary or wick action which is a feature of Sprayed "Limpet" Asbestos, such moisture as is condensed within the coating at times of peak humidity, is rapidly drawn to the exposed face, where it is re-evaporated into the atmosphere. However, it is essential that sufficient ventilation be provided in the building following application so that the sprayed asbestos can be given the opportunity to dry thoroughly. Also, it must be kept in mind that when extreme humidity conditions are encountered supplementary measures such as the use of an exhaust ventilating system are often required to reduce the high humidity. Unless this is done, an excessive thickness of insulation would be required and the remedy becomes impractical and uneconomical.

It is important, therefore, that essential points be determined before a condensation control problem is handled. These are as follows:

1. The relative humidity at or near the inside of the roof.
2. The inside and outside temperatures under extreme conditions.
3. The extent of ventilation in the rooms.
4. The number of hours per day and number of days per week that the processes are in operation.
5. The location of the factory or building with regards to winds and direct sunshine.
6. Full details as to wall and roof construction together with plans and elevations or complete dimensions.

SPRAYED "LIMPET" ASBESTOS

LW.21 - ACOUSTICAL FIBER

LW.21 Acoustical Fiber replaces the LB.1 and LW.9 acoustical fibers. It is the result of a thorough research, development and test program to improve the Sprayed "Limpet" Asbestos process. This improved and more economical product, opens the way for new methods in the application of the process and in the appearance and decoration of the surface.

LW.21 is composed of a blend of 100% natural, mined asbestos fibers specially prepared for acoustical use. A dry, inorganic binder is incorporated with the asbestos fibers. The same high sound absorption and noise reduction coefficients are obtained with LW.21 as with the former acoustical fibers. These are published in current literature and data pages.

One fiber, LW.21, produces the complete coat. The color of the fiber is a natural shade which provides a cream or light buff appearance. Careful spraying, properly carried out, will produce a surface requiring little or no touching up. The finished surface can be pressed or tamped in the normal manner to give a smooth or fissured look. An alternate textured appearance can now be given the surface. This is described in detail in the data page headed, "Hobnail Textured Surface".

The natural, light color of LW.21 may be used for the completed installation. However, when decoration of the surface with color is required, an easy and effective method has been developed. This is described in data page headed, "Spraying Fiber with Color". This same method will produce a distinctive white surface when the natural fiber color will not be sufficient.

SPRAYED "LIMPET" ASBESTOS

HOBNAIL TEXTURED SURFACE

To obtain a new and attractive surface texture to any Sprayed "Limpet" Asbestos application, use a wood pressing tool for final finishing, prepared as follows:

1. Drive 1/2" long nails with dome-shaped heads into face of tool in a random pattern. Head of nails should be 1/4" diameter and 1/8" high. Distance between edges of nail heads should vary from 1/4" to 1/2" apart. Make no attempt to place nails in rows or definite pattern.

2. Press surface of fiber in same manner as with a smooth faced tool. Keep nail heads wiped clean as pressing progresses.

The above operation will blend together most surface defects and fissures to provide an overall textured appearance. The random hobnail pattern permits repeated pressing in the same area without changing the general appearance of the pattern. It is especially effective with the color process.

Nails tested are as follows:

Baur Tack Company	- Cone head Hungarian nail.
Atlas Tack Corporation	- High head Hungarian nail.
American Tack Company	- No. 19 nickel upholstery nail.
Stout Bros., Philadelphia	- No. 12 brass upholstery nail.

Obtain nails from upholstery supply dealers. Quantity required: Approximately 5 nails per sq. in. of surface.

SPRAYED "LIMPET" ASBESTOS

LB.9 FIRE PROTECTION FIBER (Cont'd.)

check made of spraying rate during actual application for recent fire tests, results in the following:

Cellular Steel Deck - Thickness of "Limpet" varied from 2-3/4" to 1-1/4". Rate of spraying for 3-man crew - 25 sq. ft. of surface area per hr. This includes pressing.

Steel Beam Caged with Metal Lath - Thickness of "Limpet" 1-1/2". Rate including pressing - 40 sq. ft. per hour.

Steel beam sprayed to follow the contour with 2" thickness of "Limpet". Rate including pressing - 30 sq. ft. per hour.

Material Required.
To estimate the amount of material required for LB.9 application to structural steel, take the cross-section area of material around the member and convert this into an equivalent total area 1" thick. Then multiply this by 1-1/2 lbs. of LB.9 per sq. ft. For example:

8" x 4" column 10 feet long sprayed 1" thick to follow the contour. The cross-section of material would be 36 sq. in.

$\frac{36}{144}$ sq. ft. x 10 x 12 = 30 sq. ft. 1" thick.

30 x 1.5 lbs. = 45 lbs. of LB.9 required.

SPRAYED "LIMPET" ASBESTOS

FIRE PROTECTION

The Underwriters' Laboratories, Inc. Chicago, Illinois, tested Sprayed "Limpet" Asbestos in accordance with the Standard for Fire Tests of Building Construction and Materials (ASTM E119), on August 2nd, 3rd and 4th, 1955.

Fire Test Construction Details

The floor and ceiling construction consisted of H. H. Robertson Company's RK-16-16 Steel Floor Units supported by two steel beams. The cellular steel floor was covered with a 2½" fill of poured concrete. One steel beam was caged in with metal lath and the other was bare steel. Sprayed "Limpet" Asbestos was applied to the underside of the steel deck with a thickness of 1¼" below the steel rib. The metal lath covering the steel beam was sprayed with a thickness of 1½" and the other beam was sprayed with a 2" thickness direct to the steel.

Two separate steel columns were also tested. One was sprayed with a thickness of 1½" of Sprayed "Limpet" Asbestos and the other with a 2" thick application.

Results of Fire Tests

Sprayed "Limpet" Asbestos will afford protection against passage of flame and dangerous heat transmission to floor and ceiling assemblies and to steel columns, according to the following classifications. The listing of this material as it appears in the Fire Protection Equipment List of the Underwriters' Laboratories Inc., will be under the heading; Fibers (Sprayed) Guide No. 40 U18.6.

Retardant No. 3705-1. Accepted April 5, 1956

Floor and Ceiling Construction with Concrete on Steel Floor Units, supported by Steel Beams and Protected with Sprayed "Limpet" Asbestos.

Design No. 13 - 4 Hr. (Beam 4 Hr.)

Thickness below bottom of Steel Deck ---- 1¼ inches.
Thickness on metal lath encasing Beam ---- 1½ inches.

Design No. 14 - 4 Hr. (Beam 3 Hr.)

Thickness below bottom of Steel Deck ---- 1¼ inches.
Thickness direct on steel Beam ---- 2 inches.

Retardant No. 3705-2-3. Accepted March 2, 1956

Steel Building Columns protected with Sprayed "Limpet" Asbestos.

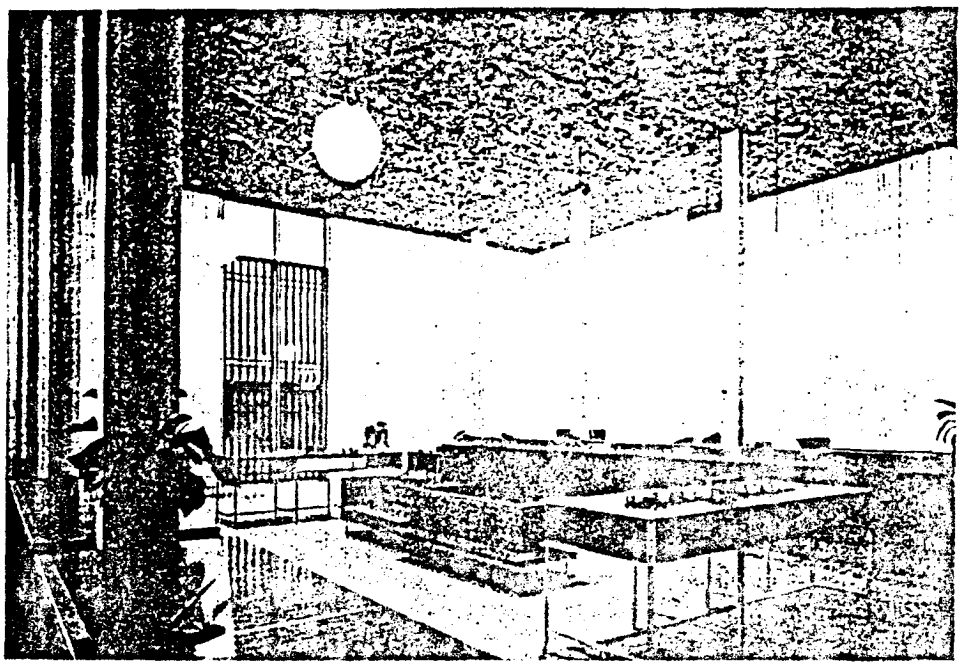
Design No. 4 - 2 Hr.

Thickness direct on steel Column ---- 1½ inches.

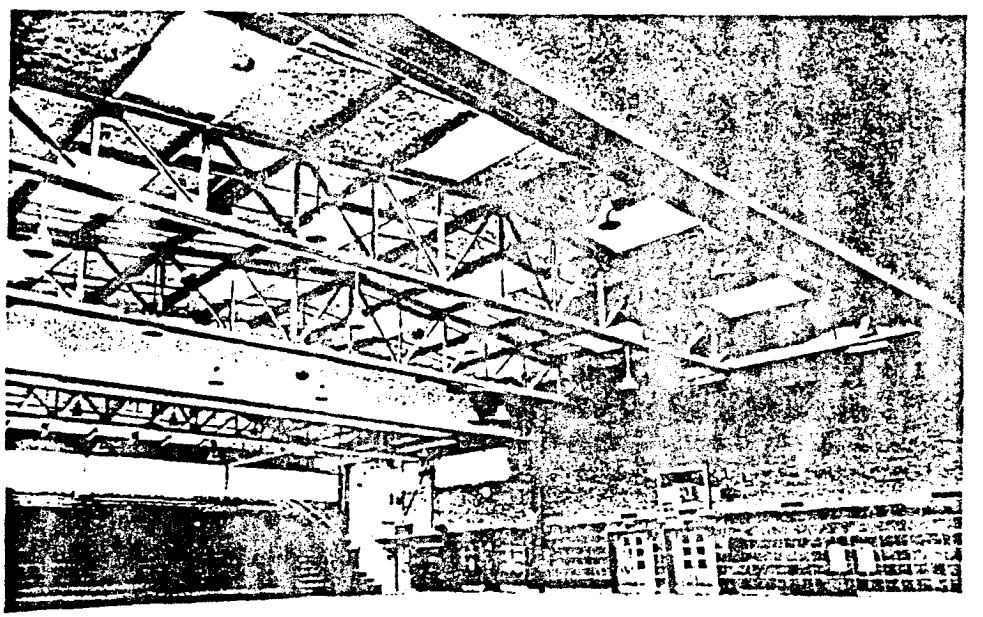
Design No. 7 - 3 Hr.

Thickness direct on steel Column ---- 2 inches.

SPRAYED "LIMPET" ASBESTOS



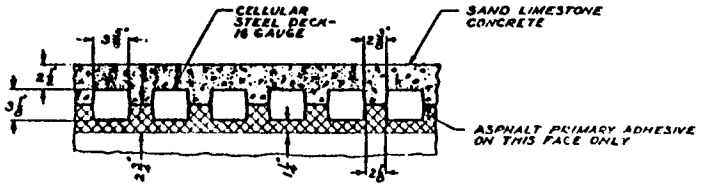
BANK LOBBY - Washington State Bank, Bellevue, Wash. Sound reduction
Applicator: Northwest Cork & Asbestos Co., Seattle, Wash. 4000 Sq. Ft.



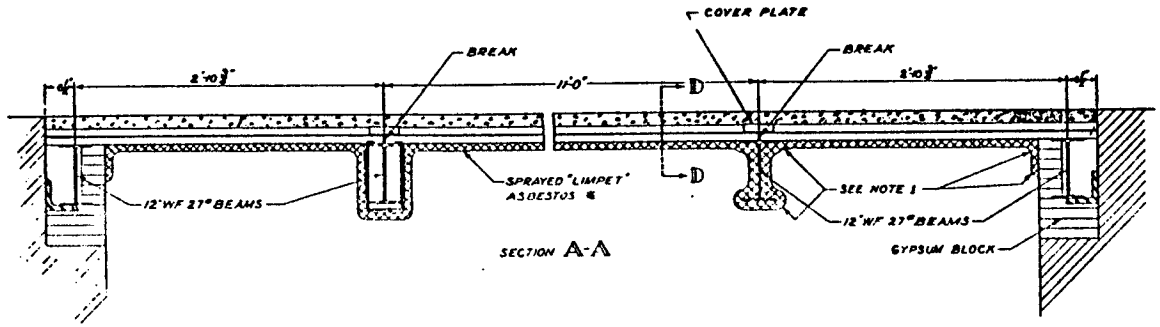
GYMNASIUM Woodbridge H.S., Woodbridge, N.J. Noise reduction
Applicator: E.B. Carley & Co., Jackson Heights, N.Y. 25,000 Sq. Ft.

12-12-56

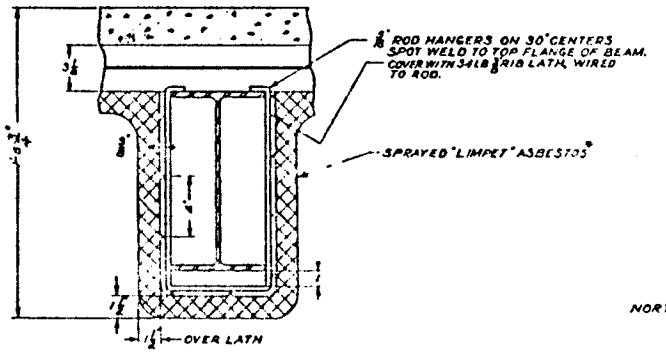
SPRAYED "LIMPET" ASBESTOS CELLULAR STEEL FLOOR CONSTRUCTION FOR UNDERWRITERS' LABORATORIES INC. FIRE TESTS.



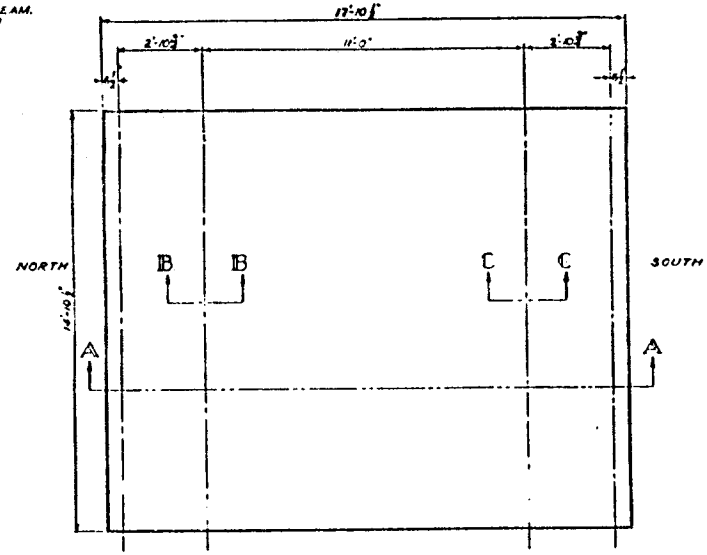
SECTION D-D
SCALE 2"=1'-0"



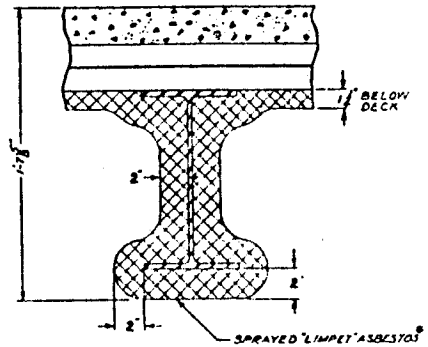
SECTION A-A



SECTION B-B
SCALE 3"=1'-0"



FLOOR PLAN
SCALE ¼"=1'-0"



SECTION C-C
SCALE 3"=1'-0"

NOTE:-
1 COVE EDGE OF SPRAY COATING AT ALL WALLS, IN CORNERS AND AT BEAM EDGES.
2 SPRAY CONTINUOUS COAT, AVOID JOINTS.

* LISTED BY U.L. INC.
SPRAYED "LIMPET" ASBESTOS GRADE L.B.9

SPL-8M-1 0997

Keasbey & Mattison Co., Ambler, Pa.

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation

JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Post Office Building	Batesville	Ark.	A	3/4	800
Bath House	Hot Springs	Ark.	A	3/4	1,200
Berkeley Savings & Loan Co.	Berkeley	Calif.	A	3/4	1,000
Hillsdale Shopping Center	San Francisco	Calif.	A & T	1	24,000
Prudential Insurance Co.	Jacksonville	Fla.	T	1-1/2	5,000
Independent Life Ins. Co.	Jacksonville	Fla.	T	1-1/4	14,240
North West Jr. High School	Shawnee	Kansas	T	1-1/2	2,500
South West Jr. High School	Merrian	Kansas	T	1-1/2	3,411
North East Jr. High School	Johnson County	Kansas	T	1-1/2	3,411
Smith College	North Hampton	Mass.	A	1-1/4	4,306
WORL Radio Station	Boston	Mass.	A	1-1/2	2,258
Runels Construction Co.	Lowell	Mass.	A	3/4	4,850
Sanitarium, SW Mich. State	Kalamazoo	Mich.	S	3/4	4,000
Detroit Arsenal, U.S. Army	Detroit	Mich.	T	3/4	5,500
Bay State Abrasive Co.	Detroit	Mich.	S	1	1,850
St. Louis Ordnance Plant	St. Louis	Mo.	S	1/2 to 1-1/2	7,500
St. Louis Ordnance Plant	St. Louis	Mo.	S	1/2 to 1-1/2	10,000
St. Luke's Hospital	St. Louis	Mo.	S	1-1/2	400
St. Louis Ordnance Plant	St. Louis	Mo.	A	1 to 2	50,000
Inter-City High School	Kansas City	Mo.	T	1-1/2	2,448
Inter-City High School	Kansas City	Mo.	A.C.	1-1/2	4,951
Linda Hall Library	Kansas City	Mo.	T	1-1/2	1,635
Better-Bilt Door Co.	Egg Harbor City	N. J.	T	1-1/2	3,000
E.I. DuPont de Numours Co., Inc. (Chambers Works)	Deepwater	N. J.	T	1	500
Woodbridge High School	Woodbridge	N. J.	A	1	25,000
Tenacre Foundation	Princeton	N. J.	T	1	750
Mohawk Manor	Buffalo	N. Y.	T	1-1/2	748
66th St. School	Niagara Falls	N. Y.	T	1	870
Airway Motel	Cheektowage	N. Y.	S	1-1/2	430
Seaman's Bank Bldg.	New York	N. Y.	A	1	5,200
Towne House Hotel	Buffalo	N. Y.	T	1-1/2	1,979
Board of Education (Administration Bldg.)	Niagara Falls	N. Y.	T	2	528
Temple Emanuel	Great Neck	N. Y.	A	3/4	18,600
Leonard Ave. School	Columbus	Ohio	T	1	650
Green Cross Hospital	Cuyahoga Falls	Ohio	T	1	900
Holy Angels School	Sidney	Ohio	T	2	2,000
Veterans Hospital WPAFB	Dayton	Ohio	T	1	1,000
Cameron Office Bldg.	Olkahoma City	Okla.	T	3/4	1,837
Sanders Office Bldg.	Olkahoma City	Okla.	T	3/4	1,200
Hillcrest Country Club	Oklahoma City	Okla.	A	3/4	3,800
Lake Murray Lodge	Ardmore	Okla.	A	1-1/2	2,000
Norman Municipal Hospital	Norman	Okla.	T	3/4	880

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation

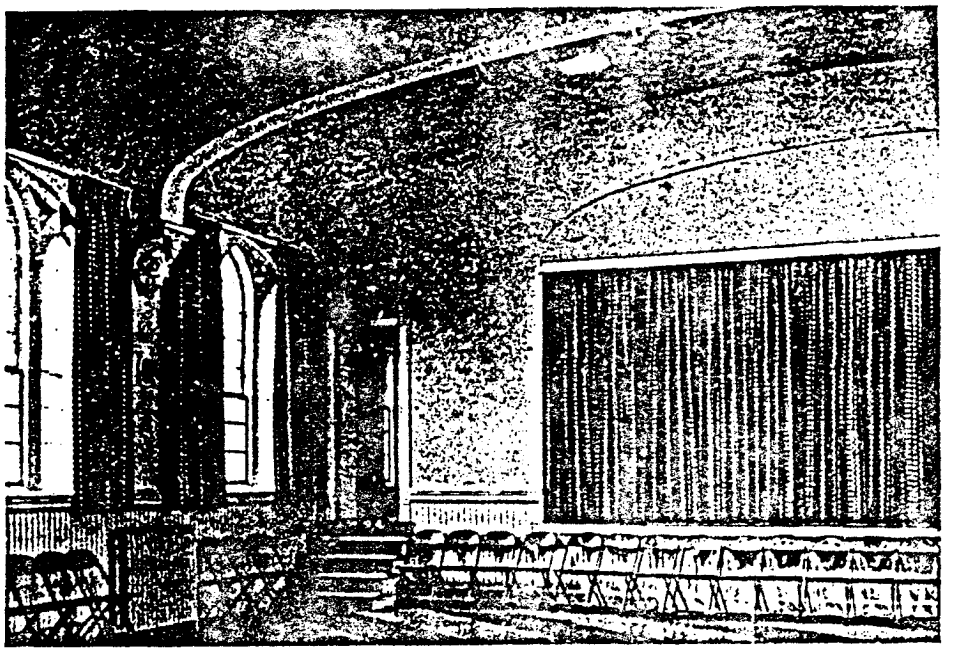
JOB	LOCATION		PURPOSE	THICKNESS IN INCHES	AREA IN SQ. FT.
Holy Family High School	Birmingham	Ala.	S	1	17,000
C. Y. O. Camp	Mt. Bullion	Calif.	S,T,A-C	3/4	24,000
High School	Manchester	Conn.	A	3/4	2,682
St. Mary's School	Ridgefield	Conn.	T	1	800
Mills, Peddicord & Mills	Washington	D. C.	S	3/4	3,000
Woodward & Lothrop	Washington	D. C.	S	3/4	900
Laboratory Facilities Bldg.	Panama City	Fla.	T	1-1/2	4,000
First Presbyterian Church	Ft. Myers	Fla.	A	1	2,800
Ringling Museum	Sarasota	Fla.	S	3/4	4,000
Industrial Bank Bldg.	Miami	Fla.	S	1	9,000
Gwyn Falls School	Baltimore	Md.	T	1	3,000
Cherry St. School	Gloucester	Mass.	T	1	1,034
St. John's Hospital	Lowell	Mass.	A	3/4	2,825
State of Michigan Bldg.	Detroit	Mich.	S	3/4	20,000
Detroit Securities Co. Cass Bldg.	Detroit	Mich.	S	3/4	1,200
Detroit Securities Co. Cass Bldg.	Detroit	Mich.	S	3/4	2,000
Linde Air Products Co.	Montague	Mich.	T	1-1/2	24,000
Mich. Nat'l. Drive In Bank	Port Huron	Mich.	S	3/4	1,600
Union Hospital	New Ulm	Minn.	T & F	1-1/2	1,204
Bur. of Mines Pilot Plant	Minneapolis	Minn.	T & F	1-1/4	4,080
Albert Lea Savings & Loan	Albert Lea	Minn.	T & F	1	651
May Bros. Co.	Minneapolis	Minn.	T	1	1,200
Austin Savings & Loan	Austin	Minn.	T & F	1	860
Hastings Nat'l. Bank	Hastings	Minn.	T	1-1/2	5,800
W.T. Grant Store	Minneapolis	Minn.	F	2	1,200
Empire Nat'l. Bank	St. Paul	Minn.	T & F	1	1,000
American Hoist & Derrick	St. Paul	Minn.	F	1-1/2	5,050
S.W. High School	Minneapolis	Minn.	A	1-1/2	1,200
Lincoln Jr. High School - Swimming Pool	Kansas City	Mo.	T & S	1	8,250
Lincoln Jr. High School - Boiler Room	Kansas City	Mo.	T & S	1	2,100
Dunnleith Apt. Boiler Room	Kansas City	Mo.	T	1	1,580
Schweiger Construction Co.	Kansas City	Mo.	T	1	7,600
Radio Corp. of America	Harrison	N. J.	S	3/4	4,000
Federal Telephone & Radio Corp.	Clifton	N. J.	S	3/4	20,000
Passaic Valley Regional High School	Little Falls	N. J.	T	1	1,200
American Academy Arts & Letters	New York	N. Y.	S	3/4	1,300
Merchants Midtown Bank	New York	N. Y.	S	3/4	2,000
F.H. McGraw & Co.	New York	N. Y.	S	3/4	3,000
Railway Express Co.	New York	N. Y.	S	3/4	8,000

SPRAYED "LIMPET" ASBESTOS
RECENT INSTALLATIONS

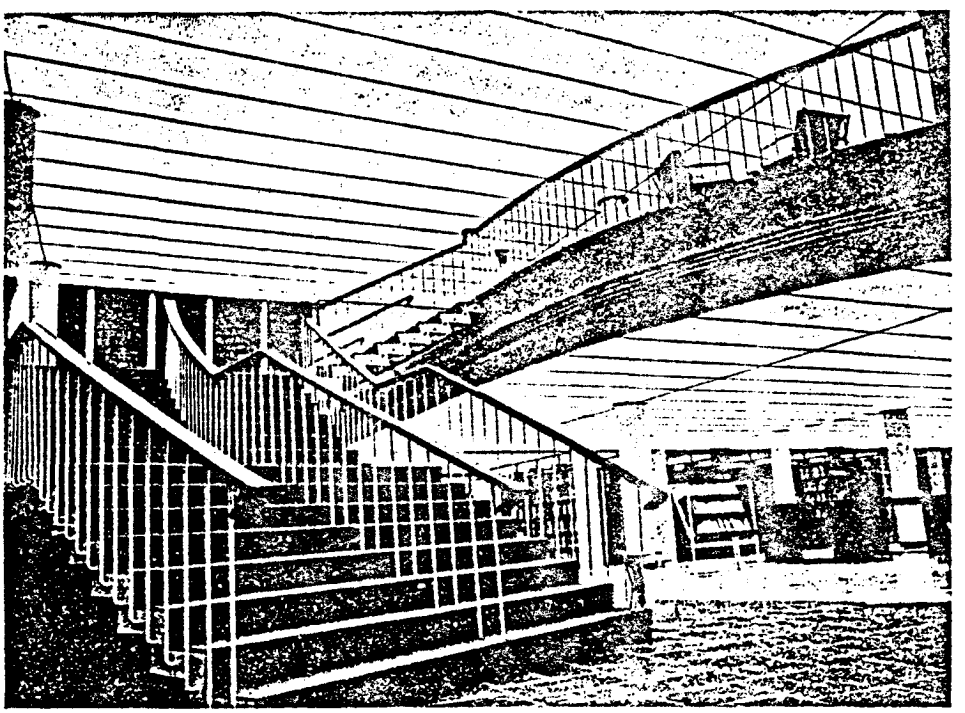
S - Sound Reduction
A - Acoustical Correction
T - Thermal Insulation
A-C - Anti-Condensation
F - Fire Protection

Elmendorf A. F. B.	Anchorage	Alas.	A. C.	3/4	6,800
Merchants Nat'l. Bank	Ft. Smith	Ark.	A, C,	3/4	4,500
Potomac Plaza Apt.	Washington	D. C.	T & F	3/4	10,000
Dalecarlia Pumping Station	Washington	D. C.	T	3/4	15,000
Junior College	St. Petersburg	Fla.	A	3/4	28,000
Peninsular Telephone Co.	Tampa	Fla.	A	3/4	20,000
W. T. V. T. Studio	Tampa	Fla.	A	1-1/2	2,200
Laboratory Facilities Building U. S. N.	Panama City	Fla.	A	1/2 to 3/4	30,000
Leon Co. Gymnasium	Tallahassee	Fla.	A & T	1	9,000
Female Correctional Inst.	Ocala	Fla.	T	2	1,200
Fairvilla Lanes Bowling Alley	Orlando	Fla.	S	3/4	4,500
Olin-Mathieson Chem. Corp.	East Alton	Ill.	S	1 & 1-1/2	3,500
Aberdeen Proving Grounds	Aberdeen	Md.	S & T	3/4	8,000
Fidelity Baltimore Nat'l. Bank	Baltimore	Md.	F	1-1/4	15,000
Big Savage Refactory Co.	Frostburg	Md.	A. C.	3/4	6,000
State Hospital	Crownsville	Md.	T	1-1/2	3,000
Officers Club A. F. B.	Westover	Mass.	A	1/2	3,800
Lecture Hall, Compton Lab. M. I. T.	Cambridge	Mass.	A	3/4	2,800
Central Savings Bank	Lowell	Mass.	A	3/4	1,200
Jr. -Sr. High School	W. Boylston	Mass.	A	3/4	2,300
Jr. -Sr. High School	Lunenburg	Mass.	A	1/2	2,800
Parochial School	N. Beverly	Mass	T	1	800
Home for Aged	Fairhaven	Mass.	T	1-1/2	500
St. Like's Hospital	St. Louis	Mo.	A, C & T	1-1/2	1,000
Anheuser-Busch Inc.	St. Louis	Mo.	A	1-1/2	1,500
Schober's Restaurant	St. Louis	Mo.	A	1	1,200
McGuire Air Force Base	Ft. Dix	N. J.	T	3/4	5,000
Crotched Mt. Hayden Bldg.	Greenfield	N. H.	T	2	700
Deering-Milliken Bldg.	New York	N. Y.	T & F	1-1/4	15,000
Roehrig Insurance Agency	Kenmore	N. Y.	A & T	3/4	800
Continental Inn	Kenmore	N. Y.	F & S	1	2,400
University of Buffalo	Buffalo	N. Y.	T	1	1,000
M & T Bank	Buffalo	N. Y.	A	3/4	4,600
Park School	Snyder	N. Y.	A	3/4	1,800
Greiner Bowling Alley	Cheektowaga	N. Y.	A	3/4	16,000
Derrick Mfg. Co.	Cheektowaga	N. Y.	T	1-1/2	3,200
Ohio State University	Athens	Ohio	T	3/4	650
Darling Store	Steubenville	Ohio	F	1	1,000
Temple of Healing Stripes	Akron	Ohio	A & F	1	11,000
Katherine Boswell Mem. Chapel	Ada	Okla.	A	3/4	1,800

SPRAYED "LIMPET" ASBESTOS

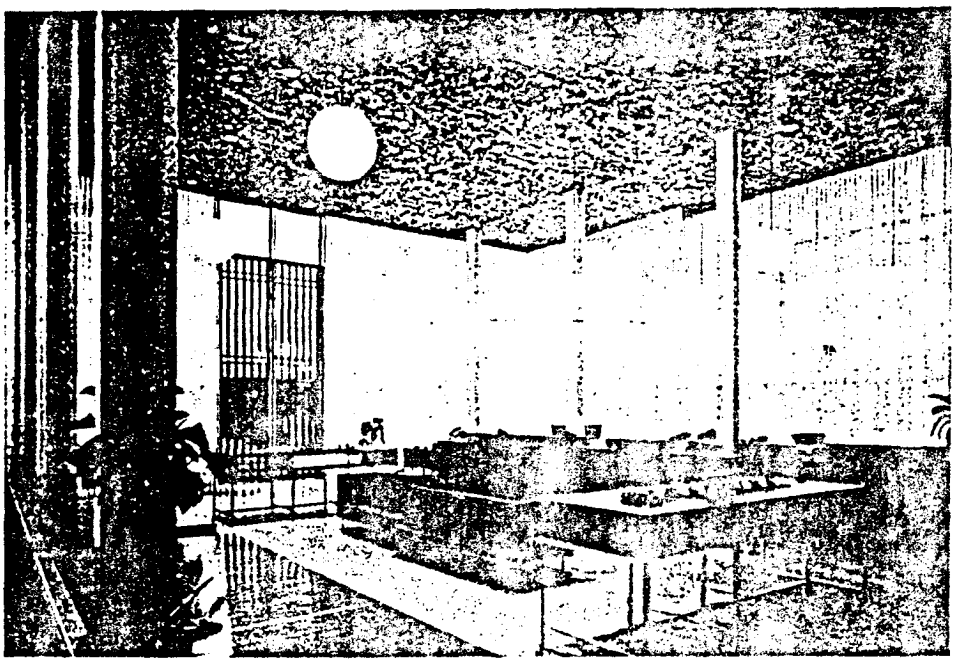


AUDITORIUM - YMCA Ridgway, Pa. Acoustical correction
Applicator: Hudson Plastering Co., Buffalo, N.Y. 2800 Sq. Ft.

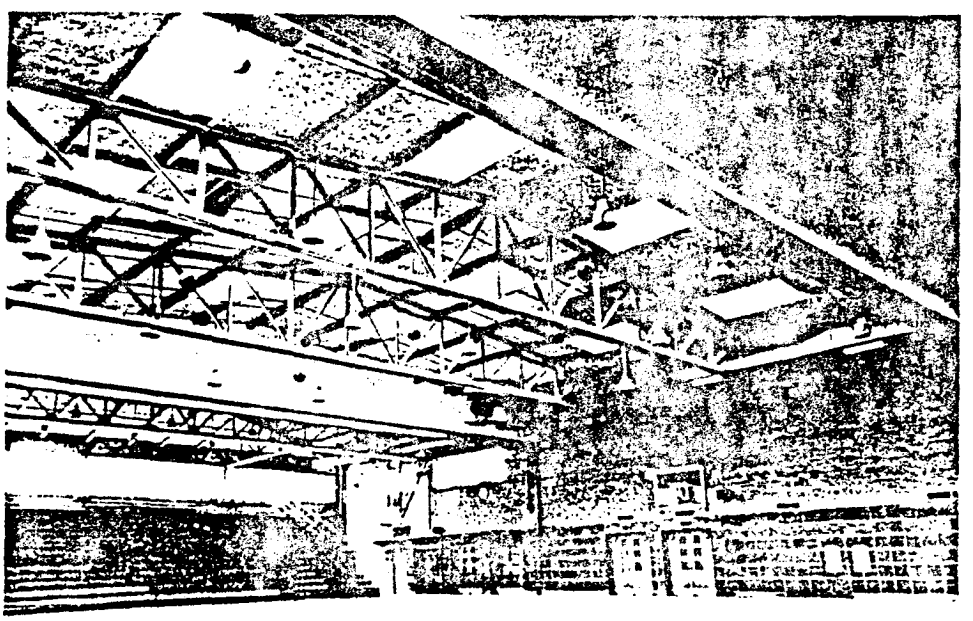


READING & EXHIBITION ROOM - Charlotte Public Library, Charlotte, N.C.
Sound reduction. Applied to slab above suspended luminous ceiling.
Applicator: C.W. Kirkland Co., Charlotte, N.C. 16,000 Sq. Ft.

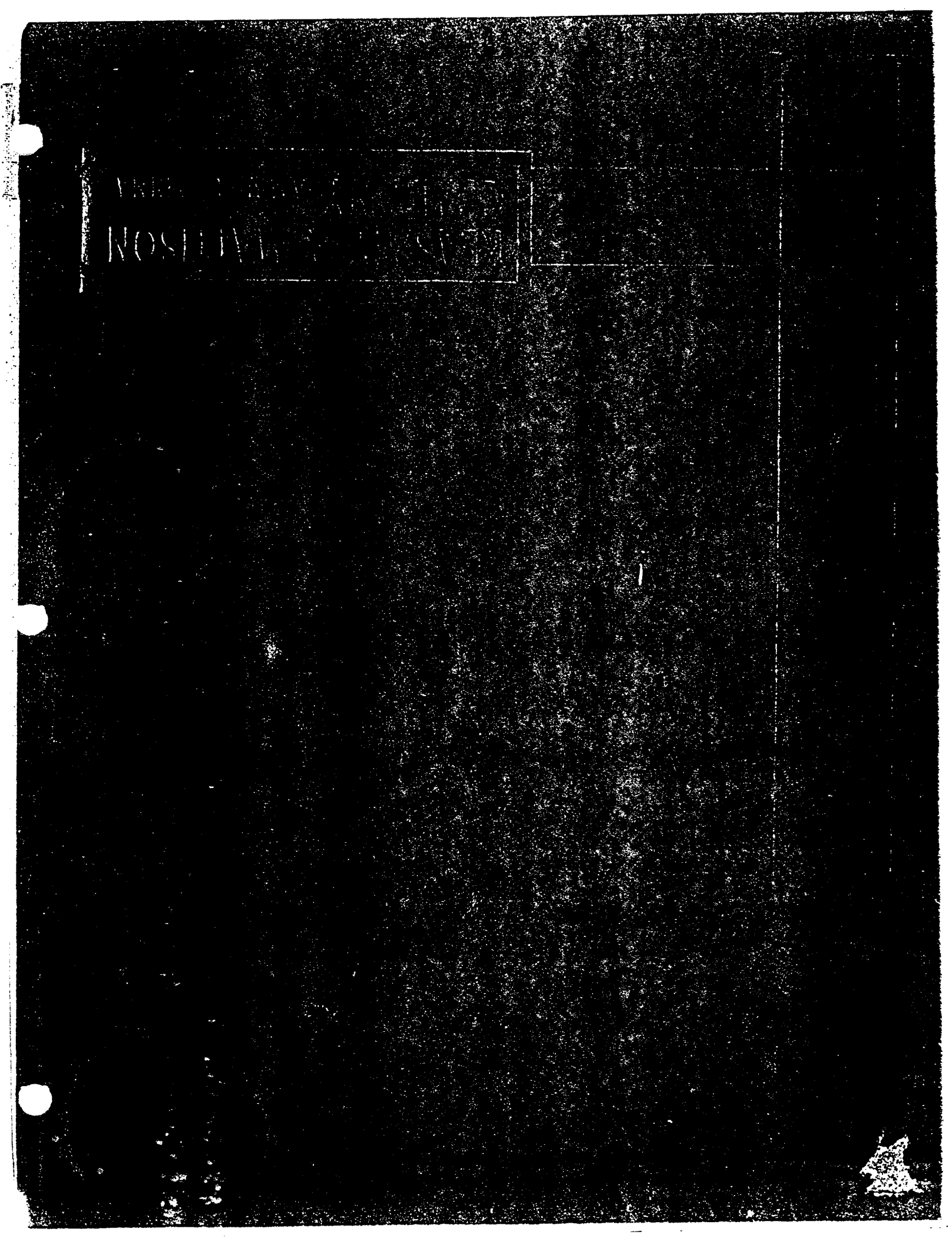
SPRAYED "LIMPET" ASBESTOS



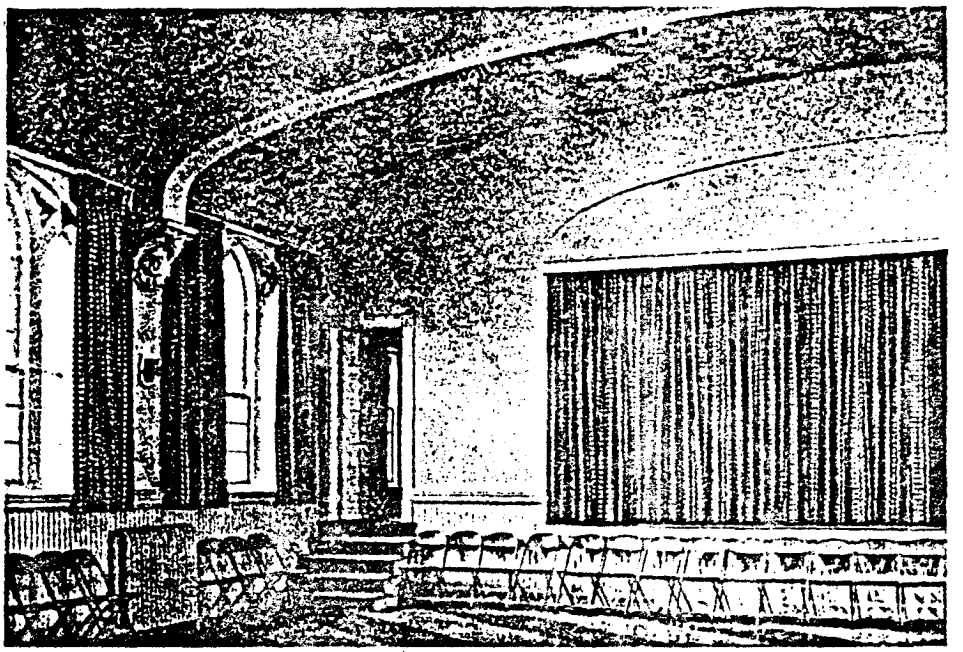
BANK LOBBY - Washington State Bank, Bellevue, Wash. Sound reduction
Applicator: Northwest Cork & Asbestos Co., Seattle, Wash. 4000 Sq. Ft.



GYMNASIUM Woodbridge H.S., Woodbridge, N.J. Noise reduction
Applicator: E.B. Carley & Co., Jackson Heights, N.Y. 25,000 Sq. Ft.

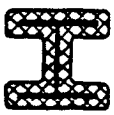
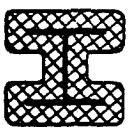
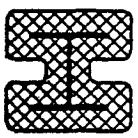
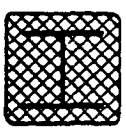
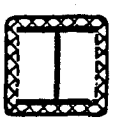
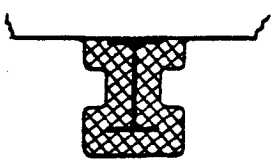
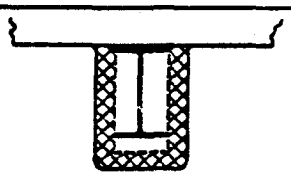
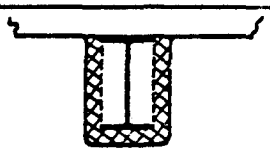


SPRAYED "LIMPET" ASBESTOS



AUDITORIUM - YMCA Ridgway, Pa. Acoustical correction
Applicator: Hudson Plastering Co., Buffalo, N.Y. 2800 Sq. Ft.

READING & EXHIBITION ROOM - Charlotte Public Library, Charlotte, N.C.
Sound reduction. Applied to slab above suspended luminous ceiling.
Applicator: C.W. Kirkland Co., Charlotte, N.C. 16,000 Sq. Ft.

ASSEMBLY	DESCRIPTION	RATING	"LIMPET" THICKNESS	AUTHORITY
	ROOFING & SIDING ASBESTOS CORRUGATED	1 HR 2 HR	1¼" 2"	FIRE OFFICES COMMITTEE REF. FROSI NO. 528 1955
	STEEL WALLS (SHIPS BULKHEAD)	1 HR	1¼"	FIRE OFFICES COMMITTEE REF. FROSI NO. 8 1948
	COLUMN DIRECT TO STEEL	1 HR 2 HR 3 HR	5/16" 1½" 2"	FIRE OFFICES COMMITTEE AND Underwriters' Laboratories Inc. REF. FROSI NO. 1412 & NO. 3705-2-3
	COLUMN DIRECT TO STEEL	3 HR 5 HR	2¼" 3⅜"	Underwriters' Laboratories Inc. REF. R-3705-4-5 1958
	COLUMN DIRECT TO STEEL	5 HR	2¾"	Underwriters' Laboratories Inc. REF. R-3705-6 1958
	COLUMN DIRECT WITH BOSUM FILLED	2 HR 4 HR	1" 2"	FIRE OFFICES COMMITTEE REF. FROSI NO. 19 & NO. 769 1939 & 1956
	COLUMN APPLIED ON METAL LATH	2 HR	1"	FIRE OFFICES COMMITTEE REF. FROSI NO. 447 1953
	BEAM DIRECT TO STEEL	3 HR	2"	Underwriters' Laboratories Inc. REF. R-3705-1 1955
	BEAM APPLIED TO METAL LATH 1" SPACE BENEATH	4 HR	1½"	Underwriters' Laboratories Inc. REF. R-3705-1 1955
	BEAM APPLIED TO LATH ON WIRE HANGERS	4 HR	1¼" SIDES 1½" BOTTOM	Underwriters' Laboratories Inc. REF. R-3705-3 1958

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

*SPRAYED "LIMPET" ASBESTOS

Nothing Quite Like It Anywhere

Sprayed "Limpet" Asbestos forms a seamless blanket of asbestos fiber. It adheres to all clean surfaces of wood, metal, masonry, plaster or glass and whether straight, curved or irregular surfaces. The blanket is formed by spraying self-bonding asbestos fiber on the surface which is to be covered. It adheres as tightly as the famed rock-clinging marine mollusk from which Sprayed "Limpet" Asbestos gets its name. As an added measure to insure that the initial bond is made, a primer is applied to the surface prior to application of fiber.

A blanket of this unique material possesses remarkable acoustical, sound deadening and insulating properties. It is light in weight, highly fire resistant, and it will not attract nor harbor vermin. Murals, stenciled patterns, or flat, pastel tones can be painted on the seamless surface of this material. Thus Sprayed "Limpet" Asbestos is adaptable to a wide variety of decorative treatments. These properties, plus the ease and simplicity of application, make it ideal material for many varied acoustical and insulating jobs which are covered in detail under the following sections headed "Acoustical" and "Building Insulation."

World-Wide Acceptance

Sprayed "Limpet" Asbestos was placed on the world market in the late twenties. Applications of Sprayed "Limpet" Asbestos have since been made in the most trying climatic conditions in countries both North and South of the Equator. These countries include —

Argentina	France	New Zealand
Australia	Germany	Norway
Belgium	Great Britain	Poland
Canada	Iceland	South Africa
Czechoslovakia	India	Spain
Denmark	Italy	Sweden
Egypt	Malay States	The Netherlands
Finland	Mexico	United States

Many applications have been made in the U. S. A. by approved Keasbey & Mattison Company contractors. Even though Sprayed "Limpet" Asbestos may be new to many prospects, its properties and advantages have been tested and proved under many varied conditions through actual use.

How "Limpet" is Prepared and Applied

The asbestos fibers for use in "Limpet" applications are prepared, treated and blended by a special manufacturing process. This process, like all K&M manufacturing processes, is subject to strict laboratory control and inspection. When "Limpet" leaves the factory the fibers are self-bonding, and the only liquid required to make them stick is water.

When an application is made, "Limpet" is applied to the surface to be covered by simply blowing it through a spray machine. The fibers leave the nozzle of the spray gun in a dry and well opened state. They combine in mid-air with a fine, misty water spray which makes the fibers stick tightly when they come to rest on the surface. This unique method of application produces a continuous, felt-like coating which is extremely light in weight. The method of spraying both the water and the fiber makes "Limpet" much more suitable for the purposes intended than if the fiber were mixed with water in advance.

*Trademark Registered in U. S. Patent Office.

SPRAYED "LIMPET" ASBESTOS

Variety of Finish Textures (Continued)

In order to avoid misunderstanding, the architect should approve a sample of Sprayed "Limpet" Asbestos with a paint finish so that the applicators can duplicate the finish on the job.

How Beautiful Decorative Effects May be Secured

One of the most important characteristics of Sprayed "Limpet" Asbestos from an architectural point of view is its adaptability to many different and beautiful decorative treatments.

The evenly textured, seamless blanket of Sprayed "Limpet" Asbestos forms a perfect base for decorative painting. Murals, stencils and other decorative designs painted on walls and ceilings where Sprayed "Limpet" Asbestos has been applied will produce a gay, colorful and attractive room. This material can be painted with flat pastel colors popular with decorators.

Sprayed "Limpet" Asbestos places no limitations on the imaginative decorator. The painting of the surface of the Sprayed "Limpet" Asbestos should be done by *spraying rather than by brushing.*

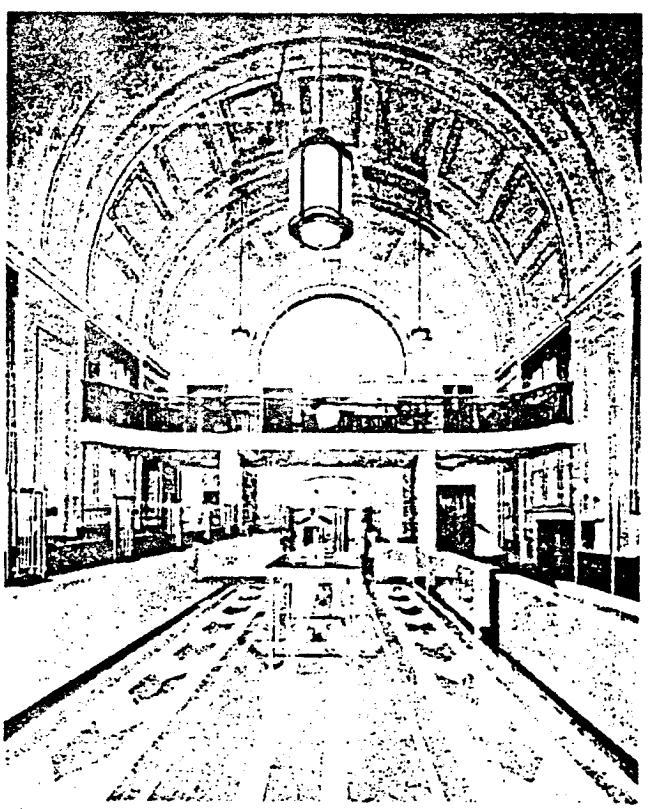
Spray Painting Has Little Effect on the Efficiency of Sprayed "Limpet" Asbestos

Sprayed "Limpet" Asbestos may be sprayed with very light coats of oil-emulsion or casein type paints without noticeably impairing its acoustical efficiency.

Sprayed "Limpet" Asbestos Ideal for Irregular Surfaces

Sprayed "Limpet" Asbestos is simply sprayed to the right thickness on most surfaces. As it is being applied, it follows the lines of the walls and ceilings without altering them in any way. In vaulted buildings or ones with barrelled coves, where extremely irregular or curved surfaces exist, Sprayed "Limpet" Asbestos is the ideal acoustical material. There is no need to cut or fit Sprayed "Limpet" Asbestos. The problem of applying a flat acoustical material to a curved surface does not arise when Sprayed "Limpet" Asbestos is used.

Sprayed "Limpet" Asbestos is applied without mechanical systems or gadgets, and therefore avoids common, unsightly geometrical patterns.



Sprayed "Limpet" Asbestos is adaptable to any type surface. Illustration shows application on barrelled ceiling.

SPRAYED "LIMPET" ASBESTOS

Sound Absorption Qualities of "Limpet" (Continued)

"*Noise Coefficient*" has also been defined by the Bureau:

> "Noise Coefficient is the average, to the nearest multiple of 0.05, of the coefficients for 256, 512, 1024, and 2048 cycles per second. As its name implies, the noise coefficient is used when the problem is one of general noise reduction as in offices, restaurants, hospitals, and the like."

Acoustical treatments may be classified in two types: (1) The reduction of noise. (2) Acoustical correction to improve audibility.

There are two ways of getting the required amount of sound absorption through an acoustical application:

> First—by covering a relatively small part of an area with a material that gives a high degree of sound absorption per square foot.
>
> Second—by covering a larger area with a material that gives a lower degree of sound absorption per square foot.

The second is often preferable to the first because the distribution of the acoustical material over a wider area gives greater uniformity of sound absorption and cuts down the sound-reflecting area. This means that Sprayed "Limpet" Asbestos can in some cases give a better performance if sprayed in less thickness, but over a greater area—for instance, by putting less thickness on the ceiling but covering the upper part of the sidewalls too. Sprayed "Limpet" Asbestos can be applied in different thicknesses, thus varying its degree of sound absorption per square foot.

In general, an application that covers the upper portions of the sidewalls in addition to the ceiling, is more satisfactory in reducing noise. "Limpet" Asbestos can be sprayed on sidewalls easily and so decorated that it becomes a part of the walls, which is an unique feature.

Sprayed "Limpet" Asbestos Gives a Plus Value — Insulation

There are many cases where a customer gets a real "plus" value from a Sprayed "Limpet" Asbestos application at no extra cost, since it is an effective insulation material. This added feature is especially desirable in cases where the Sprayed "Limpet" Asbestos is applied directly to the underside of the roof of a building. It helps to keep the room temperature more comfortable both in summer and winter.

SPRAYED "LIMPET" ASBESTOS CONDENSATION CONTROL

Atmospheric air always contains a certain measure of moisture in the form of invisible vapor, even when the air appears to be perfectly dry. At a certain given temperature air cannot carry more than a definite amount of water vapor. In this condition the air is said to be "saturated with moisture." The degree of saturation of air is called its relative saturation, or, as it is better known, "relative humidity." If air contains less water vapor than it could actually carry at a given temperature the air is "unsaturated." Saturated air has a relative humidity of 100 per cent and perfectly dry air a relative humidity of 0 per cent. Warm air can carry more water vapor than cold air. Therefore, if saturated air is cooled off, some of the water vapor is precipitated from the air in the form of visible water. This process is called "condensation of moisture." Everyone is familiar with the "sweating" of a glass of cold water or the condensation on a window pane in the home. Water which is condensed from the air, will, depending on circumstances, appear either as dew, fog, rain, snow, hail, frost or as dripping condensation. When unsaturated air is cooled off, its relative humidity rises until, at a definite temperature it becomes saturated. Upon further cooling, dew or fog condenses from the air. This temperature, at which a certain sample of unsaturated air would become saturated, when cooled, is called the "dew point" of the air.

Sprayed "Limpet" Asbestos is the only form of insulation that fits any contour or shape perfectly without an air space in back of it, and this fact, coupled with its high resistance to the transfer of heat, makes it the perfect material for the prevention or control of condensation. This control is carried out by spraying sufficient thickness, usually ½" to 1", directly to the ceiling, roof or walls of a building so that the inner surface of the insulation remains at a temperature above the dew point of the surrounding air. Attempts have often been made to prevent condensation by suspending ceilings of various types of insulating boards under the roof or attaching interior linings to the walls. However, since it is impossible to render this lining air-tight, condensation will continue to take place behind it as the vapor-laden air comes into contact with the cold roof or outer wall. So-called vapor sealing or waterproofing of the inner surface of the insulation actually makes matters worse since it forms a trap for the moisture condensed behind it and prevents it from getting out.

By spraying the insulation directly to the underside of the cold roof or to the inner portion of the wall surface, air spaces between the insulation and these surfaces are eliminated; therefore, no condensation can take place behind the insulation. Owing to the exceptionally strong capillary or wick action which is a feature of Sprayed "Limpet" Asbestos, such moisture as is condensed within the coating at times of peak humidity, is rapidly drawn to the exposed face, where it is re-evaporated into the atmosphere. However, it is essential that sufficient ventilation be provided in the building following application so that the sprayed asbestos can be given the opportunity to dry thoroughly. Also, it must be kept in mind that when extreme humidity conditions are encountered supplementary measures such as the use of an exhaust ventilating system are often required to reduce the high humidity. Unless this is done, an excessive thickness of insulation would be required and the remedy becomes impractical and uneconomical.

It is important, therefore, that essential points be determined before a condensation control problem is handled. These are as follows:

1. The relative humidity at or near the inside of the roof.
2. The inside and outside temperatures under extreme conditions.
3. The extent of ventilation in the rooms.
4. The number of hours per day and number of days per week that the processes are in operation.
5. The location of the factory or building with regards to winds and direct sunshine.
6. Full details as to wall and roof construction together with plans and elevations or complete dimensions.

SPRAYED "LIMPET" ASBESTOS

LW.25 INSULATION FIBER

LW.25 Insulation Fiber replaces the LB.4 and LW.4 Insulation Fibers. It is a blend of thoroughly tested 100% mined asbestos fibers specially developed for insulation and anti-condensation purposes. The appearance of the finished application is similar to the LW.21 Acoustical Fiber. A dry, inorganic binder is incorporated with the asbestos fibers. Thus, one fiber grade, LW.25, now produces a complete coat.

The covering capacity of LW.25 is 12-oz. per sq. ft. per 1" thick. The conductivity or "K" factor is 0.32 BTU/hr./ft.^{2}/°F./in. at 50° F. mean temperature. The rate of application is 100 sq. ft. per hr. per 1" thick.

Instructions for Spraying LW.25.
These follow closely the instructions for LW.21. Refer to those instructions for:

1. Air and Fluid Pressures.
2. Setting of control brush.
3. Application of adhesive coat.
4. Spraying the main thickness coat.
5. Pressing the surface.

The exposed surface of LW.25 can receive the color process or can be left in its natural color. Pressing can be done with either the plain wood tool or with the hobnail pressing tool. If the color process is not used, the finished surface should receive a final overspray with water or preferably, an overspray with TS2 solution. This sets and toughens the surface.

The following table has been established from weights obtained by skilled spray operators. For estimating purposes, allowance should be made for variations in take-off, skill of operator, and overall material requirements.

LW.25

Thickness Finished	Thickness Unpressed	Ounces Per Sq. Ft.	Lbs. per 100 Sq. Ft.	Sq. Ft. per 70 lb. Bag
1/2"	1"	8	50	140
3/4"	1-1/4"	10	63	112
1"	1-1/2"	12	75	93.25
1-1/4"	1-3/4"	14	88	80
1-1/2"	2"	16	100	70
2"	2-1/2"	20	135	56

SPRAYED "LIMPET" ASBESTOS

INSTRUCTIONS FOR SPRAYING ~~LW-21~~ ACOUSTICAL FIBER (Cont'd.)

LW.21 requires slightly more thickness allowance for pressing to the final dimension than the former acoustical fiber. The surface should be pressed back with wooden tools on which all edges are well rounded to prevent surface marks. The face of the pressing tool must be wiped dry occasionally as the finishing goes forward. A fairly firm pressure should be used.

Follow the final pressing with a spraying of the entire surface with a water spray or a fine TS2 spray omitting the fiber. This insures a firmer, tougher surface and permits the fiber to distribute the liquid into the coat.

The covering capacity of LW.21 is 10-oz. per sq. ft. per 1" thick. This is obtained by giving attention to spraying the fiber correctly so that overlapping the rows of fiber produces a felted coat of proper thickness and density. The spraying distance should be 18" to 20" from the surface. The rate of spraying is 100 sq. ft. per hour for 1" thick.

The following table has been established from weights obtained by skilled spray operators. For estimating purposes, allowance should be made for variations in take-off, skill of operator and overall material requirements.

LW.21 Thickness Finished	Thickness Unpressed	Ounces Per Sq. Ft.	Lbs. per 100 Sq. Ft.	Sq. Ft. per 56 lb. Bag
1/2"	1"	~~7~~	44	128
3/4"	1-1/4"	~~8-1/2~~	53	105
1"	1-1/2"	~~10~~	63	89.5
1-1/4"	1-3/4"	~~12~~	75	74.5
1-1/2"	2"	~~13-1/2~~	85	66
2"	2-1/2"	~~17~~	106	52.5

2-15-57 (Canceling SPL-8C dated 12-15-55) SPL-8C

08649

SPRAYED "LIMPET" ASBESTOS

HOBNAIL TEXTURED SURFACE

To obtain a new and attractive surface texture to any Sprayed "Limpet" Asbestos application, use a wood pressing tool for final finishing, prepared as follows:

1. Drive 1/2" long nails with dome-shaped heads into face of tool in a random pattern. Head of nails should be 1/4" diameter and 1/8" high. Distance between edges of nail heads should vary from 1/4" to 1/2" apart. Make no attempt to place nails in rows or definite pattern.

2. Press surface of fiber in same manner as with a smooth faced tool. Keep nail heads wiped clean as pressing progresses.

The above operation will blend together most surface defects and fissures to provide an overall textured appearance. The random hobnail pattern permits repeated pressing in the same area without changing the general appearance of the pattern. It is especially effective with the color process.

Nails tested are as follows:

Baur Tack Company	- Cone head Hungarian nail.
Atlas Tack Corporation	- High head Hungarian nail.
American Tack Company	- No. 19 nickel upholstery nail.
Stout Bros., Philadelphia	- No. 12 brass upholstery nail.

Obtain nails from upholstery supply dealers. Quantity required: Approximately 5 nails per sq. in. of surface.

SPRAYED "LIMPET" ASBESTOS

LB.9 FIRE PROTECTION FIBER

All Sprayed "Limpet" Asbestos fiber has high fire protection value. Any application for acoustical use or for insulation purposes gives efficient protection against fire to the structure to which it is applied. The LB.9 grade of "Limpet" used for the fire tests at Chicago is recommended where protection must be furnished for definite ratings secured in accordance with Underwriters' Laboratories tests. This fiber sprays much the same as other grades but presses to form a coat of greater density.

LB.9 Fiber

Density	- 15 to 18 lbs. per cu. ft.
Covering Capacity	- 20 to 24-oz. per sq. ft. per 1" thick
Spraying Rate	- 75 to 100 sq. ft. per hour per 1" thick.

LB.9 Fire Protection Fiber is a blend of Blue South African Asbestos Fibers specially prepared with a dry, inorganic binder. An application of this fiber should be pressed to form a firm, dense coat at the weights given above. The surface should receive a thorough overspray with water after it is pressed to insure a slow drying out period.

Structural Steel.
Beams, columns and other structural members should be clean, free of scale and rust. No primary adhesive is required since the "Limpet" fibers knit together to form an interlocking coat around the steel member. The inside corners or re-entrant angles should be sprayed first and the thickness built up on the inside steel faces to be followed by the spraying of the flange areas.

Cellular Steel and Corrugated Steel.
Only a small area of the steel surface should receive an asphalt emulsion adhesive. This insures initial adhesion at the time of spraying. Example; in the case of the H. H. Robertson steel deck, the 2" wide upper cell of the unit would be given a light coat of the emulsion. All steel surfaces must be free of oil, grease, dirt and rust before spraying with fiber.

Concrete Surface.
Wet thoroughly with water. Then apply a light coat of adhesive in spots or strips as recommended for asbestos corrugated.

Asbestos Corrugated.
Asphalt emulsion should be used by stripping it across the corrugations on approximately 16" centers after wetting the sheets thoroughly with water.

Application Rates.
Although the spraying rate for LB.9 fiber can be done at 75 to 100 sq. ft. per hour per 1" thick on a flat, open area, application to structural steel is a much slower operation. This is due to the many corners and edges to be sprayed which require building up to thickness and careful pressing. For example, a

SPRAYED "LIMPET" ASBESTOS

LB.9 FIRE PROTECTION FIBER (Cont'd.)

check made of spraying rate during actual application for recent fire tests, results in the following:

Cellular Steel Deck - Thickness of "Limpet" varied from 2-3/4" to 1-1/4". Rate of spraying for 3-man crew - 25 sq. ft. of surface area per hr. This includes pressing.

Steel Beam Caged with Metal Lath - Thickness of "Limpet" 1-1/2". Rate including pressing - 40 sq. ft. per hour.

Steel beam sprayed to follow the contour with 2" thickness of "Limpet". Rate including pressing - 30 sq. ft. per hour.

Material Required.

To estimate the amount of material required for LB.9 application to structural steel, take the cross-section area of material around the member and convert this into an equivalent total area 1" thick. Then multiply this by 1-1/2 lbs. of LB.9 per sq. ft. For example:

8" x 4" column 10 feet long sprayed 1" thick to follow the contour. The cross-section of material would be 36 sq. in.

$\frac{36}{144}$ sq. ft. x 10 x 12 = 30 sq. ft. 1" thick.

30 x 1.5 lbs. = 45 lbs. of LB.9 required.

SPRAYED "LIMPET" ASBESTOS

EQUIPMENT FOR APPLICATION

The equipment consists of a spray machine, a spray gun, a hose for fiber, for air and for water, tools for pressing and finishing, an air compressor and a pressure tank and/or fluid regulator for the water supply. See detailed list.

Although the Spray Machine is equipped with a continuous damping device, described on Page SPL-25, which eliminates most of the dust particles, it is strongly recommended that each member of the spray crew wear a dust respirator at all times during the application process.

The hopper of the Spray Machine should be filled only to one-half its capacity with fiber of the proper grade. Overfilling will cause overloading and jamming of the fan and fiber hose. The amount of fiber flowing to the fan and gun is regulated by the adjustment control to the rear brush.

Clean water is fed to the damping device and to the gun through the use of a pressure-feed tank or by a fluid regulator connected directly to a building's water line. The pressure on the water should be 5 lbs. per square inch plus 1 lb. for each 2" the gun is above the tank or regulator. For example, when spraying at a height of 20 feet, the pressure on the tank would be 15 lbs. If the pressure required is more than 20 lbs., then the damping device should be cut off or the pressure tank moved to a higher level.

The air from the compressor to the gun should be maintained at 30 lbs. per square inch either by means of a regulator on the compressor or a double regulator on the tank.

Under normal hook-up arrangement, air flows from compressor to tank to gun. Water flows from tank to machine where it supplies the damping device and then from machine to gun. The clutch control, described on Page SPL-25, gets air from the small bore hose connecting the gun to the control on the machine.

The spray gun is operated by a single lever having three working positions. (See Page SPL-25.) When the lever at the gun is pushed to the full forward position, air is permitted to flow to the pneumatic control cylinder on the machine, thereby starting the spiked belt and the flow of fiber to the fan. From the fan the fiber is blown in a steady stream to the gun. At the same time air goes to the damping jets at the machine by way of the air control valve, and a fine mist of water is deposited on the fiber resting on the spiked belt, thus eliminating most of the dust.

When the equipment is in operation, the fiber leaves the gun nozzle; and at a distance of about 9" from the gun, it is intercepted by the atomized spray of water from the 6 jets of the gun. The gun should be held 18 to 20" from the surface, at an angle of approximately 45°, so that the dampened fiber is deposited uniformly until the required thickness is built up. Each advancing layer of fiber should slightly overlap the preceding layer as the strength of the "Limpet" application depends upon the interlacing or felting of the fibers, as well as to the bonding materials contained therein. A slight excess of thickness, around 3/8", is sprayed on and the surface should then be pressed to the specified thickness. A final overspray of water only, will greatly toughen the surface.

SPRAYED "LIMPET" ASBESTOS

LIST OF EQUIPMENT REQUIRED FOR APPLICATION

This itemized list is prepared for the information of applicators. Either list of equipment as shown under Binks Manufacturing Company or DeVilbiss Company may be obtained by the applicator. Electrical wire and hose lengths specified may be varied slightly to meet standard lengths as furnished by suppliers or to meet individual demands.

EQUIPMENT SUPPLIED BY KEASBEY & MATTISON COMPANY

Spray Machine with 1 H.P. motor wired for 220 V.A.C.

Multi-Jet Spray Gun.

Driving Belts--motor to fan; and motor to main drum.

Tools for use on machine and gun.

Alternate pulleys for changing fan and main drum speeds.

Adapters (9/16" x 1/4") at gun fittings and (9/16" x 3/8") at machine fittings.

EQUIPMENT SUPPLIED BY APPLICATOR

1 - 50-foot length fiber blowing hose, 1 3/4" or 2" I.D. (See Page SPL-28.)

2 - 25-foot lengths #12 flexible rubber covered cable. (2-conductor wires, with ground wire for leads to machine and compressor.)

1 - Dust Respirator for each man. Obtainable from Safety Equipment firms.
Example--American Optical Company Model R-9100.

1 - Set--Wooden Pressing Tools. (Page SPL-12-13.)

2 - Steel Plasterer's Trowels.

2 - Whitewash Brushes for asphalt emulsion.

1 - 50-foot or 100-foot length 3/4" garden hose for water supply.

SPRAYED "LIMPET" ASBESTOS

LIST OF EQUIPMENT REQUIRED FOR APPLICATION

Equipment Supplied by Applicator (Continued)

Binks Manufacturing Company

Order hose and connections assembled, with standard pipe threads.

Length	Hose No.	Hose Size	Connection No.	Connection Size	Use
1—50 ft.	H-105	5/16" I.D.	2-SC-317	1/4" (F)	Air—Tank to Gun
1—50 ft.	H-108	1/2" I.D.	2-SC-333	3/8" (F)	Air—Compressor to Tank
1—50 ft.	H-110	1/4" I.D.	No Fittings	—	Air—Gun to Clutch Control
2—50 ft.	H-208	3/8" I.D.	2-SC-328	3/8" (F)	Water—Gun to Machine
			2-SC-325	1/4" (F)	TS — 2 —Tank to Gun
1—15 ft.	H-208	3/8" I.D.	2-SC-328	3/8" (F)	Water—Tank to Machine

1—Pressure Feed Tank (10, 15, 30 or 60 gallon) with 3/8" water outlet, 3/8" air inlet and 1/4" air outlets. Complete with PR-104 double regulator air control unit.

1—Air Compressor (Quincy) TX-8—1½ H.P., wired for 220 Volts A.C.—8.6 cu. ft. displacement.

1—SD-57 Straight Valve (1/4"M x 1/4"F) connects to water hose at gun.

1—D-1846 Material Strainer to filter water at tank.

1—PM-100 Material Regulator for reducing main line water pressure when pressure tank is not used.

DeVilbiss Company

Order hose and connections assembled, with standard pipe threads.

Length	Hose No.	Hose Size	Connection No.	Connection Size	Use
1—50 ft.	H-1901	5/16"	2-P-HC-4527	1/4" (F)	Air—Tank to Gun
1—50 ft.	H-1903	7/16"	1-P-HC-4550	3/8" (F)	Air—Compressor to Tank
			1-P-HC-4530	1/4" (F)	
1—50 ft.	H-1900	1/4"	No Fittings	—	Air—Gun to Clutch Control
2—50 ft.	H-1673	3/8"	2-P-HC-4548	3/8" (F)	Water—Machine to Gun
			2-P-HC-4528	1/4" (F)	TS — 2 —Tank to Gun
1—15 ft.	H-167	3/8"	2-P-HC-4548	3/8" (F)	Water—Tank to Machine

(Continued on Next Page)

SPRAYED "LIMPET" ASBESTOS

LIST OF EQUIPMENT REQUIRED FOR APPLICATION

Equipment Supplied by Applicator (Continued)

1—Pressure Feed Tank (P-QM-5094) 10 gal. Also available 15, 30, 60 gal. size with 3/8" water outlet, 3/8" air inlet and 1/4" air outlets. Complete with P-QM-4092 double air regulator.

1—Air Compressor (PL-502) electric 1 H.P., wired for 220 Volts A.C. or (PLE-502) gas, 1 H.P.

1—P-H-5516 Adjusting Valve (1/4" connections). Use at gun as water valve.

1—P-VS-506 Material Strainer. To filter water at tank.

1—HG-516 Fluid Regulator to reduce water pressure from main line when pressure tank is not used.

Pressure Regulator for Water Supply

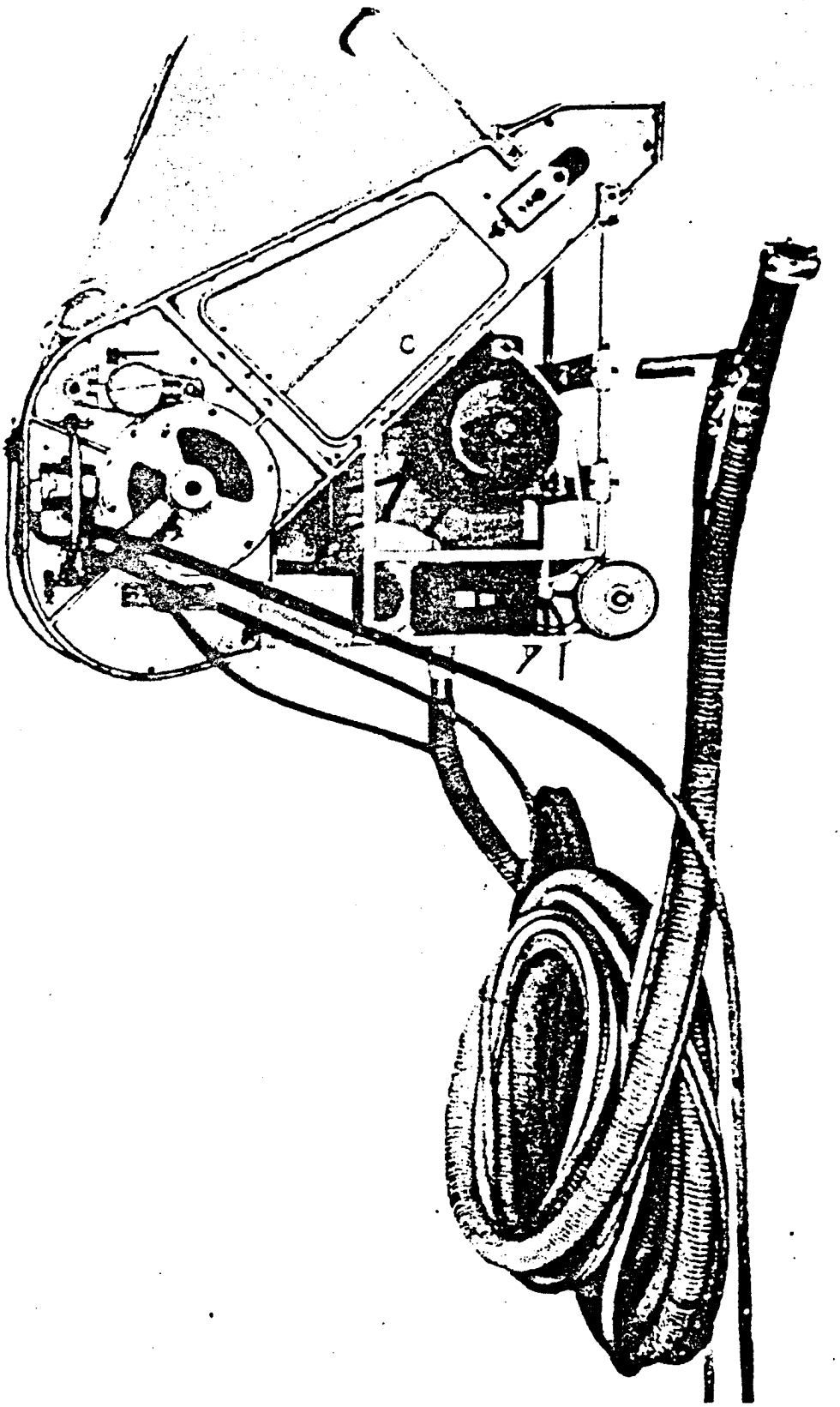
A suitable pressure regulator for the water supply may be used whenever a continuous supply of clean water under pressure above 20 pounds per square inch is available at all times, fairly close to the equipment. Labor costs can be reduced by using the regulator, since it will eliminate the stopping of spraying caused by the periodic refilling of the pressure feed tank.

This arrangement of eliminating the pressure tank can only be used where it is possible to maintain a constant connection to the building water line under pressure at all times. Any interruption to the main water line will cause a shut-down of spraying. The ideal way is to have both the regulator and the pressure tank systems available on all jobs.

The hook-up is easily made as follows:

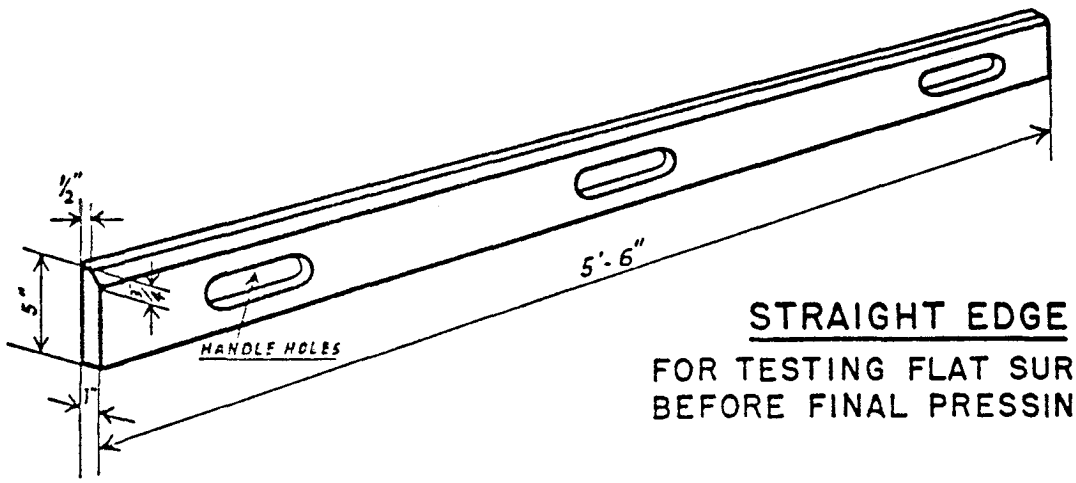
To the inlet on the DeVilbiss HG-516 Regulator connect a shut-off valve, similar to DeVilbiss Fluid Valve, P-L-72. Then connect a 3/4" garden hose to the building water line and to the above valve by using a 3/4" x 3/8" pipe reducer between hose and valve. Connect the regulator outlet to the 3/8" hose normally used from tank to machine by using a DeVilbiss AD-11 coupling 3/8" NPT(M) x 3/8" NPS(M). A similar arrangement can be made with the Binks PM-100 Material Regulator.

SPRAYED "LIMPET" ASBESTOS



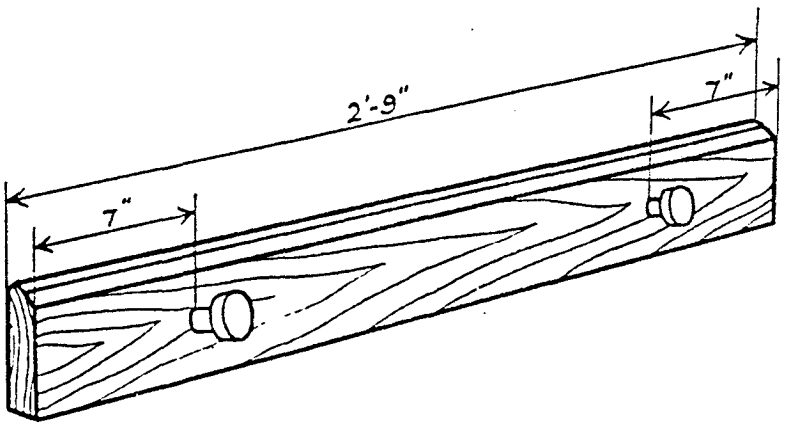
The Spray Machine

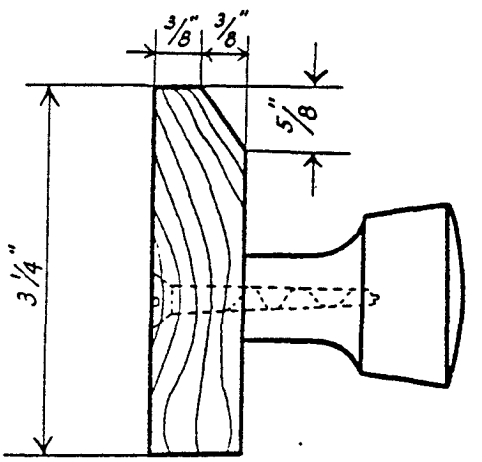
SPRAYED "LIMPET" ASBESTOS



STRAIGHT EDGE

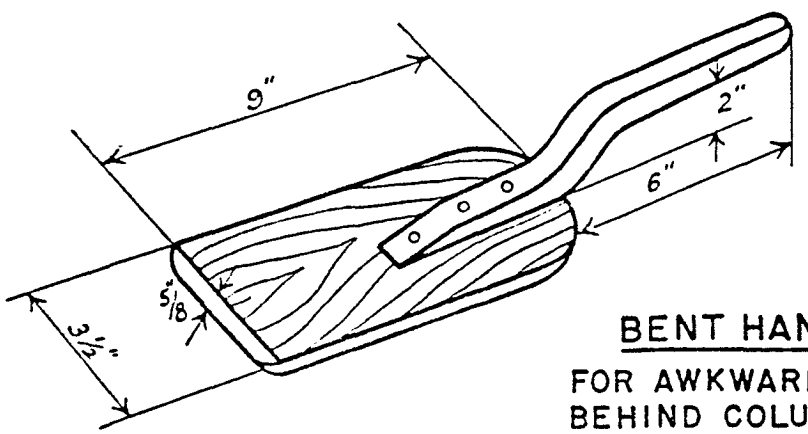
FOR TESTING FLAT SURFACES
BEFORE FINAL PRESSING





CORNER PRESSING TOOL

FOR INTERNAL CORNERS
BEVELLED FOR BETTER VISION



BENT HANDLED TOOL

FOR AWKWARD WORK SUCH AS
BEHIND COLUMNS OR BRACKETS

SPRAYED "LIMPET" ASBESTOS

APPLICATION SPECIFICATIONS
ACOUSTICAL TREATMENT

For Approved Applicators Only

1. GENERAL

These specifications outline general requirements for the supply and application of Sprayed "Limpet" Asbestos for acoustical treatment in buildings.

2. MATERIALS

Shall conform to the following:

a. **Priming Coat for Primary Adhesion**
Asphalt Emulsion—Flintkote C-13-HPC—Flintkote Co. or approved equal.
TS-2 Solution—Refer to Data Page SPL-8E

b. **Acoustical Material**
Sprayed "Limpet" Asbestos acoustical type fiber supplied by Keasbey & Mattison Company.

c. **Paint** —For standard spray painting of the surface use:
Resin or oil emulsion or casein type paints as manufactured by Sherwin-Williams Co., Pittsburgh Plate Glass Co., The Glidden Co., National Gypsum Co., Wall Products Co., or approved equal.

Note: Where constant high humidity for a period of 48 hours or more and lack of ventilation facilities are prevalent, the paint to be applied to the Sprayed "Limpet" Asbestos should contain a fungus or mold retarding agent. Information on this subject may be obtained from the paint manufacturer. See Data Page SPL-8G and 8H for spraying fiber with color.

3. THICKNESS

Thickness should be sufficient to give a sound absorption at 512 cycles, or a noise reduction of not less than that called for in specifications. It is recommended that values shown in National Bureau of Standards' Tests LC-870 should be used in determining proper thickness. See Data Page SPL-4 for Sound Absorption and Noise Reduction Coefficients.

4. FINISH (Texture and Painting)

Shall be as agreed upon between applicator and architect and/or owner. Decision shall be based on a sample submitted by applicator as representative of finish he proposes to furnish under the terms of his proposal. All samples for this purpose should be at least 12″ x 12″ on suitable backing and should show texture and color.

Stock samples, prepared to represent material only, should not be used to select finish for a specific job.

5. PREPARATION AND PRELIMINARY OPERATION

a. **Type of Surface**

Application can be on solid backing such as concrete, plaster, metal or asbestos-cement, or direct on metal lath.

Surfaces that are porous or absorbent as brick, unglazed tile, asbestos-cement, etc., should be thoroughly wetted with clean water before attempt is made to apply a primary adhesive.

Ceilings and walls finished with very porous materials such as fiber insulating board should be avoided as it is extremely difficult to completely seal the surface before applying the primary adhesive and these surfaces are liable to warp.

New Galvanized Iron or Steel should be free of oil, grease and dirt. The surface should be etched with a product similar to Lithoform (American Chemical Paint Co., Ambler, Pa.) and washed down with clean water and dried.

SPRAYED "LIMPET" ASBESTOS

a. **Type of Surface (Continued)**

Aluminum should be cleaned and then etched with Alodine or Deoxidine (American Chemical Paint Co.) followed by washing with clean water. When dry a coat of zinc chromate paint should be applied. Two coats of bituminous adhesive are recommended after the paint has dried.

Steel should be scale-free and clean. Products such as Deoxidine or Granodine can be used for cleaning and etching. Steel work should be coated with red lead or other approved paint. Following this, adhesive is applied and spraying done in the normal manner. See Data Page 8B and 8E.

Wood should be cleaned and any loose paint removed. Apply adhesive and spray fiber to a thickness of approximately ¼" but do not press. Large headed nails about 1" long should then be driven in at 16" centers so that head of nail is just clear of the fiber. Then spray to the required thickness and press in the normal manner.

Note: Cover only about 2 sq. yds. with the first coat before driving in the nails and follow at once with required thickness to prevent laminating.

b. **Condition of Surface**

The surface to be treated shall be clean and free from dirt, grease, scale, loose paint or plaster, or any other condition which would prevent good adhesion.

c. **Moulding**

Where wood moulding is required, a chalk line should be run around the room at level of the thickness specified. A strip of wood ¼" thick shall be attached with its lower edge at the line. Spray ¼" over required thickness and press up to lower edge of the wood strips. The strip will be concealed by the moulding (See Par. 7) when job is completed.

d. **Scaffolding**

Shall be sufficient to permit free and safe movement of workmen over a reasonable area, and of such height that the finished work shall be 4" to 6" above the heads of the workmen. Adequate scaffolding is an important part of the Sprayed "Limpet" Asbestos application.

e. **Drop Cloths**

If interior of room is such as to require it, floors and furniture shall be protected by drop cloths.

f. **Masking**

Side walls and any other portions of the room requiring protection shall be masked using medium-weight kraft paper and Scotch tape. Tape 1" or 1½" wide is most convenient. Paper 18" or 24" wide is usually sufficient.

g. **Removal of Lighting Fixtures**

Lighting fixtures in the ceiling, if already in place, shall be removed before work is started. If impossible to remove they shall be dropped far enough to permit application of the Sprayed "Limpet" Asbestos, and shall be masked and otherwise protected against damage. All glass shades, globes and similar parts shall be removed.

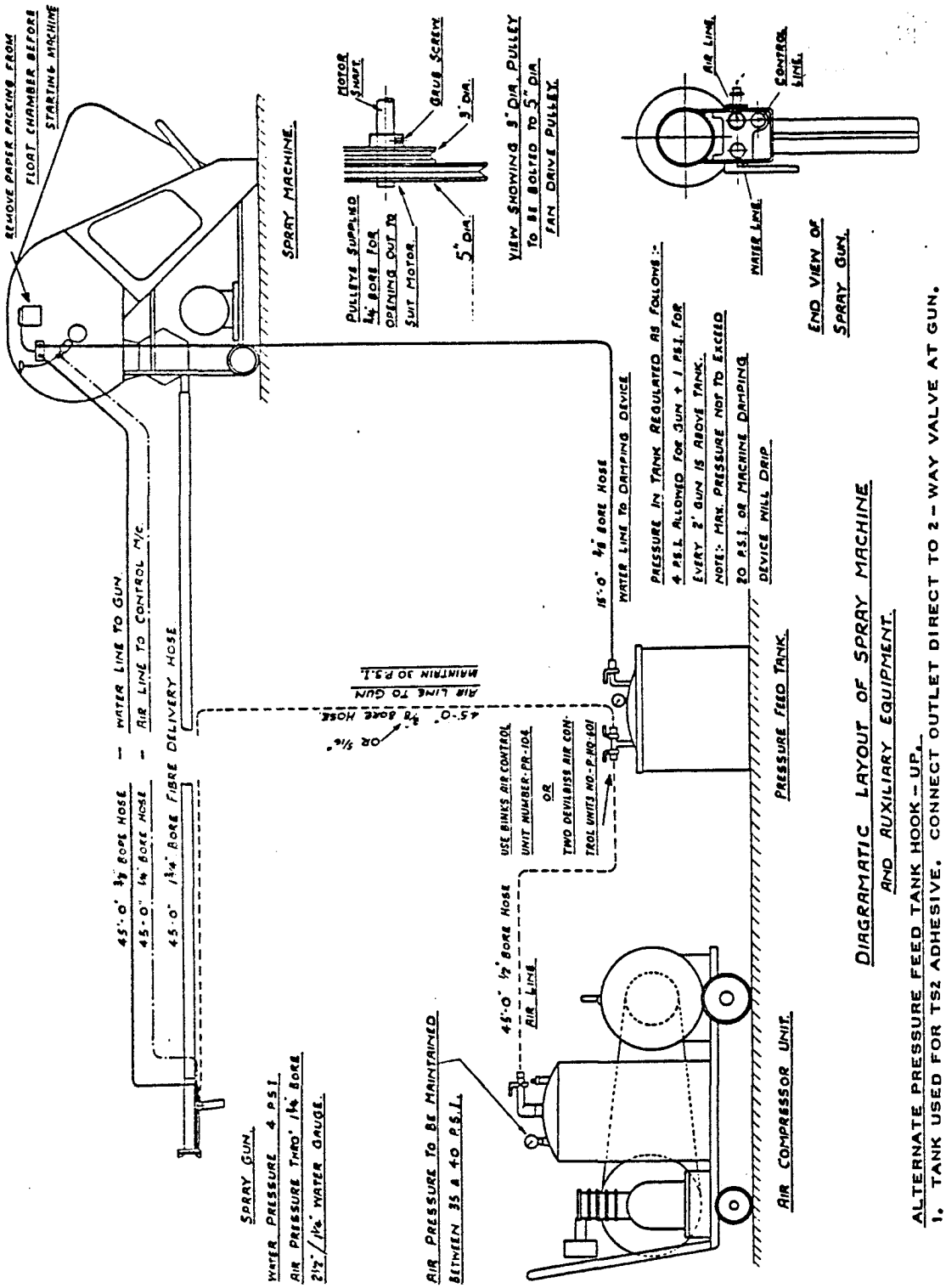
h. **Working Light**

If daylight is insufficient, adequate lighting must be provided, bearing in mind that accurate leveling of surface necessitates good lighting.

i. **Electric Current**

Electric current with 220 AC voltage shall be provided by the customer from the nearest fuse box directly to the spray machine and the air compressor.

SPRAYED 'LIMPET' ASBESTOS



DIAGRAMATIC LAYOUT OF SPRAY MACHINE AND AUXILIARY EQUIPMENT.

ALTERNATE PRESSURE FEED TANK HOOK-UP.

1. TANK USED FOR TS2 ADHESIVE. CONNECT OUTLET DIRECT TO 2-WAY VALVE AT GUN.
2. USE PRESSURE REGULATOR FOR WATER SUPPLY. SEE PAGE SPL-108.
3. OTHERWISE, USE 2 TANKS, ONE FOR WATER AND ONE FOR ADHESIVE.

SPRAYED "LIMPET" ASBESTOS

PARTS LIST

PART N°	DESCRIPTION	QUANTITY PER M/c	REMARKS.
H.1.	CREEPER BELT	1.	
H.2.	MAIN DRUM WITH REDUCTION GEAR	1.	
H.3.	REDUCTION GEAR EXTENSION SHAFT	1.	
H.4.	MAIN DRUM GROOVED PULLEY.	1.	7" DIA. ALUMINIUM
H.5.	SMALL SPROCKET FOR BRUSH DRIVE.	1.	12 TEETH
H.6.	FRONT BRUSH.	1.	
H.7.	" " SPINDLE	1.	
H.8.	" " LARGE SPROCKET.	1.	24 TEETH.
H.9.	" " SMALL SPROCKET.	1.	12 TEETH.
H.10.	" " BEARING	2.	
H.11.	REAR BRUSH.	1.	
H.12.	" " SPINDLE.	1.	
H.13.	" " SPROCKET.	1.	24 TEETH.
H.14.	" " BEARING.	2.	
H.15.	BOTTOM DRUM.	1.	
H.16.	" " SPINDLE.	1.	
H.17.	" " BEARING.	2.	
H.18.	" " ADJUSTER.	2.	
H.19.	" " BRACKET.	1. R.H. 1. L.H.	
H.20.	MOTOR (ELECTRIC OR AIR)		AS SPECIFIED.
H.21.	DRUM DRIVE PULLEY.	1.	3" DIA. STEEL
H.22.	FAN " "	1.	5" DIA. ALUMINIUM
H.23.	FAN CASING.	1.	
H.24	FAN PULLEY.	1.	1½" STEEL
H.25.	FAN SPINDLE.	1.	
H.26	" IMPELLOR.	1.	
H.27.	" BEARING.	1.	
H.28	" DUCT.	1.	
H.29.	CLUTCH FLANGE.	1.	
H.30	" CONTROL CYLINDER.	1.	
H.31.	" " PISTON.	1.	
H.32	" " " LEATHER	1.	
H.33.	ENDLESS VEE BELT 3/8" x 7/32" SECTION	1.	LENGTH TO SUIT.
H.34.	LEATHER BELT.	1.	3/8" DIA
H.35	TUBE CONNECTION FOR HOSE.	1.	
H.36.	JOCKEY PULLEY ASS. REAR.		
H.37.	" " " FORWARD.		
H.38	LOWER SIDE FRAME.	1. R.H 1. L.H.	CASTING 1288-2 CASTING 1288-1.
H.39.	UPPER SIDE FRAME.	1. R.H 1. L.H.	CASTING 1124 CASTING 1123

Parts List — Spray Machine

Please Read Carefully

SPRAYED "LIMPET" ASBESTOS

NOTES ON OPERATION AND CARE OF SPRAY MACHINE

In the application of Sprayed "Limpet" Asbestos, conditions may develop in the mechanical operation of the Spray Machine that should be quickly identified and corrected by the operator and thus assure the high-quality finished job possible and expected.

To assist the operator in recognizing such conditions as they arise, and to enable him to make the necessary adjustments, the following check list will be found helpful.

Fiber Too Wet.

1. Water pressure too high.
2. Fiber stream too weak.
3. Wrong setting of control brush.
4. Wrong setting of damping device.

Fiber Too Dry.

1. Water pressure too low.
2. Water jet or jets choked.
3. Fiber stream too heavy.
4. Gun held too near to surface being sprayed.

Fiber Too Slow.

1. Wrong setting of control brush.
2. Belt slipping.
3. Hose choked.
4. Fan speed too low for length of hose.
5. Too many bends in fiber hose.
6. Fan impeller or casing worn.

Fiber Too Fast.

1. Wrong setting of control brush.
2. Fan speed too high for length of hose.
3. Too much fiber in hopper.

Fiber Erratic.

1. Belt slipping.
2. Hose choked.
3. Hose crushed.
4. Too much fiber in hopper.
5. Wrong setting of damping device.
6. Pneumatic clutch control not operating correctly.

Fiber Stream Distorted.

1. Gun end blocked.
2. Gun end distorted.
3. Air Pressure to gun too high.
4. Air or water jets choked.

Fiber Flying About.

1. Gun held too far from surface.
2. Fan speed too fast.
3. Air pressure too high.
4. Gun end blocked.
5. Gun being waved about.

No Fiber Issuing from Gun.

1. Fan duct or hose choked.
2. Foreign body in fan or hose.
3. Spiked creeper sheet loose or fouling sheet metal work.
4. Pneumatic clutch control not operating.

Causes for Leakage from Damping Jet.

1. Drop of water left on jets.
2. Damage to copper float.
3. Needle valve dirty.
4. Pressure of water in tank greater than 20 lbs. per sq. inch.
5. Uneven machine — causing float to jam.
6. Air leak in line to float chamber.

Uneven Surface on Sprayed Coating.

1. Each row of Fiber not carefully over-lapped.
2. Gun pointed at right angles to surface.
3. Gun not moved at an even rate.
4. Fiber too fast.
5. Fiber erratic.
6. Gun too near surface.
7. Gun too far from surface.
8. Fiber too wet.

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SPRAYED "LIMPET" ASBESTOS

OPERATION AND CARE OF DAMPING DEVICE

See Drawing SM 197

When the continuous damping device is in operation, an amount of finely atomized water is introduced into the "Limpet" fiber on the spiked belt in order to dampen the fine dust and to create better working conditions and a cleaner area for the spraying process.

When the lever on the spray gun is moved to the full forward or "on" position, air flows to the air cylinder as described under "clutch control." At the same time air passes to the damping nozzle via a control valve. As the air is passed through the five jets in the nozzle, suction is created and a fine spray of water is deposited on the fiber flowing on the spiked belt. When the air at the gun is stopped, the spiked belt stops, and the flow of air and water to the damping jet also stops.

The float chamber (Section A-A Drawing SM 197—see page SPL-26) contains a copper float to operate the needle valve regulating the water entering the chamber. This float is packed with paper at the factory to prevent damage. It is necessary to open the top and remove packing before operating the damping device. The pressure cannot be greater than 20 lbs. per square inch or the needle valve will remain open and the chamber will flood resulting in dripping from the five jets above the belt. An uneven or unsteady footing for the machine can cause the same trouble.

To control the amount of water from the five jets, only open the knurled screw on the air control valve about one-quarter turn or until an "as-little-as-possible" amount of atomized water goes to the fiber. Too much damping causes the fiber to stick to the fan blades and to the sides of the fan duct. It also causes the spiked belt to get wet, damaging the fabric and permitting fiber and dust to cake and harden there. (See instructions for cleaning the spray machine.)

When the machine is running and the damping device is turned on, the machine should always contain fiber or the belt will become saturated. At the end of each day's spraying, the air control valve should be closed and the machine, without fiber, should be run for a few minutes to clean the brushes and spiked belt thoroughly.

To test the flow of water from the jets a piece of cardboard or heavy paper can be held under the nozzle to catch the water. If the jets are not all operating, a fine wire, such as the brush wire, can be used to clear the tiny jet openings for air and water.

OPERATION AND CARE OF SPRAY MACHINE CLUTCH CONTROL

(Page SPL-9 describes the necessary equipment and its use in the application of Sprayed "Limpet" Asbestos. Details of the function and care of the Clutch Control and its relation to the Control Lever at the gun, are described in this page.)

The flow of fiber can be started or stopped by the operator of the spray gun by means of a control cock lever. Control is maintained through three positions of the lever; namely, "off"; "middle"; and "on".

At the "off" position, no water or fiber can come from the gun. The control lever, at this point, is pulled back as far as it will go. The "middle" or vertical position of the lever permits water and compressed air to mix and flow from the six jets on the gun head. A small valve (Binks No. D.S.-57 or DeVilbiss No. P-H-5516 or equal) coupled to the water hose at the gun, regulates the flow of water. The "on" position starts the flow of fiber to the gun. To arrive at "on" the lever is pushed forward all the way from the "middle" location.

The action of the gun lever at "on" position permits compressed air to pass from the gun to a pneumatic clutch control cylinder mounted on the spray machine. This cylinder contains a piston sealed with a leather washer. Compressed air enters the cylinder and forces the piston downward until it engages the clutch flange. This action causes a reduction gear to start the movement of the main drum which in turn starts the flow of fiber on a spiked belt.

SPRAYED "LIMPET" ASBESTOS

Operation and Care of Spray Machine Clutch Control (continued)

If at the "on" position of the control cock lever, fiber does not come from the gun, the usual fault is with the piston action. The piston possibly has not engaged the clutch flange to start the movement of the spiked belt. This condition can sometimes be corrected by continued movement of the control cock lever from "middle" to "on" position.

After several such attempts have failed, it then becomes necessary to remove the control cylinder from the machine so that the leather washer around the piston can be inspected. To make this inspection, the bottom plate of the cylinder should be removed.

Upon inspection, it will usually be found that the leather washer has become hard and dry and thereby fails to make the proper seal against the leakage of air. The washer should be softened by oil and carefully replaced in the cylinder.

To stop the flow of fiber, the operator must first move the lever from "on" back to the "middle" position and pause at this point. The reason for the pause at the "middle" position is as follows: at this position air pressure on the clutch control is released which permits the piston to withdraw from the clutch flange, thus stopping the movement of the spiked belt with its load of fiber. Since the fan and blowing hose are still filled with dry fiber, the pause is made to provide water for this fiber until it has cleared from the hose. This prevents the escape of dry fiber into the room. The control lever can then be pulled back to the "off" position.

CLEANING OF THE SPRAY MACHINE

1. **Clean-out Door.** The hinged door at the rear of machine near the floor should be opened and surplus fiber cleaned out every few hours during operation. Use a stick (do not use hands).
2. **Drum Faces.** The hinged door at the sides of the machine should be opened each day and any loose fiber on the inside of the spiked belt (creeper sheet) or against the drum face, should be removed by hand. If this is not done, the packed fiber building up on the drum face can cause the belt to be stretched and get out of alignment. When using white surfacing fiber, special attention should be given this cleaning operation, since the finer white fiber works down inside the belt more readily.
3. **Guide Strips.** Above the side doors there is a metal guide strip for the spiked belt. These strips should be inspected for fiber dust and kept clean by running the hand along them from the underside of the spiked belt.
4. **Spiked Belt or Creeper Sheet.** This belt should be kept free from water or wet fiber. When using white surfacing fiber, the damping device should be turned off. The same is true when the flow of blue fiber has been cut down for filling-in and finishing work. Otherwise, wet fiber will cling to the belt and spikes, necessitating considerable labor to clear off if allowed to dry and set.
5. **Fan Impeller Blades.** These blades should be cleaned of any fiber sticking to them by lifting the flap to the fan air inlet and reaching the blades with the hand. ALWAYS SHUT DOWN THE MACHINE FOR THIS JOB.
6. **Rear Control Brush.** This brush is kept clean of fiber by an adjustable comb attached to the frame of the machine. The comb is set so that its teeth just enter the brush. It also prevents the brush from overloading with fiber. There is no definite setting of the comb so long as the teeth enter the brush. The rear control brush can be used to clean the fiber from the spiked belt by turning the control knob to the left or counter clockwise for a few seconds while the belt is moving. Such action brings the brush against the spikes, and thus clears off the fiber which can then be discharged through the fan.
7. **Front Stripping Brush.** This brush strips or clears the fiber from the spiked belt and throws the fiber into the fan duct. The brush should enter the spikes but should just clear the belt fabric. Permanent setting is made at the factory; however, side brackets permit adjustment which may be necessary to compensate for wear from continual use.

SPRAYED "LIMPET" ASBESTOS

LUBRICATION OF SPRAY MACHINE

1. **Fan Bearing.** The grease cup at front of fan should be kept filled and should be given one turn with each day's operation of the machine.

2. **Motor.** The motor should be greased or oiled every 3 to 6 months, dependent upon amount of use.

3. **Main Drum Reduction Gear.** There are three plugs; one for filling, one for oil level and one for draining. Inspection should be made every 2 to 3 weeks to see that oil flows from the middle or oil level opening. At the end of each 6 months, oil should be drained and refilled with 2 or 3 oz. of S.A.E. 30 or winter-grade motor oil until the level is reached.

4. **Upper Drum, Lower Drum, Stripping Brush and Control Brush.** The bronze bearings for these shafts are impregnated with graphite and, if machine is kept clean no lubrication is required. However, a few drops of oil, applied occasionally to the inside surface of the bearings will insure good operation.

5. **Chains.** The chains driving the brushes should be given a little oil in order to prevent them from running dry over the sprockets.

6. **Clutch Cylinder.** Leather washer on piston should be kept soft and preferably oiled with castor oil.

7. **Fiber Hopper.** The sides of the hopper should be kept smooth and free from rust. A little flake graphite on a cloth can be rubbed over the metal each week.

8. **Fan Duct.** The inside should be rubbed with graphite to prevent fiber from sticking and passing through the fan in lumps. Use same method as for lubricating the fiber hopper.

SPRAYED "LIMPET" ASBESTOS

FIBER BLOWING HOSE

The detailed information given below has been prepared for the Sprayed "Limpet" Asbestos Applicator in order to enable him to avoid difficulty in procuring the fiber blowing hose and in making the proper connections for it.

The first item listed under General Equipment on Data Page SPL-10 specifies: 1—45' length fiber hose, 1¾" I.D. x 2¼" O.D., wire-inserted, corrugated outside, smooth inside. The manufacturers of this type of hose have discontinued the production of the 1¾" I.D. and now classify it as a special size. Therefore, in buying new hose for the Spray Machine, it will be necessary to order 2" I.D. A standard length of 50 or 60 feet of this size hose with smooth ends is usually carried in stock by suppliers. The 2" I.D. hose carries the fiber in the same manner as the 1¾" I.D. type and does not change the spraying process.

Future spray machines will be equipped to take the 2" I.D. hose at the end of the gun and at the tube connector to the fan. Some applicators now have 1¾" I.D. hose which they purchased when this size was carried in stock. Others will be able to procure only the 2" I.D. size. A simple arrangement of connectors obtainable at any automotive service station is outlined below and will provide for uniform operating conditions.

A. 2" I.D. Fiber Hose to 2" tube at fan and 2" end of gun. No special connector required.

B. 2" I.D. Fiber Hose to 1¾" tube at fan and 1¾" end of gun. Obtain an 8" length of 3-ply auto radiator hose 1¾" I.D. x 2" O.D. for the fan end and 6" length for the gun end.

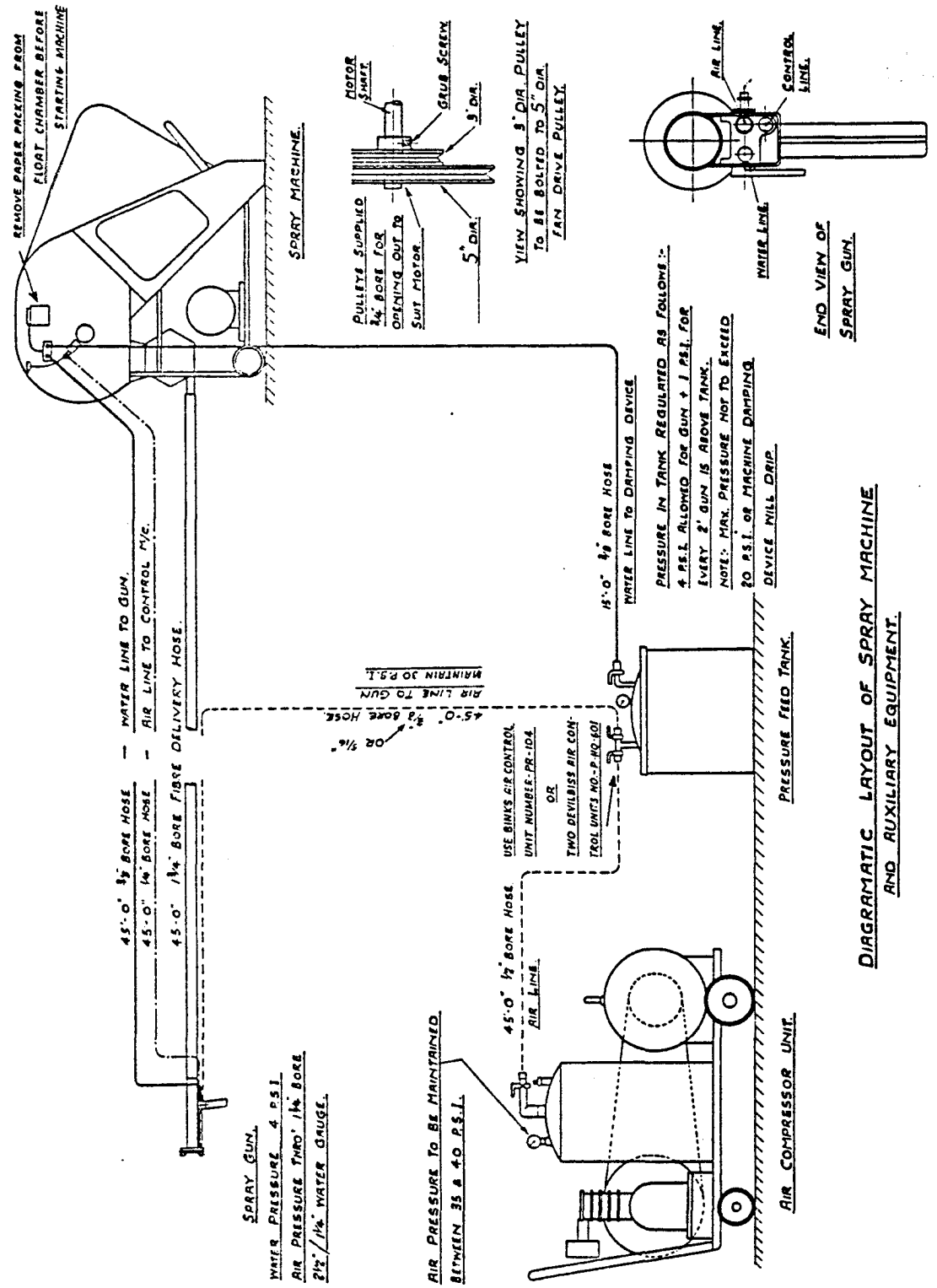
C. 1¾" I.D. Fiber Hose to 2" tube at the fan and 2" at the end of the gun. Obtain an 8" length of 3-ply auto radiator hose 2" I.D. for the fan end and a 6" length of hose for the gun end.

D. 1¾" I.D. Fiber Hose to 1¾" tube at the fan and 1¾" at the end of the gun. No special connector required.

Distributors of industrial rubber hose, located in most cities, usually stock the 2" I.D. wire-inserted, corrugated outside, smooth inside, blowing hose. The finished ends should be soft and plain for easy coupling. Manufacturers of this hose include: Gates Rubber Company, U. S. Rubber Company, Goodyear Tire and Rubber Company, and Thermoid Company.

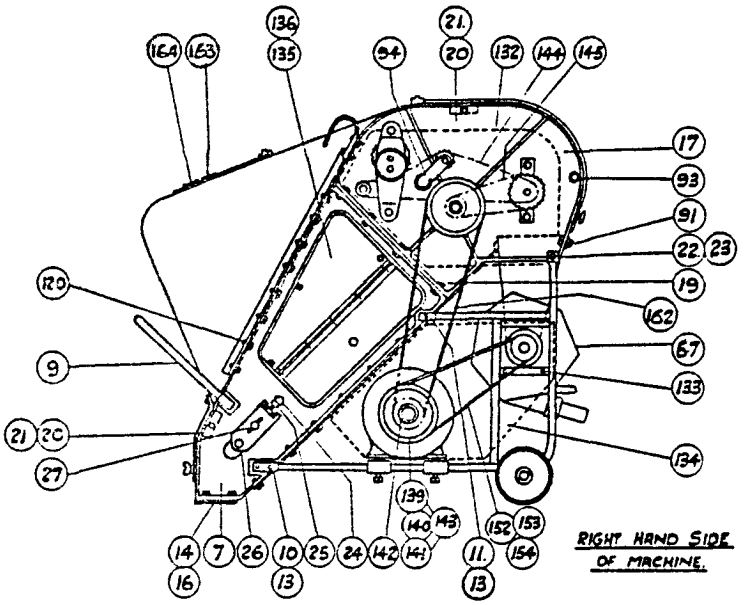
The construction of the hose obtained should be of such strength as will prevent collapse when walked upon.

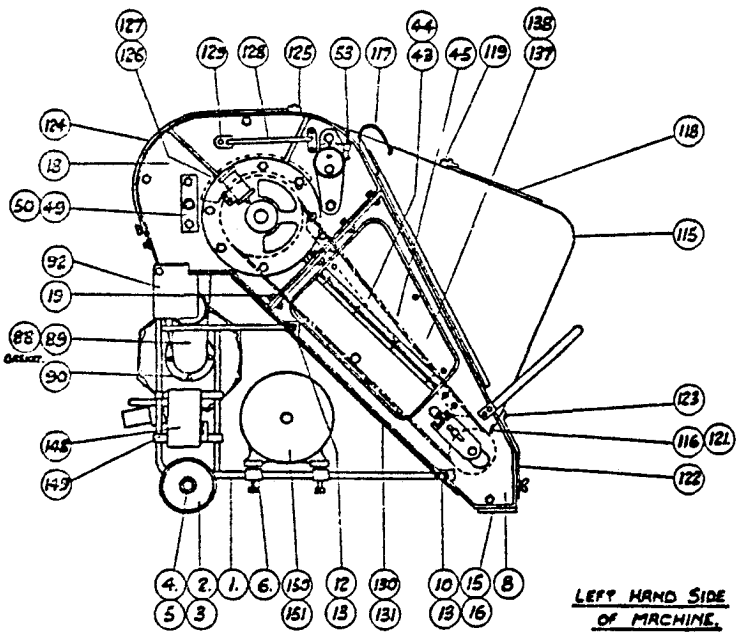
SPRAYED "LIMPET" ASBESTOS



DIAGRAMATIC LAYOUT OF SPRAY MACHINE AND AUXILIARY EQUIPMENT.

STANDARD TYPE SPRAY MACHINE





USE PREFIX LETTER "A" WITH PART NUMBERS

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STANDARD TYPE SPRAY MACHINE

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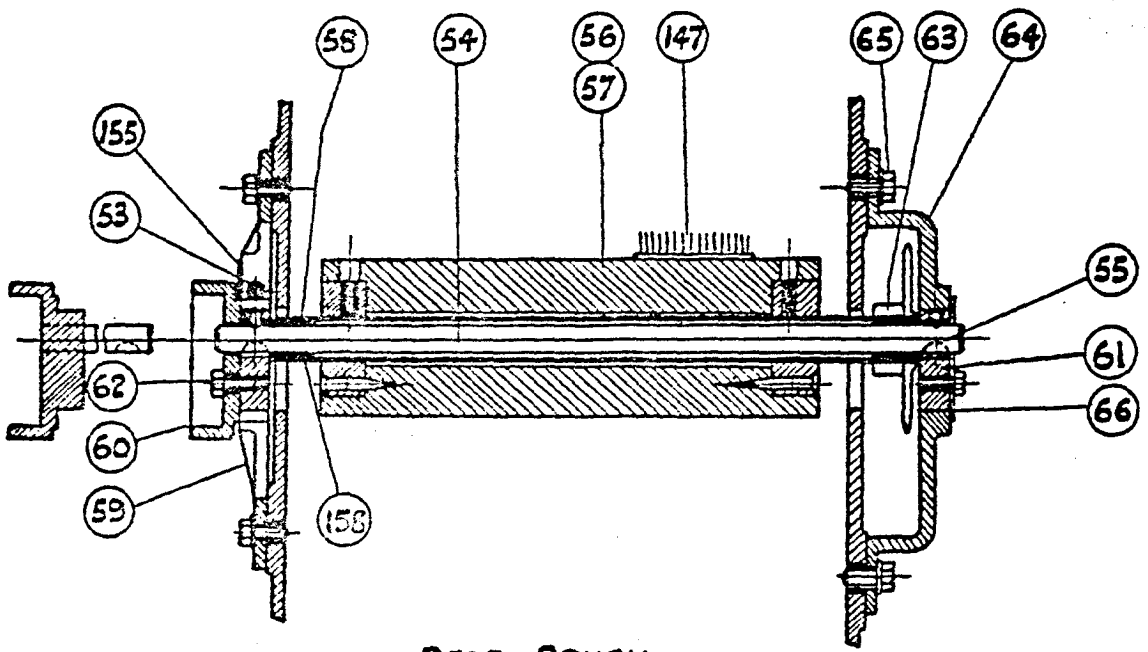
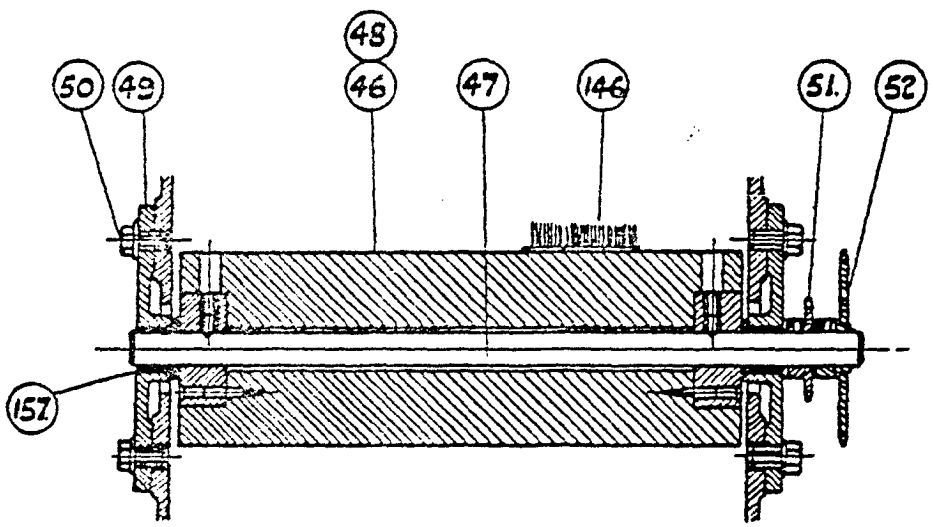


REAR BRUSH.



FRONT BRUSH.

USE PREFIX LETTER "A" WITH PART NUMBERS

STANDARD TYPE SPRAY MACHINE

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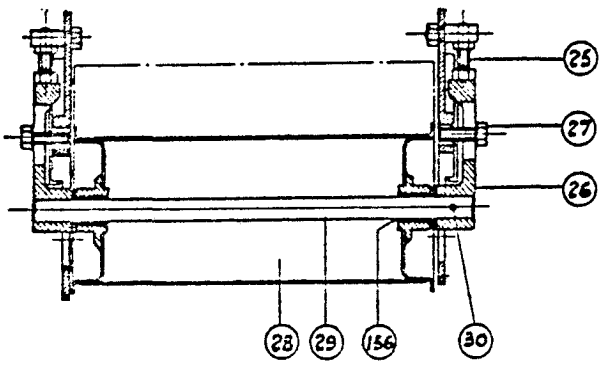
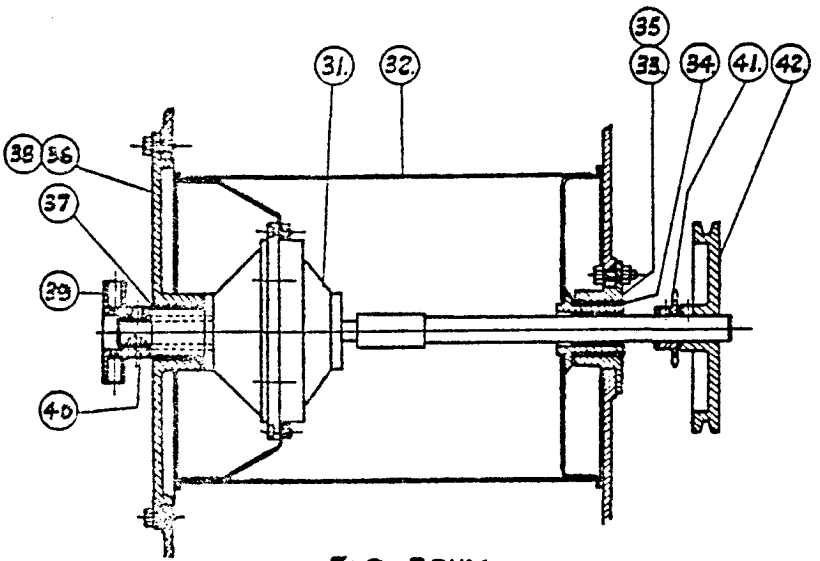
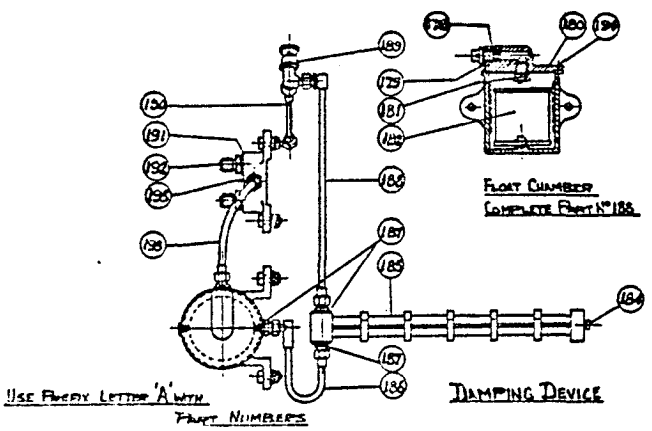


BOTTOM DRUM.



TOP DRUM.



USE PREFIX LETTER "A" WITH PART NUMBERS

STANDARD TYPE SPRAY MACHINE

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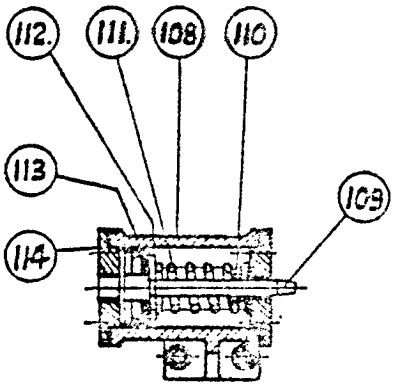
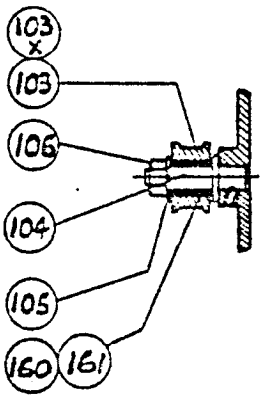


COMPLETE ASSY PT. Nº 107.

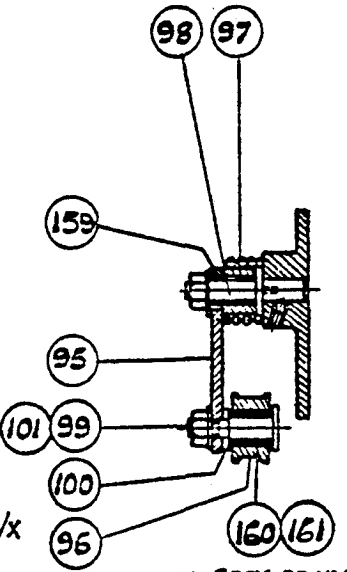
PLUNGER ASSEMBLY.



PT Nº 102/X

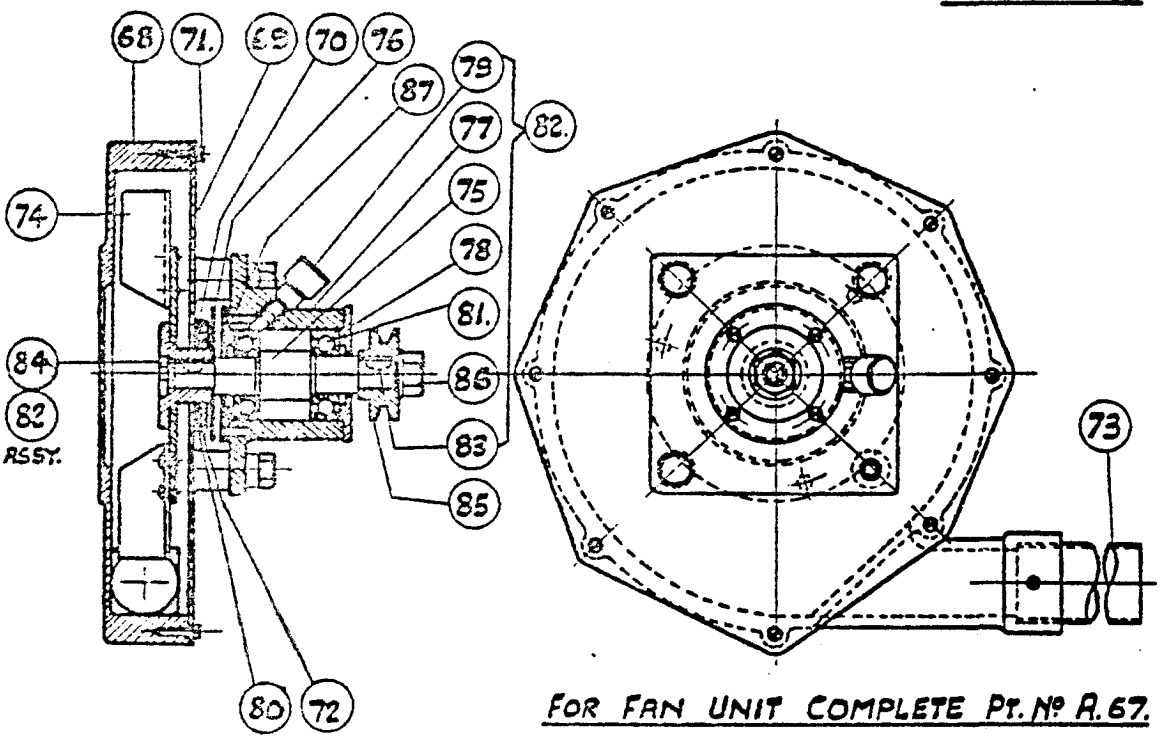
COMPLETE ASSY PT. Nº 102.

ROLLER ASSEMBLY.



COMPLETE ASSY PT. Nº 94.

JOCKEY LEVER ASSEMBLY.



FOR FAN UNIT COMPLETE PT. Nº A.67.

FAN UNIT.

USE PREFIX LETTER "A" WITH PART NUMBERS

SECTION A -SPRAY MACHINE PARTS LIST
(Parts For HFA, HHA & HSA Type Machines Only)
X-Parts Interchangeable with HSC Type Machines

PART NO.		DESCRIPTION
A1		Tubular Frame Assembly
A2	x	Wheel 6"x1 1/2" wide. Cast Iron
A3	x	Wheel 6"x1 1/2" wide. Rubber Tyre.
A4	x	Wheel retaining pin.
A5	x	Wheel retaining washer.
A6		Motor Rail Assembly
A7		RH Lower Side Frame complete with hank bush.
A8		LH Lower Side Frame complete with hank bush.
A9		Tubular Handle
A10		Frame Caps
A11		RH Frame Cap
A12		LH Frame Cap
A13		Frame Cap Nut & Bolt
A14		RH Sole Plate
A15		LH Sole Plate
A16		Sole Plate Fixing Nut & Bolt
A17		RH Upper Side Frame complete with hank bush.
A18		LH Upper Side Frame complete with hank bushes.
A19		Upper to Lower Side Frame Nuts & Bolts.
A20		Frame Stay
A21		Frame Stay Fixing Bolts
A22		Shoulder Bracket Assembly
A23		Shoulder Bracket Fixing Bolt.
A24		Block for adjusting screw complete with nut and washer.
A25		Bottom Drum adjusting screw and locknut.
A26		Adjusting Slide
A27		Adjusting Slide Bolt & Washer
A28	x	Bottom Drum Assembly
A29	x	Bottom Drum Shaft
A30		Bottom Drum Securing Pin
A31	x	Heliocentric Gear Unit complete with matching extension shaft & coupling secured by set screws A173 secured to top drum by A175.
A32	x	Top Drum Assembly
A33		RH Top Drum Housing bush
A34		" " " Bush
A35		Housing fixing bolts
A36		LH Top Drum Housing
A37		" " " Bush
A38		Housing fixing bolts
A39	x	Output Disc complete with Grub Screw A 174.
A40	x	Woodruff Key
A41	x	12 T Chain Pinion with Grub Screw A 173.
A42	x	Top Drum Pulley with Grub Screw A 174.
A43		Belt Runners
A44		Belt Runner fixing bolts
A45	x	Creeper Sheet
A46		Front Brush Assembly uncarded complete with set scres A 176.
A47		Front Brush Spindle
A48		Front Brush as A46 carded.
A49		Front Roller Bracket with Bush A 157.
A50		Front Roller Bracket fixing bolt & washer.
A51	x	Front Brush 12 T Pinion with grub screw A 173.
A52	x	Front Brush 24 T Chain Wheel with Grub Screw A 173.
A53	x	Tommy Bar Assembly
A54		Rear Brush Spindle
A55	x	" " " Key
A56		Rear Brush Assembly uncarded complete with set screws A 176.
A57		As A56
A58	x	Rear Brush Tube with bush A 158
A59	x	LH Rear Brush Bracket
A60	x	Handwheel
A61	x	Adjusting Disc & Grub screw A 173
A62	x	Handwheel Fixing Bolt
A63	x	Rear Brush 24 T. Chain wheel with grub screw A 173.
A64	x	RH Rear Brush Bracket
A65	x	RH Rear Brush Securing Bolts
A66	x	Rear Brush Retaining Plate Rear Brush Retaining Plate Bolt
A67	x	Fan Unit Complete
A68	x	Fan Case with outlet tube securing screw A173.
A69	x	Fan Case Back Plate Assembly
A70	x	Complete with Felt Washer as A80
A71	x	Back Plate Bolt
A72	x	Housing ring with screw
A73	x	Outlet Tube
A74	x	Fan Impellor Assembly
A75	x	Fan Shaft
A76	x	Slinger Disc
A77	x	Bearing Housing
A78	x	Bearing Cap
A79	x	Bearing Lubricator
A80	x	Felt Washer
A81	x	Bearing
A82	x	Complete Bearing Assm. with Fan Shaft
A83	x	Fan Pulley Key
A84	x	Fan Locking Nut
A85	x	Fan Pulley
A86	x	Fan Pulley Securing Nut & Washer

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SECTION A -SPRAY MACHINE PARTS LIST (continued)

(Parts For HFA, HHA & HSA Type Machines Only)

X-Parts Interchangeable with HSC Type Machines

PART NO.		DESCRIPTION
A87	x	Bearing Fastening Bolt
A88	x	Fan Chute Gasket
A89		Fan Chute
A90		Chute to Fan Case Fastening bolts
A91		Chute to Frame Fastening bolts
A92		Fan Inlet Shield
A93		Front Stay Rod & Nuts
A94		Chain Jockey Lever Assm. Secure to Side frame casting with set screw A 174.
A95		Lever Plate and boss with bush
A96	x	Jockey Chainwheel & bush
A97		Torsion Spring
A98		Jockey Lever Pivot Stud
A99		Lever Jockey Roller Stud
A100		Lever Washer
A101		Lever Securing nut & washer.
A102	x	Guide Roller Assm.)
		)
A102/xx		Guide Chainwheel Assm.) (Secure to side Frame with set screw A 174)
A103	x	Guide Roller & Bush
A103/xx		Guide Chainwheel & Bush
A104	x	Roller Stud
A105	x	Distance Washers for either A102 or A102/x.
A106	x	Securing Nut & Washer
A107	x	Complete Plunger Assm.
A108	x	Plunger cylinder & end caps assembled
A109	x	Plunger & securing nut
A110	x	Plunger Spring spacer
A111	x	Plunger Spring
A112	x	Backing Washer
A113	x	Cup Washer
A114	x	Plunger Cylinder securing nuts & bolt
A115		Feeder Hopper complete
A116		Leather Sealing Strip
A117		Top Side Handle
A118		Feed Hopper Lid & Hinge
A119		Feed Hopper Hinge rivets
A120		Securing bolts feed hopper to frame
A121		Leather Strip Rivets
A122		Bottom Cover & Hinge
A123		Bottom Cover to Hopper screws
A124		Top Cover complete with hinge
A125		Top Cover Hinge Rivets
A126		Top Drum Cowl
A127		" " " Fastening
A128		Tubular guard complete
A129		Tubular Guard Fixing Screws
A130		Bottom Plate
A131		Bottom Plate fastening screw & nut
A132		Chain Drive Guard
A133		Belt Drive Guard Support Rod Washer & Nut.
A134		Belt Drive Guard
A135		RH Side Panel Assm.
A136		RH Side Panel Securing Screws
A137		LH Side Panel assembly
A138		LH Side Panel Securing Screws
A139	x	Motor Pulley 7 1/4" dia.
A140	x	" " 6 1/4" dia.
A141	x	" " 5 1/4" dia.
A142	x	" " 3" dia. with Grub Screw A 174.
A143	x	Motor Pulley Fastening screws
A144	x	Chain Secondary Drive Lg.
A145	x	Chain Primary Drive
A146	x	Front Brush Carding
A147	x	Rear Brush Carding 5ft. lengths only.
A148	x	Fused switch box with cable glands.
A149		Fused switch box bracket with fastenings.
A150	x	Electric Motor, Voltage, Phase & Cycles must be stated.
A151	x	Air Motor complete
A152	x	Vee Belt for Fan Drive 42" Lg.
A153	x	Vee Belt for Fan Drive 40" Lg.
A154	x	Vee Belt for Fan Drive 38" Lg.
A155	x	Indicator Plate for LH rear brush bracket-secure with self tapping screws A 177.
A156	x	Bottom Drum Bush
A157		Front Brush A49 Bush
A158		Rear Brush Tube A58 Bush
A159		Lever Plate & Boss A95 Bush
A160	x	Jockey & Guide Chainwheel A96 and A103/x Bush.
A161	x	Guide Roller A103 Bush
A162	x	5/8" dia Leather Belting 5ft. 2in. for one machine.
A163	x	Top Cover Machine No. Plate (Not for re-sale)
A164	x	Top Cover Warning Plate
A165	x	Static Green Machine Paint
A166	x	Protecteros Machine Primer
A167	x	Thinners for A165 & A166
A168	x	Gun Key
A169	x	Machine Spanner 3/16" and 1/4 double ended.
A170	x	Machine Spanner 5/16" and 3/8 double ended.

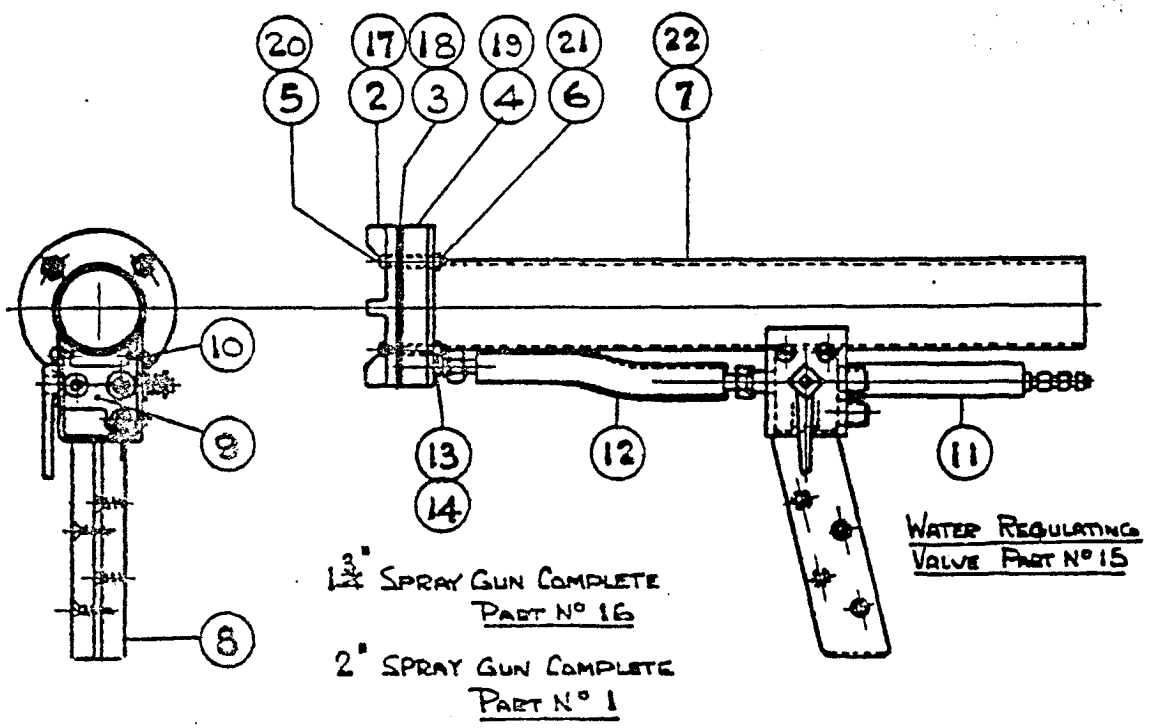
SECTION A -SPRAY MACHINE PARTS LIST (continued)
(Parts For HFA, HHA & HSA Type Machines Only)

X-Parts Interchangeable with HSC Type Machines

PART NO.		DESCRIPTION
A171	x	Allen Key 1/4"
A172	x	Allen Key 5/16"
A173	x	1/4 Whit hollow set screws 1/4 long
A174	x	1/4 whit hollow set screws 3/8 long
A175	x	Hellocentric A31 securing screws 1/4 whit S. Hd. 1/2" long.
A176	x	5/16 whit hollow set screws 1/2" long
A177	x	Self tapping screws
A178	x	Filter Union Assembly
A179	x	Fibre Washer 3/8" bore x 3/4" O.D.
A180	x	Float Chamber Lid
A181	x	Needle Valve complete with washer
A182	x	Copper Float
A183	x	Float Chamber Complete
A184	x	Jet Assembly to Side Frame Bolt 2 Ba 1 1/4" Lg. Rd. Hd.
A185		Jet Assembly
A186	x	Jet Assembly to Float Chamber Pipe. Complete
A187	x	Double Ended Union
A188	x	Jet Assembly to Water Control Valve Pipe. Complete.
A189	x	Water Control Valve Assembly
A190	x	Water Control Valve to Junction Casting Pipe. Complete.
A191	x	Fibre Washer 9/16 Bore 1" O.D.
A192	x	Double Ended Union
A193	x	Junction Casting to Float Chamber Pipe Complete.
A194	x	Float Chamber Lid to Float Chamber Screws. 4Ba
A195	x	Junction Casting

PART NO.	DESCRIPTION
PARTS APPLICABLE TO HSC TYPE MACHINES ONLY (see corresponding "A" number for location of)	
A43/C	Belt Runners
A46/C	Front Brush Assm. Uncarded complete with set screw A176.
A47/C	Front Brush Spindle
A48/C	Front Brush Assembly carded as A46/C.
A54/C	Rear Brush Spindle
A56/C	Rear Brush Assm. uncarded complete with set screw A176.
A57/C	As A56/C Carded
A94/C	Chain Jockey Lever Assm.
A132/C	Chain Drive Guard Complete
A133/C	Belt Drive Guard Complete
A149/C	Fused Switch Box Brackets with Fastenings.
A157/C	Front Brush Bush
A185/C	Jet Assembly

SPRAY GUN



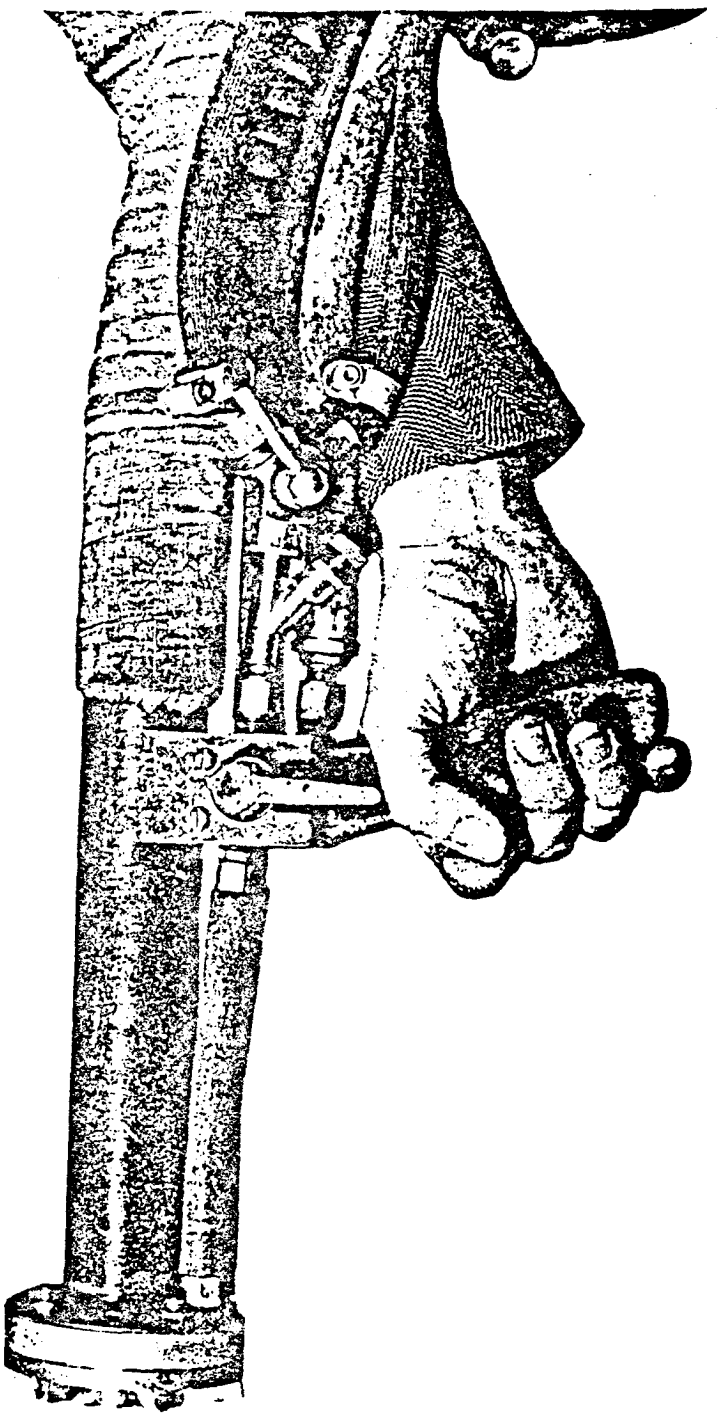
SECTION B – MULTI JET SPRAY GUN

Parts for 2" bore hose gun marked = x
Parts for 1¾" bore hose gun marked = o

J.W.R. Pt.No.			Description
B1	x		2" bore hose Multi Jet Spray Gun. Complete.
B2	x		Nozzle.
B3	x		Rubber Joint.
B4	x		Back Plate.
B5	x		Brass Rd. Hd. Screws 1⅛" long 2BA.
B6	x		Brass Full Nuts 2BA.
B7	x		Gun Body complete with wood handle.
B8	x	o	Wood Handle.
B9	x	o	Control Cock Assembly.
B10	x	o	Control Cock Assembly securing screws 2BA x ⅜ Lg.
B11	x	o	Control Hose Adaptor with connection.
B12	x	o	Flexible Hose with connections.
B13	x	o	Double Ended Union.
B14	x	o	Fibre Washer.
B15	x	o	Water Regulating Valve H5516.
B16		o	1¾ bore hose Multi Jet Spray Gun. Complete.
B17		o	Nozzle.
B18		o	Rubber Joint.
B19		o	Back Plate.
B20		o	Brass Rd. Hd. Screws 1" long. 2BA.
B21		o	Brass Full Nuts 2BA.
B22		o	Gun Body complete with wood handle.

USE PREFIX LETTER "B" WITH PART NUMBERS

SPRAYED "LIMPET" ASBESTOS



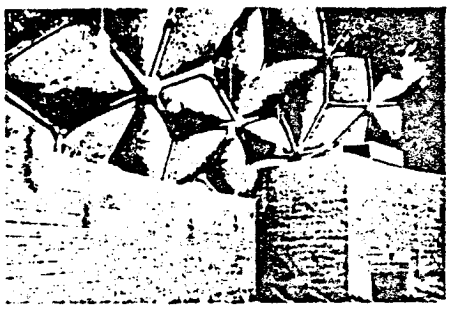
Multi-Jet Spray Gun with Two Way Valve

SPRAYED "LIMPET" ASBESTOS

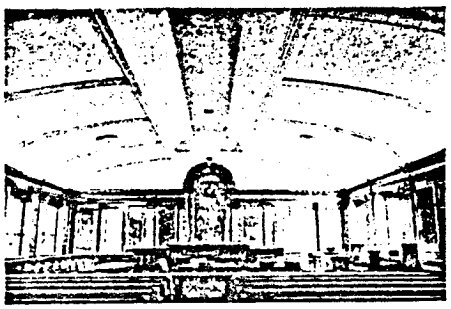
Multi-Jet Spray Gun with Two Way Valve

SPRAYED "LIMPET" ASBESTOS

the versatile insulating material that faithfully follows the contours of any surface



Building Insulation—SPRAYED "LIMPET" ASBESTOS reduces fuel and air conditioning costs as much as 50%. It insulates concrete, steel, aluminum, and corrugated asbestos. It's ideal for hospitals, apartment houses, restaurants, office buildings, prefabricated metal buildings.



Acoustical Control—SPRAYED "LIMPET" ASBESTOS gives you double sound absorption. First, by absorption in millions of pores. Secondly, by yielding to the sound wave . . . thus reducing its intensity by diaphragmatic action. For bowling alleys, schools, churches, institutions, laboratories, restaurants, hotels, office buildings, and broadcasting stations.

High Temperature Industrial Thermal Insulation—Because of its low thermal conductivity, coupled with the ease with which it accommodates itself to irregular surfaces, SPRAYED "LIMPET" ASBESTOS has been proved to be one of the most efficient forms of insulation.

COEFFICIENT OF SOUND ABSORPTION—SOLID BACKING

Thickness	Painting	Noise Reduction Coeff.
½"	2 Coats	.55
¾"	Unpainted	.70
¾"	2 Coats	.70
1"	Unpainted	.75
1½"	Unpainted	.90
1½"	2 Coats	.85

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

COEFFICIENT OF SOUND ABSORPTION—METAL LATH BACKING

Thickness	Painting	Noise Reduction Coeff.
½"	Unpainted	.85
½"	2 Coats	.80
¾"	Unpainted	.90
¾"	2 Coats	.90
¾"	10 Coats	.90

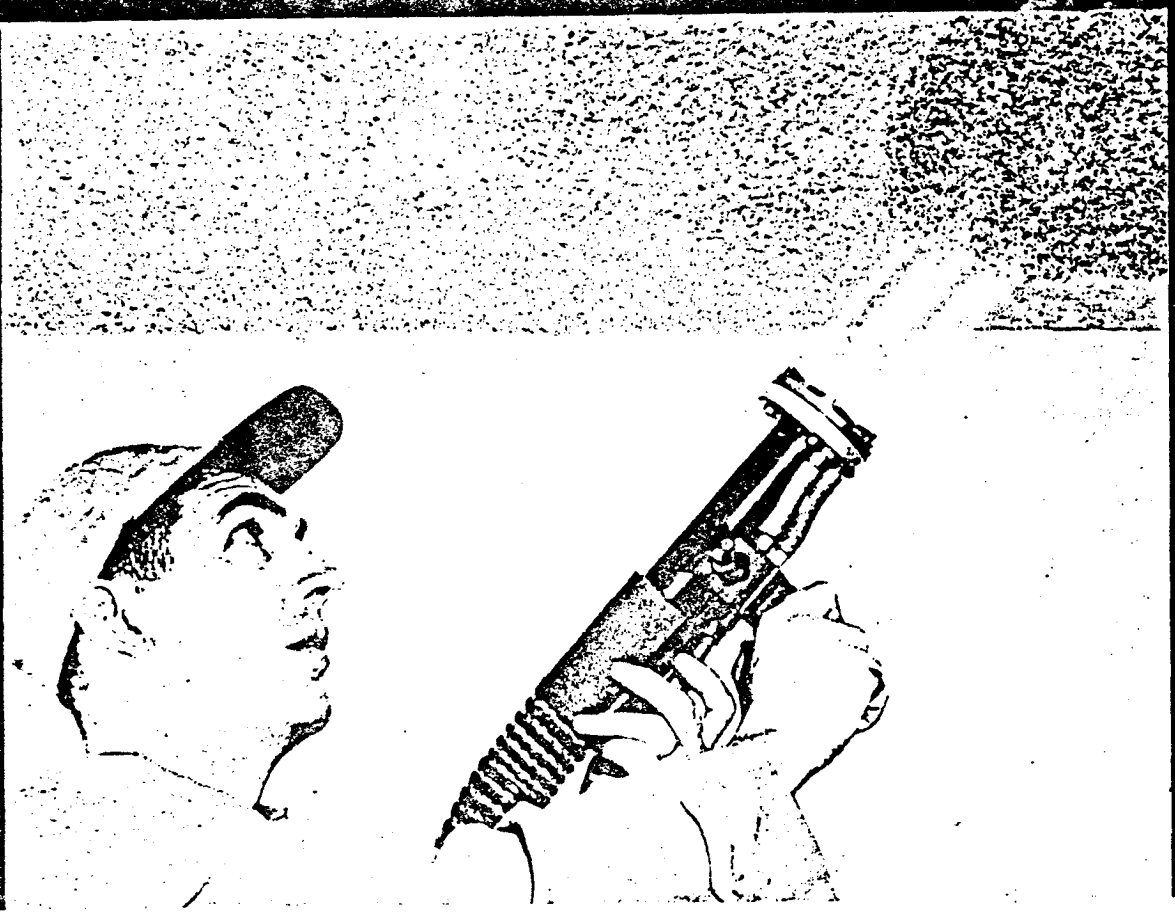
COEFFICIENT OF OVER-ALL HEAT TRANSMISSION (U) (BTU/hr/ft²/°F)

Materials and Typical Construction	U VALUE			
		Thickness of Sprayed "Limpet" Asbestos		
	Untreated	½" Limpet	1" Limpet	1½" Limpet
Corrugated Steel	1.50	.45	.26	.19
Corrugated Asbestos	1.30	.42	.25	.18
4" Concrete with Roofing	.72	.33	.22	.16
8" Brick Wall	.50	.28	.19	.15
2½" Gypsum Fiber Concrete on Plaster Bd. Builtup Roof	.38	.24	.17	.14
2" Concrete with Roofing	.82	.36	.23	.17

KEASBEY & MATTISON COMPANY • AMBLER • PENNA.

K·M BEST IN ASBESTOS

DISTRICT OFFICES: New York, New York San Francisco, California Chicago, Illinois Ambler, Pennsylvania
Houston, Texas Cleveland, Ohio Atlanta, Georgia



ONE-MOVE AND ONE-STOP INSTALLATION—One man with a spray gun applies SPRAYED "LIMPET" ASBESTOS. • No furring, clipping, fitting, or nailing required. • Goes on in any kind of weather, as long as temperature at point of application is 40°F. or above. • Sets fast and dries fast, with a minimum of clean-up. • No primary adhesive needed on direct application to metal lath and cellular steel floors. • No flammable, toxic solvents required—just clean water.

SPRAYED "LIMPET" ASBESTOS saves you space, weight, and costs. Frees you from the stress and strain caused by bulky, conventional fireproofing materials. It saves installation time and costs because the scaffolding moves ahead as the applicator completes his work, no delay for your construction schedules.

Since cracks, seams, and holes are eliminated, you can be much surer of actual fireproofing protection when you use SPRAYED "LIMPET" ASBESTOS. What's more, it has undergone extensive tests . . . under Underwriters' Laboratories supervision.

That's why more and more architects, builders, engineers, and contractors across the country are turning to the truly efficient fireproofing material: SPRAYED "LIMPET" ASBESTOS.

RESULTS OF OFFICIAL FIRE TESTS SHOWING TYPES OF CONSTRUCTION USED

Assembly Description	Rating	"Limpet" Thickness	Authority
FLOOR 2½" Concrete 3" Cellular Steel	4 HR	½"	Underwriters' Laboratories REF. R-3705-3 1958
FLOOR 3¼" Concrete	4 HR	1"	Fire Offices Committee England REF. FROSI-7 1938
FLOOR 2" Concrete Bar Joist Metal Lath	1½ HR	5/8"	National Bureau of Standards REF. No. 36A 1942
FLOOR 2½" Concrete Bar Joist Metal Lath	2 HR 2½ HR	¾" 1"	National Bureau of Standards REF. No. 37A & No. 39 1942
FLOOR 2¼" Concrete 3" Cellular Steel Metal Lath Suspension	3 HR	1⅛"	National Bureau of Standards REF. No. 42 1942
FLOOR 2½" Concrete 3" Cellular Steel Metal Lath	4 HR	¾"	Fire Offices Committee England REF. FROSI No. 940
FLOOR 2½" Concrete 3" Cellular Steel	5½ HR	⅝"	Fire Offices Committee England REF. FROSI No. 998 1958
ROOFING & SIDING ASBESTOS CORRUGATED	1 HR 2 HR	1¼" 2"	Fire Offices Committee REF. FROSI No. 528 1955

Assembly Description	Rating	"Limpet" Thickness	Authority
STEEL WALLS (SHIPS BULKHEAD)	1 HR	1¼"	Fire Offices Committee REF. FROSI No. 8 1948
COLUMN DIRECT TO STEEL	1 HR 2 HR 3 HR	5/16" 1½" 2"	Fire Offices Committee and Underwriters' Laboratories REF. FROSI No. 1412 & No. 3705-2-3
COLUMN DIRECT TO STEEL	3 HR 5 HR	2¼" 3⅜"	Underwriters' Laboratories REF. R-3705-4-5 1958
COLUMN DIRECT TO STEEL	5 HR	2¾"	Underwriters' Laboratories REF. R-3705-6 1958
COLUMN DIRECT WITH BOSUM FILLED	2 HR 4 HR	1" 2"	Fire Offices Committee REF. FROSI No. 19 & No. 769 1939 & 1956
COLUMN APPLIED ON METAL LATH	2 HR	1"	Fire Offices Committee REF. FROSI No. 447 1953
BEAM DIRECT TO STEEL	3 HR	2"	Underwriters' Laboratories REF. R-3705-1 1955
BEAM APPLIED TO LATH ON WIRE HANGERS	4 HR	1¼" SIDES 1½" BOTTOM	Underwriters' Laboratories REF. R-3705-3 1958

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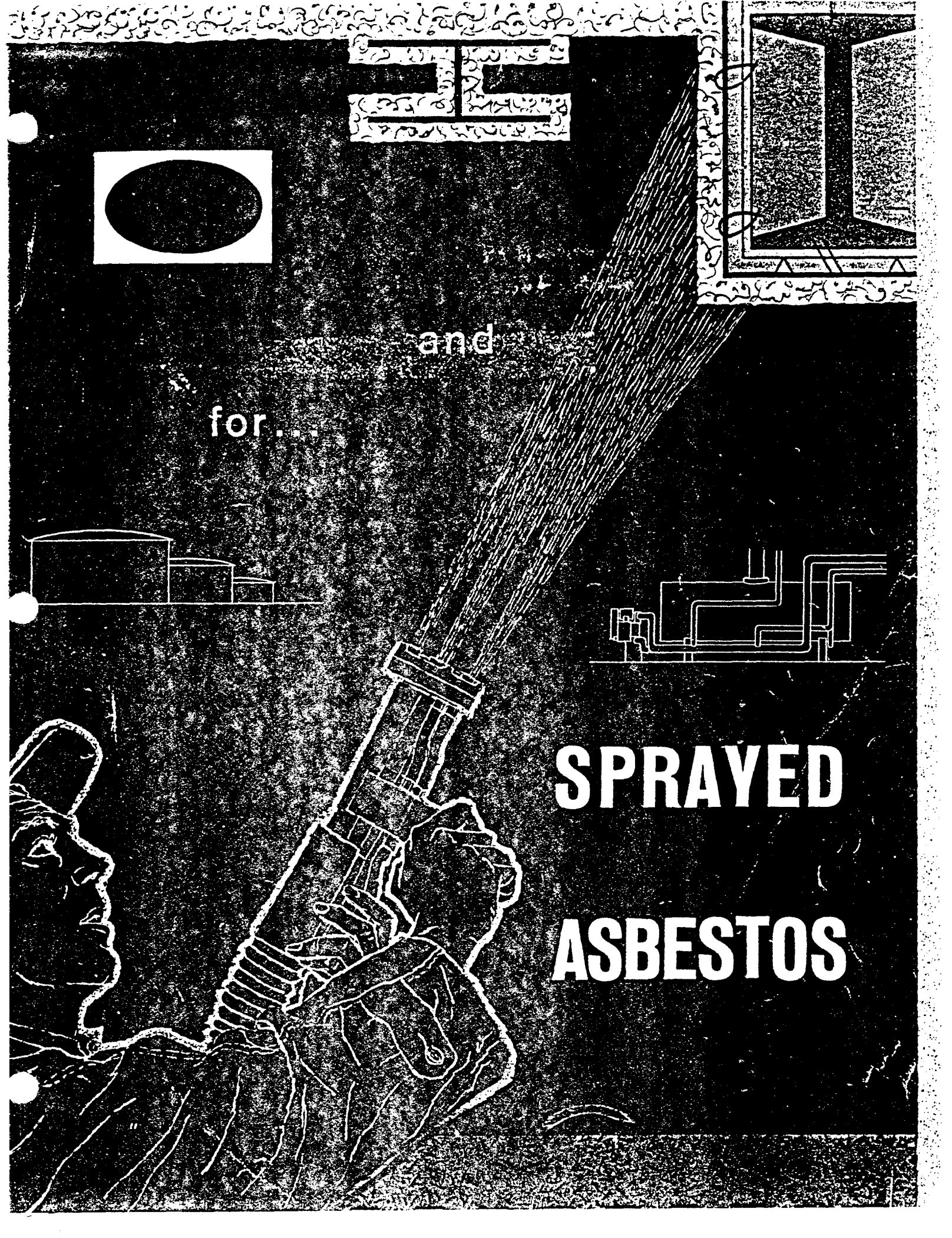
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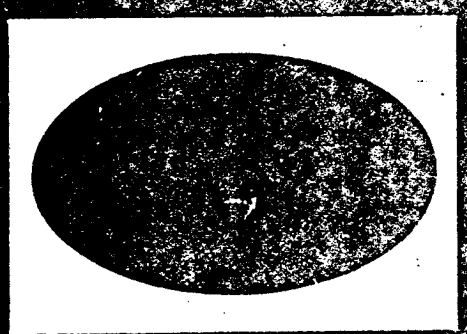
SPRAYED
ASBESTOS



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CIrcle 7-0642

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Toronto, Ontario (416)259-9281
Vancouver, B.C. (604)521-7751

ATLAS ASBESTOS COMPANY Head Office/Siège Social: 5600 Hochelaga, Montréal 5, Canada Telex: 01-2193

Representatives. Ambler, Pa. U.S.A. (215) 646-6661 Lancaster, Pa. U.S.A. (717) 569-3821

SUPERSEDES: June 5, 1967 EFFECTIVE: July 3rd 1968.

8.1.7.A

SPRAYED "LIMPET" ASBESTOS

TRUCK TRANSPORT RATES PER 100 LB.

FROM: MONTREAL, QUEBEC	0-500 lbs.	500-1000 lbs.	1-2000 lbs.	2-5000 lbs.	5000 & Over	TRUCKLOADS 24,000	TRUCKLOADS 30,000	Route of Movement
TO:								
Atlanta, Georgia	7.63	7.29	7.11	6.55	5.88	3.16	-	Via Buffalo
Baltimore, Md.	4.32	4.32	4.07	3.56	3.08	1.62	-	"New York City
Birmingham, Ala.	7.63	7.29	7.11	6.55	5.88	3.16	-	" Buffalo
Boston, Mass.	3.66	3.66	3.41	2.90	2.42	1.51	1.21	" Champlain
Buffalo, N.Y.	3.46	3.46	3.46	3.00	2.40	1.32	-	Direct
Charleston, W.Va.	4.56	4.56	4.56	4.10	3.50	1.98	-	Via Buffalo
Charlotte, N.C.	7.26	6.92	6.54	5.95	5.40	2.80	-	"New York City
Chicago, Ill.	4.56	4.56	4.56	4.10	3.50	1.98	-	"Buffalo
Cincinnati, Ohio	4.50	4.50	4.50	4.04	3.44	1.94	-	"Buffalo
Cleveland, Ohio	3.89	3.89	3.89	3.43	2.83	1.59	-	"Buffalo
Columbus, Ohio	4.27	4.27	4.27	3.81	3.21	1.82	-	"Buffalo
Dallas, Texas	8.65	8.65	8.17	7.33	6.65	3.85	-	"Buffalo
Denver, Col.	8.40	8.40	8.40	7.94	7.34	4.71	-	"Buffalo
Detroit, Mich.	3.86	3.86	3.86	3.40	2.80	1.56	-	"Buffalo
Elizabeth, N.J.	3.85	3.85	3.61	3.10	2.61	1.33	-	Direct
Harrisburg, Pa.	4.23	4.23	3.99	3.47	2.99	1.54	-	Via New York City
Hartford, Conn.	3.66	3.66	3.41	2.90	2.42	1.51	1.21	" " " "
Houston, Texas	8.80	8.80	8.31	7.46	6.78	3.98	-	" Buffalo
Indianapolis, Ind.	4.56	4.56	4.56	4.10	3.50	1.98	-	" Buffalo
Jacksonville, Fla.	8.21	7.87	7.44	6.82	6.26	3.26	-	"New York City
Kansas City, Mo.	7.26	7.26	7.05	6.46	5.61	3.37	-	"Buffalo
Louisville, Ky.	4.72	4.72	4.72	4.26	3.66	2.08	-	"Buffalo
Los Angeles, Calif.	10.42	10.42	10.42	9.96	9.36	See Note 1		"Buffalo
Memphis, Tenn.	7.63	7.29	7.11	6.55	5.88	3.16	-	"Buffalo
Milwaukee, Wis.	4.72	4.72	4.72	4.26	3.66	2.08	-	" Buffalo

NOTE 1 : MONTREAL TO BUFFALO - 1.32 cwt. on a minimum of 24,000 lbs.

BUFFALO - BEYOND - 5.28 cwt. on a minimum of 17,000 lbs.

NOTE - The above rates are in force at time of publication and may be subject to change at any time without notice.

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TRUCK TRANSPORT RATES PER 100 LB.

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TO:								
Minneapolis, Minn.	6.30	6.30	6.30	5.84	5.24	3.02	-	Via Buffalo
Nashville, Tenn.	7.17	6.83	6.67	6.12	5.46	2.94	-	" Buffalo
New Orleans, La.	8.52	8.18	7.96	7.38	6.69	3.80	-	"Buffalo
New York, N.Y.	3.85	3.85	3.61	3.10	2.61	1.33	-	Direct
Omaha, Neb.	7.24	7.24	7.24	6.54	5.94	3.14	-	Via Buffalo
Philadelphia, Pa.	4.08	4.08	3.83	3.32	2.84	1.48	-	Direct
Pittsburgh, Pa.	4.02	4.02	4.02	3.56	2.96	1.66	-	Via Buffalo
Portland, Ore.	10.42	10.42	10.42	9.96	9.36	See Note 1		" Buffalo
Providence, R.I.	3.67	3.67	3.42	2.91	2.43	1.52	1.24	"New York City
Richmond, Va.	4.75	4.75	4.50	3.99	3.51	2.31		"Buffalo
Sacremento, Calif.	10.42	10.42	10.42	9.96	9.36	See Note 1		"Buffalo
St. Louis, Mo.	4.97	4.97	4.97	4.51	3.91	2.24	-	"Buffalo
San Antonio, Texas	9.18	9.18	8.64	7.77	7.08	3.19	-	" Buffalo
San Francisco, Calif.	10.42	10.42	10.42	9.96	9.36	See Note 1		" Buffalo
Savannah, Ga.	7.52	7.18	7.00	6.42	5.75	3.07	-	" Syracuse
Schenectady, N.Y.	3.42	3.42	3.18	2.67	2.18	1.09	-	Direct
Seattle, Wash.	10.42	10.42	10.42	9.96	9.36	See Note 1		Via Buffalo
Spokane, Wash.	10.42	10.42	10.42	9.96	9.36	See Note 1		"Buffalo
Springfield, Mass.	3.60	3.60	3.35	2.84	2.36	1.48	1.19	"Champlain
Syracuse, N.Y.	3.11	3.11	3.11	2.65	2.05	1.11	-	Direct
Toledo, Ohio	4.02	4.02	4.02	3.56	2.96	1.66	-	Via Buffalo
Tulsa, Okla.	8.09	8.09	7.66	6.85	6.18	3.61	-	" Buffalo
Washington, D.C.	4.32	4.32	4.07	3.56	3.08	1.62	-	"New York City
Wilmington, Del.	4.08	4.08	3.83	3.32	2.84	1.48	-	" " " "
Worcester, Mass.	3.60	3.60	3.35	2.84	2.36	1.48	1.19	" Champlain

NOTE 1: MONTREAL TO BUFFALO 1.32 cwt. on a minimum of 24,000 lbs.

BUFFALO - BEYOND 5.28 cwt on a minimum of 17,000 lbs.

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