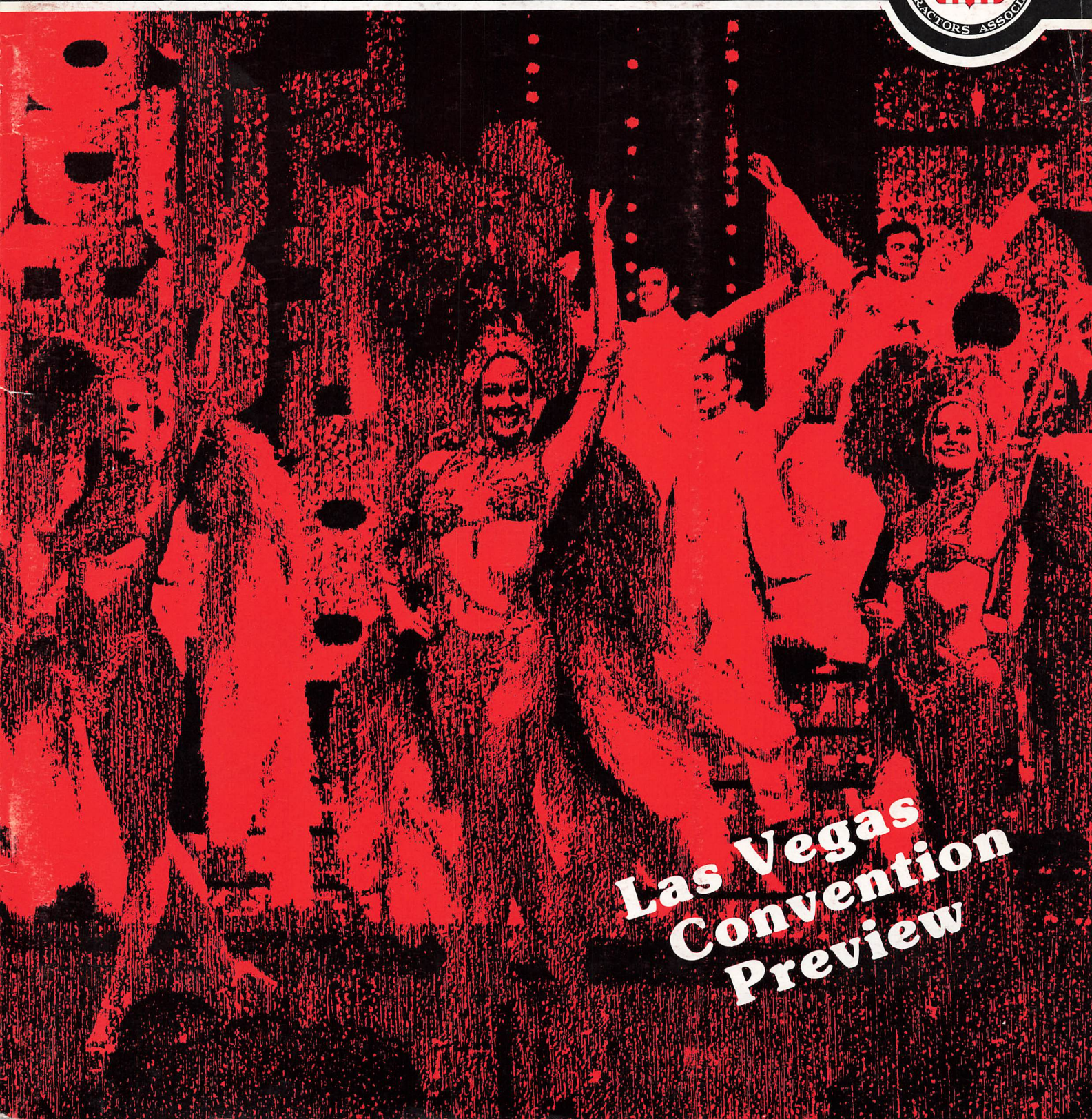
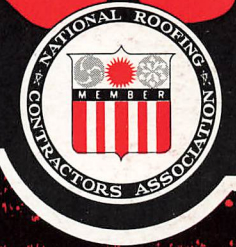


the

roofing spec

NOVEMBER 1977

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Las Vegas
Convention
Preview

PATCHING AND REROOFING EQUIPMENT

"Garlock Original Power Saw"



- Cut up old pitch and gravel roofs
- Proven over 10 years of rugged service
- Adjustable cutting depth 3¾"
- 7 H.P. Briggs & Stratton engine
- Cut in expansion joints the easy way
- Weight 176 lbs.

Power Roof Sweeper (Self-propelled)



- Plastic 36" spiral core brush
- Weight 350 lbs.
- 5.30/4.50 s wheels
- 2 x 6 caster wheels
- 8 H.P. Engine

Motorized Spud Bar



Scrapes 4½" wide

4 H.P. B/S
Weight
125 lbs.
12 Carbide
Pins

To operate
push down
on handle.

Use on repair jobs—
expansion joints—gravel
stops—roof splits—Close to
walls

Double Bladed Roof Saw

- 10 H.P. 2 Carbide Blade



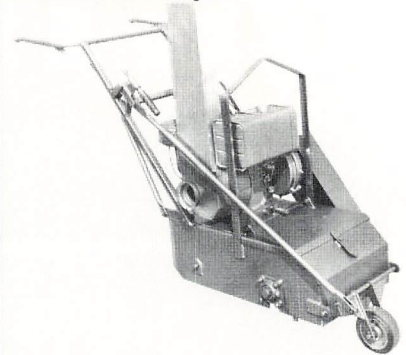
Weight 295 lbs.

Super Tear Off Bar



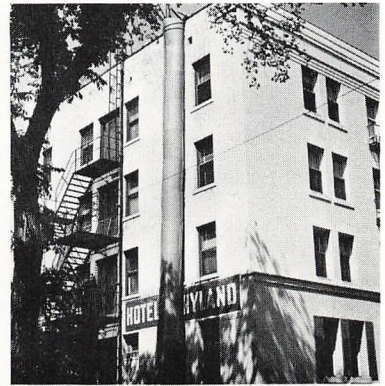
Weight 32 lbs.

Garlock's New Heavy-Duty Roof Scraper

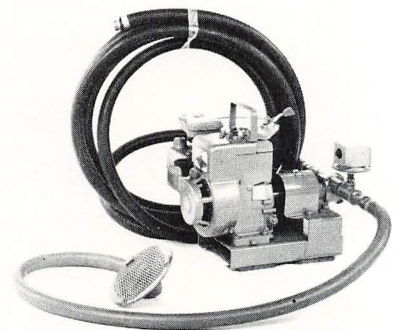


- 8 H.P. Briggs Stratton
- Scrapes 13" wide
- Weight 260 lbs.
- 30 carbide pins

Trash Chutes



Water Pump With A Clutch And Automatic Cut Off

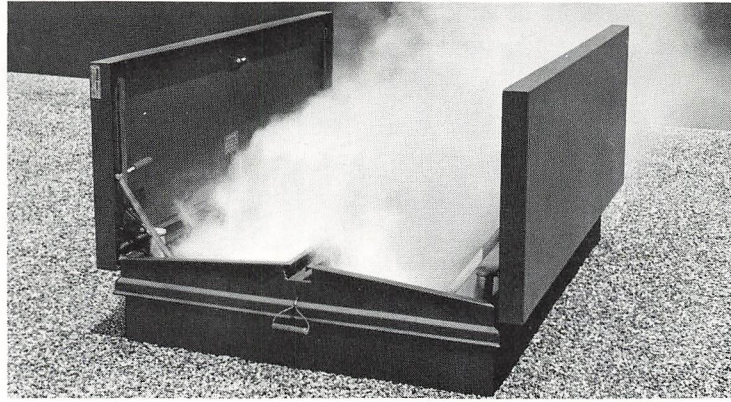


Weight 60 lbs.

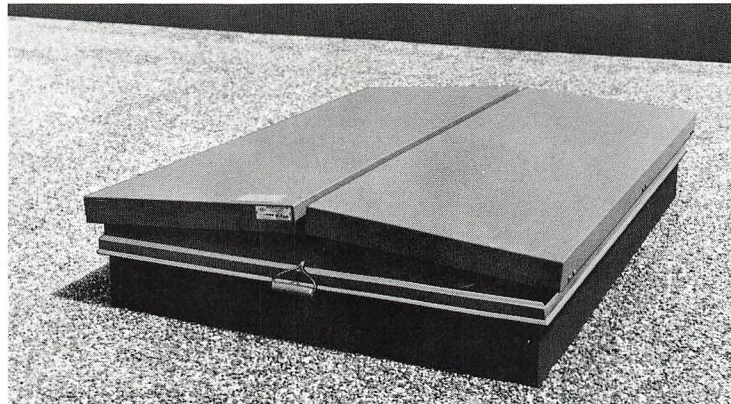
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The Bilco Automatic Fire Vent.



When you need it, it works.



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There are two requirements of an automatic fire vent. It must work in an emergency. It must work when there is no emergency. Bilco Automatic Fire Vents do both. Our exclusive patented Thermolatch™ mechanism* is foolproof in an emergency. It is equally foolproof at other times, thus preventing the covers from opening inadvertently due to vibrations within the building or high winds (often accompanied by torrential rain). Bilco Vents work to protect a building and its contents **all the time**. They are gasketed and insulated for complete weathertightness, ruggedly built of 14-gauge steel or 11-gauge aluminum, and each carries our guarantee of proper operation.

Automatic venting, vertically through the roof, is the modern way to prevent catastrophic fire losses in single-story industrial and commercial structures. Our new booklet, "Automatic Fire Venting Guide" makes it easy for you to determine vent size and spacing. It also points out some of the reasons why Bilco Vents offer your clients the soundest possible value in this type of emergency equipment. Value your client can measure in terms of reliability and long, trouble-free service. Eight standard sizes with UL and FM labels. Special sizes to order.

*Normally actuated by fusible link. Also available with easily resettable electric operator for actuation by smoke detector or other emergency device.



Send for a copy of this new fire venting guide. Answers the "why, how and what" questions about fire venting.

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Manufactured in Canada by: Richards-Wilcox of Canada, Ltd., London, Ontario

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Nobody offers you higher quality built-up roofing products than GAF.

And now, with the addition of Gaftemp™ roof insulation to our already broad line, we offer you even more. *Every* major component you need in a built-up roofing system.

Gaftemp roof insulation is a rigid board composed of expanded perlite particles. These particles provide both a high degree of thermal insulating efficiency and dependable dimensional stability.

Gaftemp panels are also lightweight for easy handling. Have a top surface sealed with a special coating to help assure positive adhesion of the roofing membrane. And come in 24" x 48" sheets in four thicknesses: 3/4", 1", 1 1/2", 2".

For more information about Gaftemp roof insulation use the coupon below to send for our complete descriptive brochure.

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- Please send me more information on GAF Gaftemp Roof Insulation.
 Please have a representative call.

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Firm _____

Address _____

City _____

State _____ Zip _____



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ROOF INSULATION

Comment

ENHANCING PROFESSIONALISM

We began to feel the effects of the Symposium on Roofing Technology, held this September, as far back as a year ago, when the first press releases and calls for papers were issued. A typical response was: "We didn't know there was a National Roofing Contractors Association; what exactly do you do?" Those reactions came not only from overseas, but from building designers, plant engineers, and academicians here in the U.S. as well.

The short term effects of the Symposium are obvious. The body of knowledge and literature on roofing technology has increased dramatically. Your association, along with NBS' Center for Building Technology, have earned a touch of respect and even prestige.

But all of this is not self-congratulatory. The long-term benefits, still very much to be realized, are exactly consistent with an overriding purpose of NRCA: upgrading the stature and enhancing the professionalism of the roofing industry. And that mission neither begins nor ends with a single meeting, even one of such magnitude as the Symposium.

The September *Construction Specifier* magazine was designated a special Roofing Issue, and contained articles by Fred Good, Bruce Martin, Ed Mertz, and McNeill Stokes. The response to that issue (reprints have been sent to NRCA members) is at once exciting and gratifying.

Still, recognition is only a small part of the effort necessary to give the industry the stature it deserves. In fact, it's a never-ending process, demanding continuing and persistent participation from the members of the industry.

It includes keeping yourself informed on what's going on, not only in your industry but in other industries, and, indeed, in your country. The best way we know of for doing that is to attend the NRCA Convention, which is previewed in this issue.

It includes keeping your employees informed, involved, and motivated, since they are usually the ones who create the image of your company for the public. That's why we place so much emphasis on our Foreman & Superintendents' Seminars, which will be held in December.

Finally, it includes having a capacity to project beyond existing limitations—to come up with new solutions to old and nagging problems. We think that John Martin's article on accident statistics will challenge you to think in those terms.

The bottom line, of course, is a better industry. A better industry can only mean a better business for everyone. And that, after all, is what it's all about.



If you are a roofer, you shouldn't be without FLASHBAND.[®]

FLASHBAND is a multi-purpose roofing material you can use for every roofing job.

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- counter flashing
- coping joint sealing
- sealant for expansion joints
- roof patching
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- chimney and roof flashing
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Installation is fast; no special tools are needed. Cut to size, peel off release paper, position and smooth down by hand.

Flashband will mold easily to irregular surfaces. Masonry will require an asphalt specification primer.

Available in bright aluminum or grey finish, in 33 foot rolls. Widths ranging from 2" to 24".

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Or, call or write us direct.



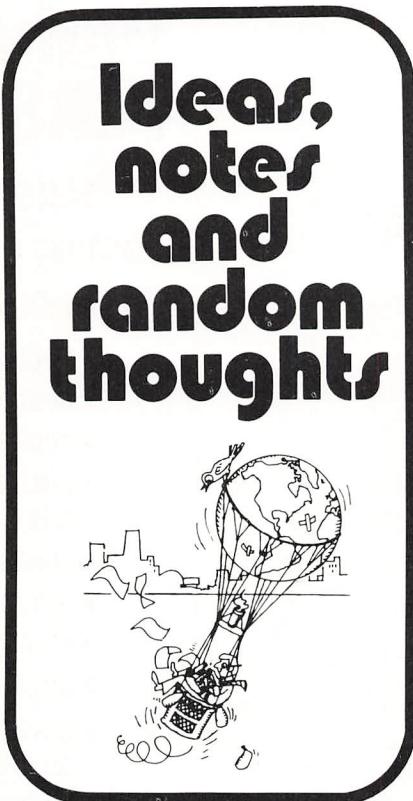
EVOLVE INC.

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The NRCA Nominating Committee is at work preparing its slate of Officers and Directors for 1978-79, to be elected at the Convention in Las Vegas. The Committee solicits the help of all NRCA members as it undertakes this important task. Chairman of the Nominating Committee is George Stephenson, Stephenson Roofing Co., 10403 Trenton, St. Louis, MO 63132. Other committee members are Robert Linck, Charles Raymond, William Steinmetz, and James King. Please contact Chairman Stephenson, the committee members, or the NRCA office with your suggestions.

Washington, D.C. retained its No. 1 ranking in per capita income among the nation's most populous urban centers in 1976, according to a recent survey. Per capita income in Washington averaged \$7,316 or 35% above the U.S. average.

Speaking of income, busboys earning the minimum wage in 1986 will be paid \$9,120 a year; mailmen will make \$24,571, truck drivers will earn \$33,587, and carpenters, \$57,399. These projections are made by a management consulting firm which warns business that such wages will come to pass if current trends persist. "For the past 12 years, prices have risen at an average annual rate of 5.4%," says Manplan Consultants of Chicago. "Wages have risen even faster—7% annually from 1971 through 1975.



For those who missed it, the September issue of *Construction Specifier* magazine was designated a special roofing issue. Reprints of the roofing articles have been mailed to each NRCA member.

Other recent mailings include:

- Convention Registration Forms
- Superintendents Conference information
- Technical Developments Bulletin #2

- Legislative Bulletin—Travel Pay Ruling
- Order Form—Proceedings of the Symposium on Roofing Technology
- Action Information—October issue
- On Target bulletin & Safety poster
- Annual report

Additional copies of these items are available from the NRCA office.

This maintenance tip comes from Charlie Jackson, E. L. Hiltz & Co.: an easy and effective way to clean kettles is to have them sand-blasted, then primed (with 2 coats). Charlie suggests doing it in cool weather or in the early morning.

Denver and Memphis are the sites of this year's Superintendents' Conferences. Using the theme, "Do You Know?", each two-day meeting will feature presentations by contractors, superintendents, and professional consultants, in addition to informal discussion sessions. Details can be gotten from the NRCA office.

And Finally, it's official now: organized labor contributed \$10,588,555.74 to help finance political campaigns of candidates for Congress in the 1976 election, according to a tabulation made from official records by Americans for Constitutional Action. Successful candidates received nearly \$7 million of the contributions.



Don't suffer from burns or skin irritation

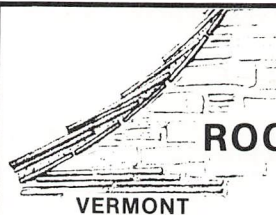
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To the Editor:

The article by G. L. Oliensis (July 1977 issue, pp 20-25) attracted my attention. It appears to be an honest effort to inform practical applicators about the problems inherent in the constantly increasing applications of polymeric materials in roofing.

There are several items, however, which need to be clarified:

1. The interaction between polymers and bitumens is not a **reaction** but only a physico-chemical process involving their surfaces and to a degree, diffusion. (p. 20)
2. The PVC sheet is made from a polymer (polyvinyl chloride is formed by a polymerization of vinyl chloride). The polymer then is plasticized by different liquid compounds such as dibutyl phtalate, dioctyl adipate etc. to form a sheet. (p. 20)
3. Butyl rubber is a pure hydrocarbon polymer much more closer to bitumen in chemical properties than PVC. The latter contains chlorine which makes it more polar and hence, dissimilar to the unpolar hydrocarbons. The plasticizers used for butyl rubber are mostly mineral (hydrocarbon) oils and they are used in much smaller amounts than those in the plasticized PVC. Therefore, their net softening effect on the bitumen is much smaller. Furthermore, the raw materials used for butyl rubber and PVC are very dissimilar. The statement "roughly the same butanes and other parafine oils" is inaccurate and misleading. (p. 21)
4. The experiment described in Section VI (p. 24) involved only polar polymers very similar to PVC. Therefore, it did not yield any negative results. If the three cements described therein would be applied on a butyl sheet or if butyl cement were used to bond PVC, failures would occur in all these cases.
5. The behavior of polymers in contact with each other and with other materials depends greatly on the nature of the surfaces of the materials involved. The chemical nature, surface energy and roughness are the main factors. The ability of liquids (e.g. adhesives) to wet the surface of the polymer and the ability of polymers to form a strong interfacial bond with other substrates (e.g. asphalts, concrete, metals) are extremely important for a good and stable bond.

To those who are interested in this subject, I recommend a book "Contact Angle, Wettability, and Adhesion" (Advances in Chemistry Series No. 43, American Chemical Society, Washington, D.C. 1964) and a paper "Analysis of the Problem of the Adhesion of Liquid Applied Membrane to Concrete" by J. G. Drobny which can be obtained from ASTM Committee C24 or from me upon request.

Sincerely,

J. G. Drobny
Manager, Product Research
Carlisle Tire & Rubber Company

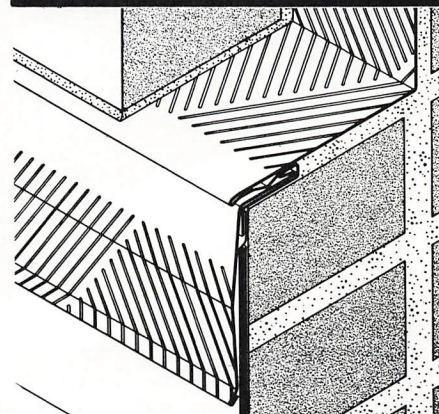


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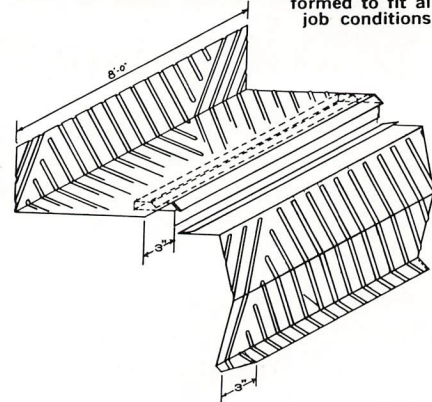
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For prices and specification data, write

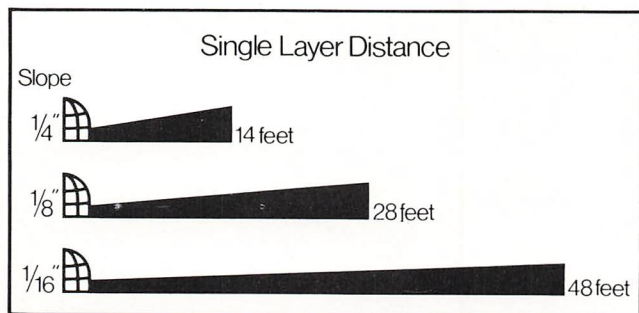
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Now Pittsburgh Corning offers an insulation system for roofs that cuts installation time and reduces underlayment—our new Tapered III FOAMGLAS® Roof Insulation System. The Tapered III System delivers positive drainage with a choice of three slopes: one-sixteenth inch per foot, one-eighth inch per foot, and one-fourth inch per foot with distances of 48, 28, and 14 feet, respectively, before underlayment is needed. These add up to an impressive savings on labor costs.



The Tapered III System arrives on the job-site shrink-wrapped and alphabetically and color coded for easy identification. Each tapered FOAMGLAS block is clearly marked according to its row and direction of slope to simplify installation. The Tapered III System is installed using conventional roofing methods and equipment.

FOAMGLAS Insulation, the heart of the Tapered III System, offers a firm, dimensionally stable base for built-up roofing. It's impermeable to moisture and noncombustible. FOAMGLAS Insulation is the only roofing insulation on the market that's guaranteed for 20 years against loss of thermal efficiency.

For more complete and detailed information on the Tapered III FOAMGLAS Roof Insulation System, write Pittsburgh Corning Corporation, Dept. N-117, 800 Presque Isle Drive, Pittsburgh, Pa. 15239.





THE CONVENTION WEEK

February 19-23, 1978

Sunday, February 19

Early arrivals will include Exhibitors, to set up their displays, and the Executive Committee, which meets in the afternoon.

Monday, February 20

Following an all-day Board of Directors meeting, Convention activities begin at 6:30 PM with a Welcome Party in the Exhibit Hall.

Tuesday, February 21

The first official Convention day begins in the Exhibit Hall—from 9 AM to 12:30 PM. The Opening Luncheon begins at 1:00, when the Convention is officially called to order. Highlighting the Luncheon will be Ronald Reagan's Keynote address, and the presentation of the J. A. Piper Award. Following the luncheon, sessions will be held on Estate Planning & Tax Problems, an update of NBS activities with Bill Cullen, and a report on splits by researcher Rene Dupuis. The evening is free.

Wednesday, February 22

Following the Member Breakfast (which includes the Nominating Committee report), choose between four concurrent sessions, each of which will be repeated: Don Brotherson's workshop on the NRCA Energy Manual; management consultant Bill O'Brien discussing pros and cons of mini-computers; a preview of a new safety film; and a close look at the insurance market for roofing contractors. At 12:30, the Exhibit Hall reopens, with beer, soft drinks, and sandwiches available.

Thursday, February 23

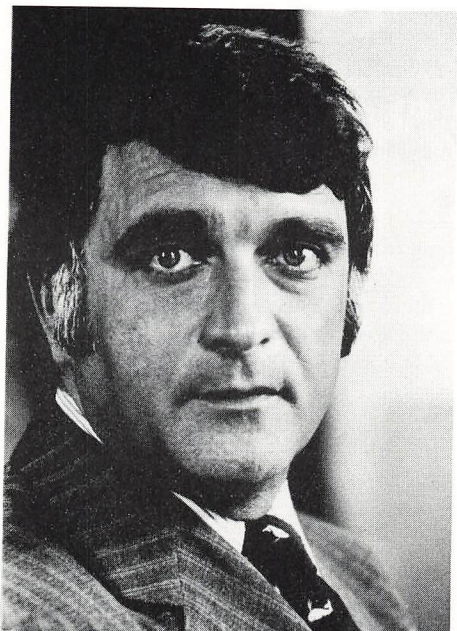
The Exhibit Hall opens for the last time from 9-12. At 12:30 the Awards Luncheon begins, and includes a talk by Frank Zarb, former head of the Federal Energy Administration. Following the luncheon, there will be a series of informal "Rap Sessions" and the annual election of Officers and Directors. The Convention ends with a gala Officer's Reception and Cocktail Party, featuring the Big Band sound of Freddy Martin and his Orchestra.

91st NRCA
ANNUAL
CONVENTION
& EXHIBIT
FEBRUARY 20-23, 1978
Las Vegas



This year's Keynote Speaker is Ronald Reagan, who will speak at the opening lunch on Tuesday.

Frank Zarb, former Energy Chief, will speak on Thursday.



PROGRAM NOTES

LADIES . . .

will have a full program of their own. Special events includes entertaining sessions on the Lore of the Southwest, the art of Japanese flower arrangement, and a matinee performance of a current play (following a Ladies Luncheon on Wednesday).

REGISTRATION . . .

will be held at the entrance to the Exhibit Hall in the MGM Grand Hotel. Advance registration speeds up the registration process, saves you money, and helps your staff. Please do it promptly!

HOUSING . . .

for all NRCA Convention delegates will be at the fabulous MGM Grand Hotel. Enough said.

EXHIBITS . . .

as usual will be a big part of the Convention. And this year, there'll be more than ever before.

RECONVENED CONVENTION . . .

participants will depart on Friday, February 24 for 8 days in Hawaii. Again, promptness is vital if you plan to attend.

HALLELUJAH HOLLYWOOD . . .

is billed as the most elaborate and successful Las Vegas show ever (never an empty seat). The National Roofing Education Foundation is selling tickets for the 9:00 show on Wednesday, February 22; proceeds will go to the Foundation.

PROBLEM CLINICS . . .

are scheduled for all regular Convention program hours. Contractors (only) are encouraged to submit details of any problem jobs encountered or envisioned to the NRCA office in advance of the Convention. Sessions will be scheduled for consultation with participants from the NRCA Technical Assistance Program.

FINALLY . . .

we hope you'll agree that the combination of Las Vegas and the program in store for you will make the Convention an event you won't want to miss. Please plan to be with us, and please register in advance just as soon as possible.





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 American Associated Companies
 Apache Foam Products Co.
 APC Corporation
 Apollo Distributors Inc.
 Asphalt Products Oil Corp.
 A-Tech, Inc.
 Ball Metal & Chemical Co.
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 Cleasby Manufacturing Co.
 CNA Insurance
 Consolidated Fiber Glass
 Products Co.
 Construction Fasteners Inc.
 Contech Inc.
 Dodge/SCAN Div.
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 Evode Inc.
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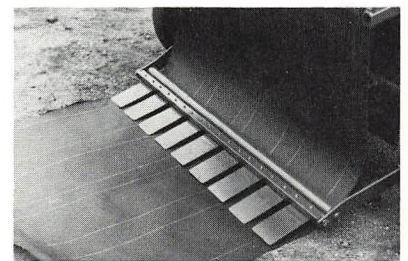
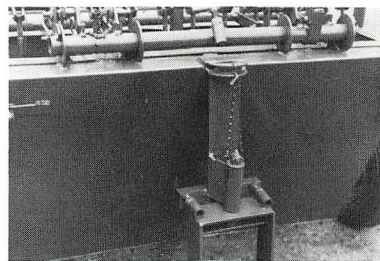
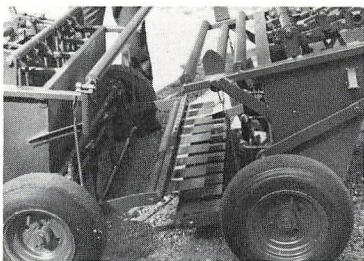
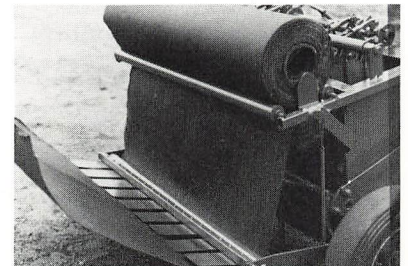
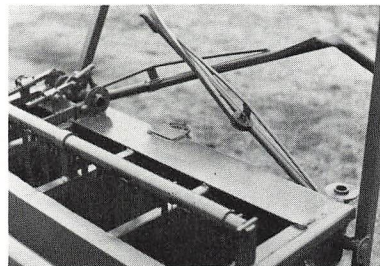
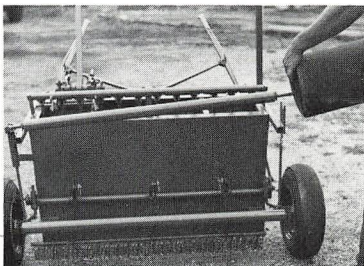
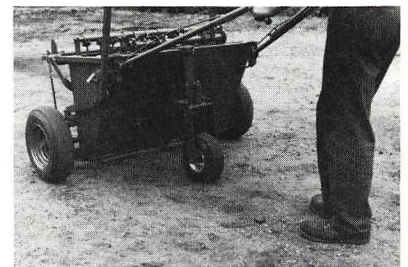
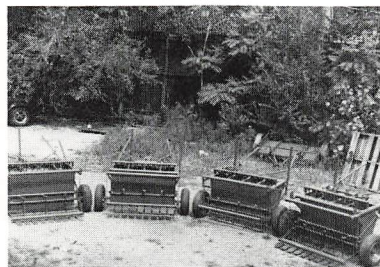
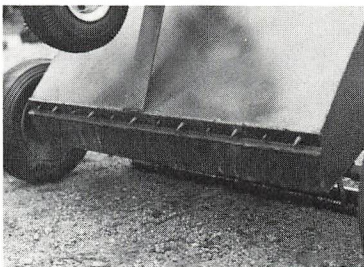
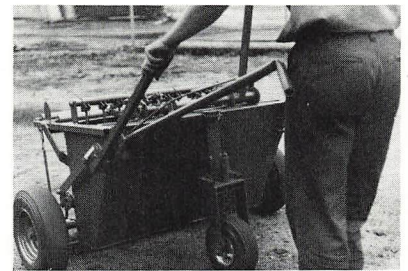
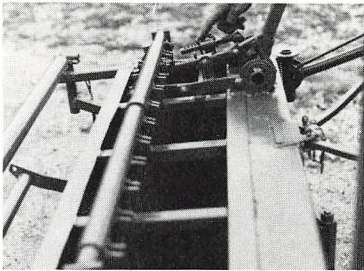
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- Type 70 Four Zone with three roll felt cradle or ball bearing swing stick.
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Pfingsten's Machines Have Been Produced For Thirty Years to Make Money For The Contractor. We'd Like to Send You A Paper Entitled *The Widely Practiced But Little Understood Art of Felt Machine Operation.*



Project Pinpoint 1977 results

Over three years ago, PROJECT PINPOINT was initiated to create an ongoing data bank of the type of work being done in the roofing industry, and the nature of those jobs which are judged to be problems. The long-term benefits of PROJECT PINPOINT are obvious: to enable us to spot unusually frequent problems before they become catastrophes.

Other benefits from PROJECT PINPOINT data have already accrued. The first returns (from 1974, published in the *Roofing Spec*, March, 1975) documented the unusually high percentage of jobs being completed without added roof insulation. Other PROJECT PINPOINT returns have been useful in overall analysis of the roofing industry.

This year, NRCA contractor members were asked to submit Baseline Data reports for all jobs completed in the month of July. The results of those reports are the basis for the 1977 results contained in this article.

We cannot stress too highly the importance of everyone contributing to the data bank that makes PROJECT PINPOINT work. Next year, all NRCA contractors will again be asked to complete forms for all jobs completed during a specified time. Equally important, **every time** you encounter a problem job, it is vital that you submit a Problem Job form. Problem job forms were sent with the last Baseline Report forms: additional copies are available for the asking from the NRCA office.

OBSERVATIONS

Fig. 1. Percentages of deck types have held amazingly consistent through the four annual PROJECT PINPOINT surveys. Our results indicate that the use of wood decks is not limited to the West Coast.

Fig. 4. Surprisingly, the number of jobs completed in 1977 without added roof insulation was 29% of the total. There is no significant difference from the 34% we found in our 1974 results.

Fig. 5. Obviously, on those jobs where insulation is used, it is used in substantial thickness. Note especially that no jobs were reported with less than 1/4" of insulation.

Fig. 6. The first PINPOINT survey (1974) showed 70% of the jobs involved coated base sheets; 59% of which were solid mopped. In 1977, only 49% involved coated base sheets (84% of which were solid mopped)

Fig. 8. Three and four ply roofs accounted for 83% of the 1977 jobs reported, compared to 68% in 1974.

Fig. 12. In 1974, only 33% of the reported jobs were new construction. In 1977, the number jumped to 52%. This is probably a fair indication of the state of the construction industry in those two years.

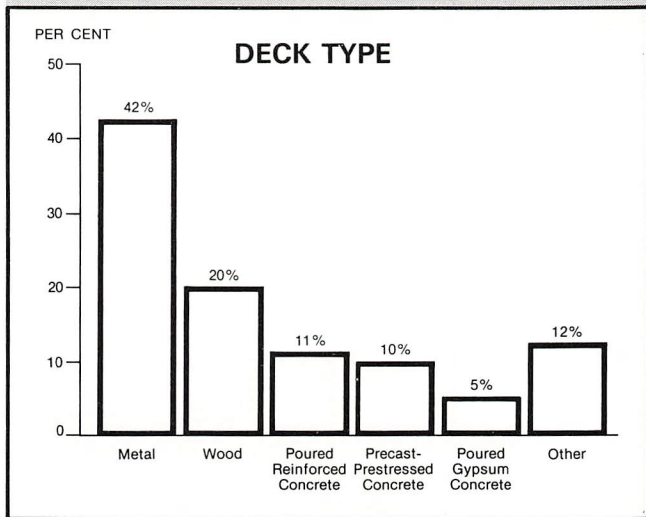


FIG. 1

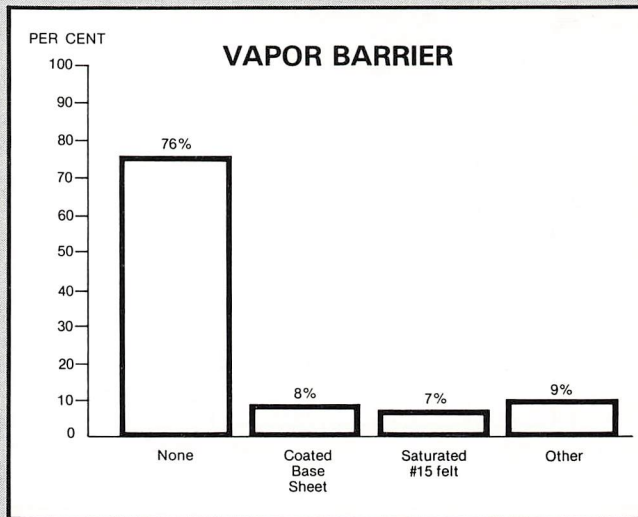


FIG. 2

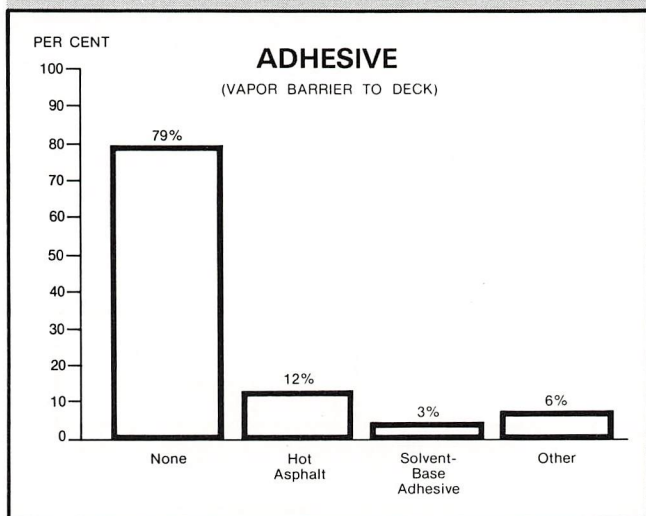


FIG. 3

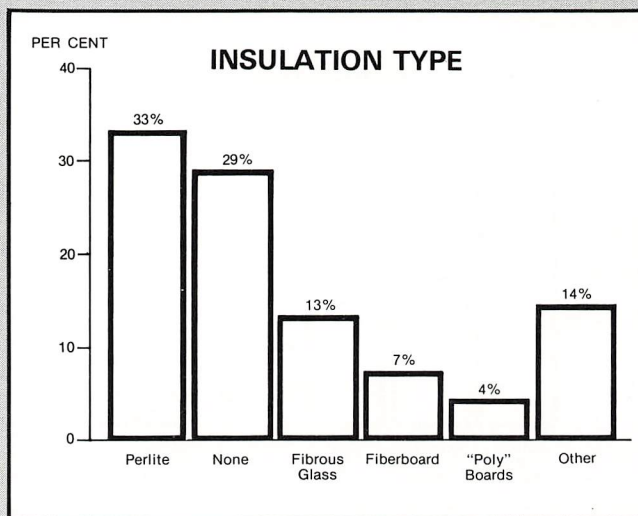


FIG. 4

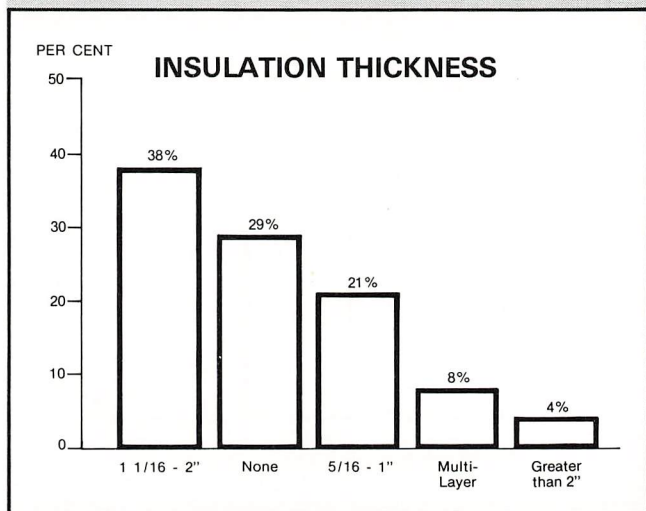


FIG. 5

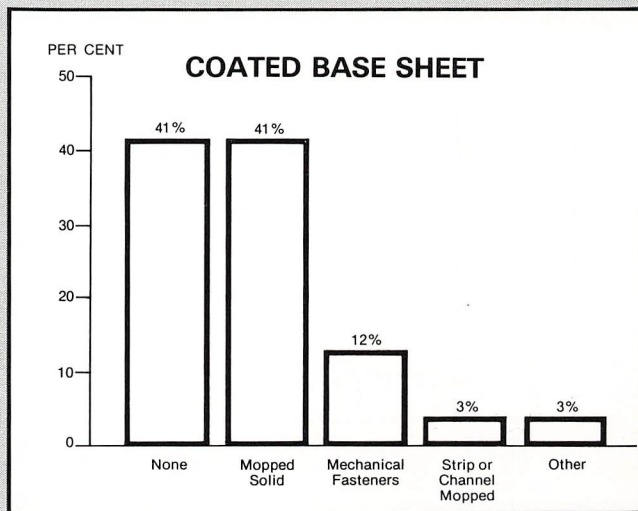


FIG. 6

MORE CHARTS

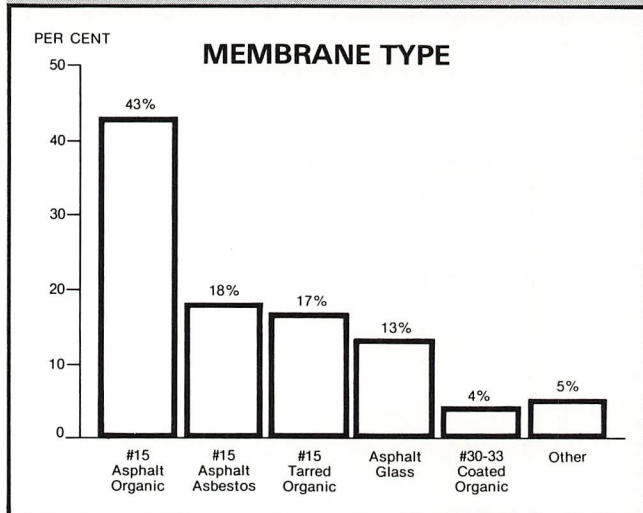


FIG. 7

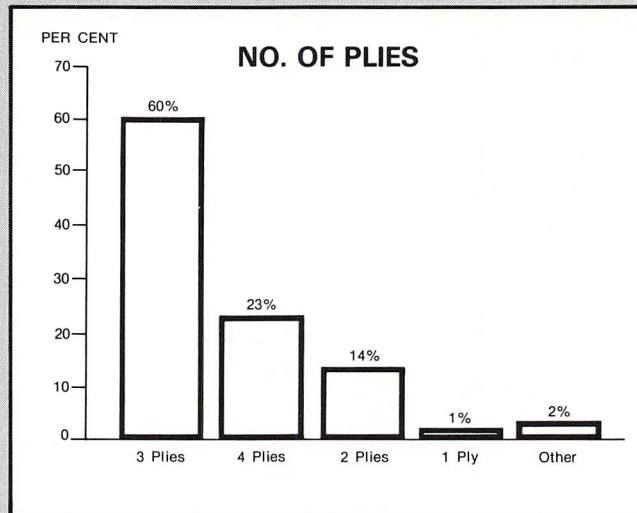


FIG. 8

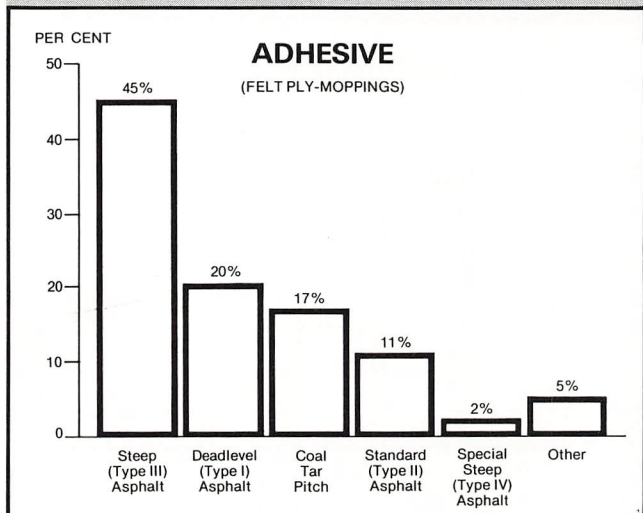


FIG. 9

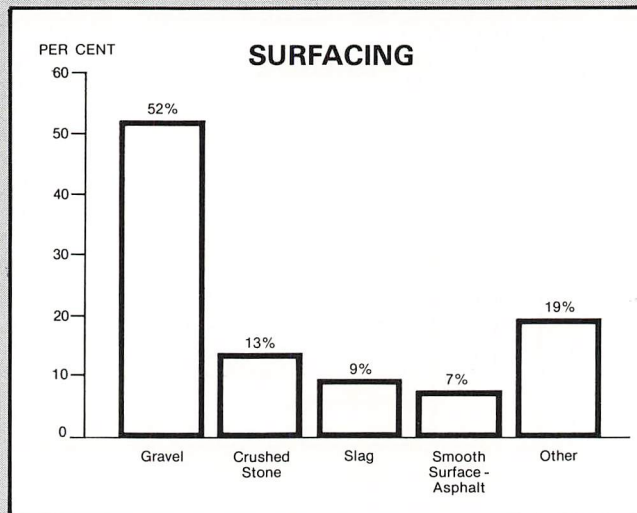


FIG. 10

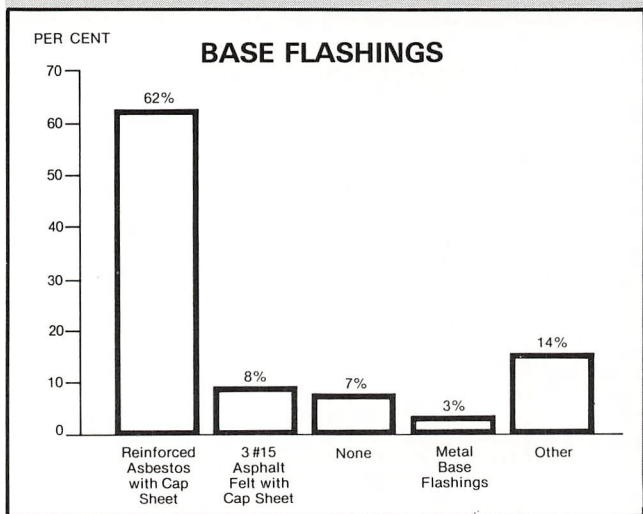


FIG. 11

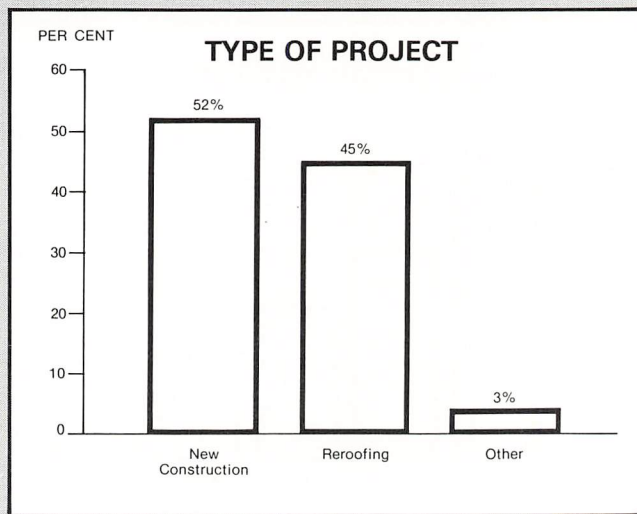


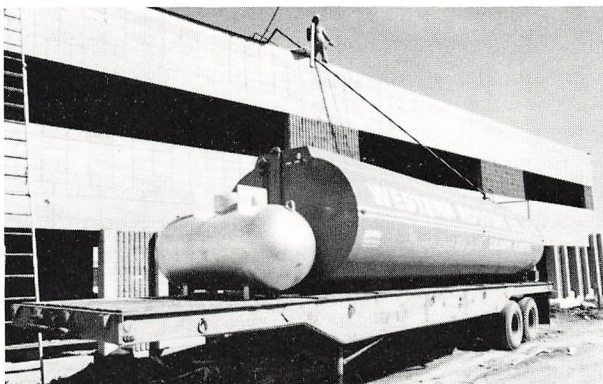
FIG. 12





Taurus Job Site Transport ... Designed to give the Roofer maximum flexibility

A Taurus job site transport is not just a tanker, but a complete liquid asphalt system. A system that, Herb Imler of Western Roofing has discovered, is capable of transporting 20 tons of bulk asphalt from the refinery directly to his job site. Western Roofing can now pump "hot" immediately to the roof for several days without a refill from the refinery, an added plus if the job site is far from your source of bulk asphalt. This system has given Western the versatility of transporting their own asphalt while still having a 20 ton job tank capable of automatically controlling the materials temperature and pump "hot" directly to the roof. A system that gives the contractor a constant supply of asphalt for either Tear-off or new Built-up roofing.



This system permits the roofer to do away with his kettles and kettle-crews, eliminating the inflated cost of using carton asphalt and the expense of carton handling, because the tank temperature is automatically controlled, the tank may be left unattended, permitting the roofer to use his manpower more productively. No more limiting the size of your on-deck crew due to a lack of kettle or job tank capacity.

Taurus job site transports are available in capacities of 15, 20 and 28 tons. Standard features include, a duo-tube heat system with fully automatic controls, a fully submerged pump, a 9HP Cast Iron engine and Taurus' octagon shaped tank with full surge baffles.

When you consider the increased productivity and cost savings, a Taurus Job Site Transport is an investment that should pay for itself within the first year of operation.

For more information on how Taurus Asphalt Handling Equipment will help you, please call or write.



LIQUID ASPHALT SYSTEMS, INC.
2425 Jefferson, Kansas City, Mo. 64108
(816) 474-0448



LIQUIDATED DAMAGES

It has become a common practice in building and construction contracts for the parties to agree upon a fixed sum of damages to be paid for each day's delay in the completion of the project beyond a stipulated date. These "liquidated damages" provisions are a direct result of the legal rule that damages may not be recovered in a court of law unless they can be proven with reasonable certainty. Since it would be very difficult to determine the damages incurred as a result of each contractor's delay in a construction project, liquidated damage provisions attempt to provide a reasonable estimate of the future losses.

The primary concern with liquidated damage provisions is whether they are so unreasonable as to be considered a penalty and therefore void. The courts have traditionally considered three criteria by which a valid liquidated damages clause may be distinguished from an unenforceable penalty. First, the injury caused by the breach must be difficult or impossible of accurate estimation; second, the parties must intend to provide for damages rather than for a penalty; and; third, the sum stipulated must be a reasonable pre-estimate of the probable loss. However, a review of the numerous decisions in this area reveals that the first two criteria are of limited importance in contrast with the third criteria, which is usually determinative. Thus, it is quite common for the courts to uphold a liquidated damage clause even though actual damages are readily calculable and regardless of what label the parties put on the provision.

There is a general rule of law that if a delay in the completion of a construction contract has been caused by the other party to the contract or by those for whom he is responsible (i.e., the general contractor, the owner or another subcontractor), the duty to complete the project within the time set is discharge, and the provision for liquidated damages for delay is then inapplicable. The problem is encountered when either the delay is caused by more than one party or when there is a requirement that the contractor give notice of delays for which he is requesting a time extension. In the former situation, the general rule is that the court will not attempt to apportion damages between each of the respective parties for their responsibility in the delays but will instead void the entire time provision and resulting, the liquidated damage clause. However, there are several states and administrative boards that will attempt to determine just how much of the delay is attributable to each party and then attempt to apportion the damages between them. As to the issue of notice requirements, generally the courts will construe the notice requirements very strictly such that if written notice is required for extension of time, then written notice will be a prerequisite to any

recovery or set off for delay damages. Again, a number of exceptions have been made by courts in order to avoid a particularly harsh result especially when the delays were caused by numerous change orders from the owner or general contractor.

Subcontractors must be very cautious in being aware of all of the related contract provisions on liquidated damages, time extensions, and delays attributable to more than one party, and abide by these provisions very carefully. Thus, the subcontractor must make certain that the time stipulated for the completion of the project is reasonable considering all the various elements and problems that might occur, that there is a provision for time extensions and that he is very careful about conforming to these requirements. The subcontractor might also want to specify a number of **consecutive** days to perform the work to guard against staggered scheduling on a job, which would cost more because of the problems of mobilization and demobilization of the job and loss of momentum.

DOCUMENTATION

Unless the price of the change can be agreed upon in advance, the contractor must preserve the evidence of facts as to the costs and details of the performance of the changed work. Under the cost-plus method or under the disputes clause, for a contractor to be successful in obtaining full compensation for the original contract work as well as the changed work, the contractor must be able to prove his costs. The best evidence of expenses is a complete set of invoices, purchase orders, receipts and accurate records of wages paid to employees.

Also very helpful in presenting a successful claim for extra compensation for changed work is the existence of a jobsite log in which the job superintendent records anything and everything that may be considered extra work. If a jobsite log is maintained and reviewed daily, the contractor will always be aware of conditions that require quick action, such as directives issued to the job superintendent from a representative of the owner, jobsite delays, or changing site conditions. It is important that every occurrence which might be extra work be documented because there is an inference that circumstances not included in the jobsite log did not occur.

Jobsite logs should be maintained daily by the job superintendent either on a handwritten form or dictated to be transcribed. A jobsite log may be in outline form to aid the job superintendent in making a record of all the important events of each day. It is a good policy to have the daily entries in the jobsite log forwarded to the main office of the contractor daily or weekly in order that the main office can follow the progress of the job and be assured that the jobsite log is being kept up to date.

Notes or memoranda should be kept of oral and telephone conversations. The content of each contract

contact with representatives of the owner or other contractors should be noted. Then, as soon as possible, these notes should be translated into written memoranda for the file or a confirming letter to the other party to the conversation. The confirming letters have the dual purpose of implying agreement by the other if he remains silent after receipt of the confirming letter, and also preserving a written record.

In addition to the job log, photographs showing the nature and location of the changed work should also be made part of the file. Photographs can be the ultimate help in documenting the exact factual situation and may even furnish details previously unnoticed or not noted elsewhere. An instant-development type camera is useful, so that additional pictures can be taken before the site conditions are altered, if for any reason the initial photographs do not clearly depict what needs to be shown.

Depending on the magnitude and complexity of the claim, experts may be needed to produce expert opinions, analyses, and reports on the subject matter of the change. An expert can serve the dual purpose of supporting the claim and advising the contractor on the specifics of the claim. The contractor should not formulate his claim and then hire an expert at the last moment before presenting the claim. Rather, calling in an expert should be among the first steps, when it becomes clear that a substantial claim for extras may exist.

Also relevant in presenting a claim is evidence of the customs and practices of the trade of a particular contracting field. These customs or trade practices amplify

plans and specifications and are implicitly incorporated into a contract provided they are not contrary to the expressed provisions of the contract. In addition to "fleshing out" the terms of the plans and specifications, proof of customs and trade practices may be an absolute necessity when questions arise about the standard of workmanship.

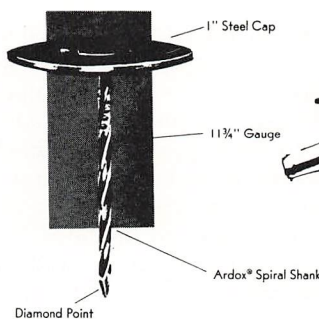
DEFECTIVE PLANS AND SPECIFICATIONS

One of the foremost concerns of architects and engineers is that the plans and specifications they draft must be accurate and complete. However, not even the most highly trained and competent design professional is immune from making errors or omissions in the increasingly complex work he performs. Those who have had the misfortune to be the source of defective plans or specifications are acutely aware of the delay and expense which can result from even a minor defect. The contractor may turn to the owner and the owner may turn to the architect or engineer to compensate them for the losses they incur in trying to comply with or remedy faulty specifications.

Too often the design professional does not pay adequate attention to the methods and materials specified and thinks that all he has to do in the specifications is include an expressed performance guarantee from the contractor. A design professional who attempts to rely on a guarantee and ignores the

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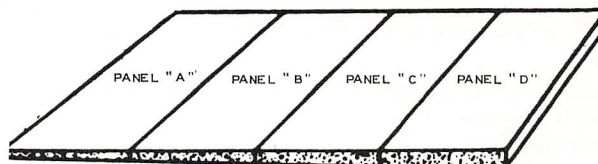
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Tapered panels produced from incombustible perlite board under factory-controlled conditions . . . provide dimensionally stable substrate for built-up roof . . . standard, flat, perlite board stock may be used as filler to provide 1/8", 1/4" or 1/2" incline . . . combine with urethane board for maximum thermal efficiency.

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sufficiency of the plans and specifications is on a legally slippery slope. The contractor may guarantee the workmanship and materials, but the owner impliedly guarantees the sufficiency of the plans and specifications. The owner may then look to the design professional if the plans and specifications are defective.

Coupling a methods and materials specification with a performance guarantee creates a "catch 22" situation that may very well catch the design professional. If the methods and materials specified will not produce the performance results, then the law may relieve the contractor of the specified performance. For example, if the specifications and design of a roof are defective and will not keep the work watertight, the contractor's guarantee may not hold water either. Design professionals too often attempt to rely on clauses written into the specifications which attempt to shift their design errors onto the contractors. Just as often, the courts have found ways of getting around these loaded clauses and fix the responsibility for where it should justly be, on the specifier of the defective design.

The theory used to give the contractor relief from defective plans and specifications is that the owner impliedly warrants that if the plans and specifications are followed, the work will meet the performance requirements of the contract. This rule is necessary because the contractor has no right to depart from the plans and specifications, and it would be unjust to hold him responsible for failure due to causes over which he has no control. One court considered the contractor's plight when working under defective plans and specifications and concluded: "The contractor is not permitted to vary from the prescribed plans and specifications 'even if he deems them improper and insufficient; and therefore cannot be held to guarantee that the work performed as required by them will be free from the defects....or accomplish the purposes intended.'"

The following is a short list of theories and ways the plans and specifications are determined to be defective allowing contractors to recover their damages.

1. **Error.** Error is one of several ways defective specifications may entitle the contractor to extra compensation. Inadequate detail in the specifications may also lead to a compensable extra if the discovery of the omitted detail forces the contractor to incur more costs than the original defective specifications led him to expect.

2. **Erroneous Specifications.** If the specifications which indicate the feasibility of doing work in a certain way are so erroneous as to preclude the use of that method, the contractor may recover for unanticipated costs in using a different method. A dimensional error which requires the performance of more work than anticipated also gives rise to extra compensation.

3. **Defective Contract Specification.** Contract specifications may be defective by calling for materials which are inadequate to produce the required result. This is not the responsibility of the contractor and he is not held liable for any resulting failure.

4. **Building Code Provision.** Specifications may be defective by requiring work which when completed in accordance with them violates a building code provision.

5. **Unattainable Performance Requirement.**

Specifications are defective if they establish an unattainable performance requirement. Specifications which may call for a standard of performance which is, in fact, impossible to attain may give rise to an extra for the contractor.

When the plans and specifications for a construction project are in some manner defective, the contractor may expend great time and money in trying to comply with them before he becomes aware of the defect. Upon this discovery, he is faced with the additional delay and expense of undoing work already performed, attempting to solve the problem presented, and in executing the work correctly. If the contractor is working under a fixed-price contract, he understandably should be compensated for the unanticipated costs, including damages for delays, for his work on the project.

When the contractor's expenses in trying to fulfill the contract requirements are greater than they would have been if the specifications had not been defective, the contractor is entitled not only to the contract price, but also to the additional expenses. Since the contractor's contract is with the owner and not with the design professional, the contractor's claim is against the owner for a contract change or in extreme circumstances, a contract breach. The architect or engineer may not have any immediate liability to the contractor under the contract. However, since the owner may seek indemnification from the architect responsible for the defect, design professionals should be knowledgeable about contractor's legal rights to recovery. This may be the basis for the design professional's eventual liability.

This link from contractor to owner and design professional may place eventual liability for defective specifications and extra expense they cause with the party responsible for drafting the defective plans and specifications in the first place.

The courts are clogged with lawsuits concerning allegedly improper plans and specifications. The number of lawsuits and demands for arbitration has increased dramatically over the years. Over twenty-five percent of the malpractice claims against design professionals arise out of roofs which allegedly are defectively designed or specified. Many of these problems are due to a lack of preparation and understanding on the part of the construction specifier.

Today, however, these problems can be overcome. Manufacturers publish their products' specifications and although these specifications cannot always be accepted at face value, they are a starting point in evaluating materials and systems. The design professional should insist on manufacturers furnishing technical backup so that he can understand and evaluate the properties and interaction of the specified materials and methods. The specifier must become knowledgeable of a product's strengths and weaknesses. He cannot afford the luxury of blindly accepting a manufacturer's specs and should demand technical data and field test results. The specifier may not be able to hide behind the contractor's and manufacturer's guarantee as a defense in a lawsuit if the cause of a failure is defective specifications. Though architectural and engineering practices have become more complex, it is still up to the design professional to research and develop the correct plans and specifications for every given job.



When you need on-the-roof technical assistance, you can get it - best - from a J-M District Engineer.



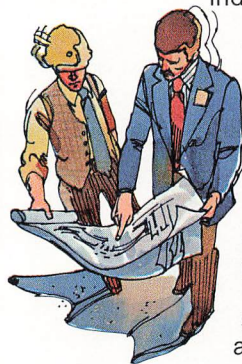
Best, for several reasons.

You see, we're the only roofing manufacturer with field engineers.

And as part of our team of roofing experts, J-M District Engineers (and there are 12 of them) devote full time to built-up roofing systems.

Together they offer over 200 years of roofing experience.

Their combined qualifications form a technical resource that's unmatched in the industry.



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To assist with specifying, as part of J-M's guaranteed roof programs.

To provide on-site, technical advice on unusual roof situations.

To help keep you advised on new practices in the industry.

To provide information on local climatic conditions as they affect roof design and construction.

And, most of all, to help you solve roofing problems before they happen.

Backing them are the resources of one of the world's largest producers of built-up roofing materials. Plus knowledge assembled in solving roofing problems since 1868.

Reason enough to look to J-M when you're planning a new structure and need assistance designing a roof that will provide years of reliable performance.

For information on J-M single-source roofing systems, contact Grant Edmonds, Johns-Manville, Ken-Caryl Ranch, Denver, Colorado 80217, 303-979-1000.

For single-source built-up roofing systems.



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Turned down any good roofing jobs lately?

Switch to Sure-Seal Systems and you'll be able to take on any of these:

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with insulation
roof over lightweight
concrete
roof over cement
fiber planks
roof over water
roof under water
prefab roof
temporary roof
loose laid roof
without insulation
new roof under
insulation
reroof with tear-off
reroof without
tear-off
a frame roof
peak roof
ski lodge roof
hip roof
cured membrane roof
uncured membrane roof
liquid membrane roof
roof over wood deck
roof over metal deck
roof over precast
concrete
roof over poured
concrete
permanent roof
reusable roof
sod roof
tapered roof.

Great stuff, the tough, versatile, stable, economical sheeting at the heart of our so-simple Sure-Seal Systems (and our 5-year warranty, which can be extended). Find out how to become an approved Sure-Seal applicator. Write today!

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News from associates members

Applied Polymers of America Inc., a Clifton, N.J. based manufacturer of polyurethanes, epoxies, polysulfides, and elastoplastics, recently expanded their product line with the introduction of a unique liquid membrane waterproofing adhesive for setting tile called **TILE TITE**.

TILE TITE is a one-part, polyurethane based liquid adhesive for setting tile that cures to form a tough waterproof membrane. Applied to vertical and/or horizontal surfaces with a serrated mason's trowel or gauged squeegee, **TILE TITE** can also be used to set terrazzo and wood floors.

TILE TITE cures completely within 24-48 hours to form a seamless, low modulus, high elongation, physically and chemically resistant synthetic rubber membrane permanently bonded to the tile.

Now available from **GAF Corporation** is **GAF Mineral Shield** glass membrane, a dimensionally stable membrane entirely composed of inorganic materials. The high quality, coated glass membrane is designed for use in the construction of **Mineral Shield** cold-applied built-up roofs, in place of the usual coated felt membrane, for applications over roof insulation and lightweight poured-in-place decks.

The new membrane is highly resistant to micro-organisms that cause decay and deterioration. It is

light in weight and easy to handle, requiring less material-handling per square. It carries a Type 15 U.L. label on the roll, and roofs built with this glass membrane offer the same U.L. ratings as other granule-surfaced **GAF Mineral Shield** roofs.

Packaging consists of 324 sq. ft. per roll, approximately 65 lbs. per roll.

For complete information, write for data sheet #2223-005 to **GAF Corporation**, Building Materials Group, 140 W. 51 Street, New York, NY 10020.

Grefco, Inc. a subsidiary of **General Refractories Co.**, filed suit in the U.S. District Court in Wilmington, Delaware on August 24, 1977 against **Kewanee Industries Inc.** of Bryn Mawr, Pennsylvania for an infringement of **Grefco's** patent on a composite construction panel made of perlite and urethane foam. **Grefco's** patented panel has found wide acceptance in the construction roofing industry because of its excellent insulative and fire-resistant characteristics. The **Apache Foam Products Division** of **Kewanee**, located principally in New Jersey, has been manufacturing and selling this patented panel without the permission of the patent owner. **Grefco, Inc.** intends to assert vigorously its patent against **Kewanee Industries, Inc.** and **Apache Foam Products** in order to prevent further infringements.



THE PINK STUFF

The two important things to know about roof insulation today.

THE GREEN STUFF

The **Pink Stuff** is Thermax[®] Roof Insulation. From Celotex. It's the most efficient on the market with a **Factory Mutual Class 1** fire rating.

We don't have to tell you the critical importance of insulating efficiency today and in years to come. The government is making it quite clear.

So start now with a simple fact ... the most efficient roofing insulation is foam, and one of the most efficient, stable, practical foamed insulation boards comes from Celotex.

Over new or existing roofs, Celotex will help you get the maximum insulation value at costs equal to or below the less efficient insulating systems you may use now.

High R factors.

One look at the chart comparing insulating value per thickness of Thermax, Tempchek, fibrous glass, composite (foam plus perlite), and fiberboard roof insulations shows how The Pink Stuff and The Green Stuff provide up to 2.5 times as much insulation value per inch.

Strong. Stable. Lightweight.

Both Thermax and Tempchek Roof Insulations are reinforced with glass fibers for extra dimensional stability. And both are 3 to 6 times lighter than less efficient insulation.

Thermax Roof Insulation... the only FM-rated foam insulation (non-composite) for Class 1 over steel.

Thermax Roof Insulation is the first non-composite foam insulation in

the U.S. to qualify for Factory Mutual Class 1 fire rating installed directly over unsprinklered steel decks.

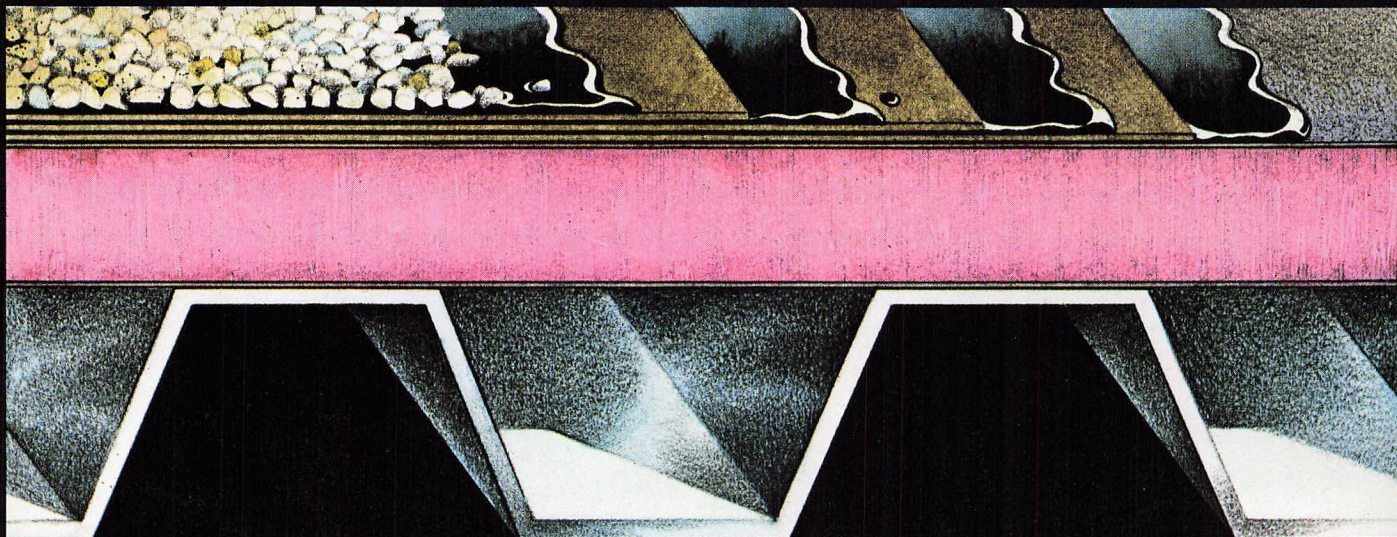
Why pink? To dramatize the exclusive isocyanurate foam core, sandwiched between two asphalt-saturated inorganic facers. It gives you the high insulation value of urethane, plus fire rating, without the need for a second material like perlite between it and the steel deck.

The best way to fasten Thermax to the deck is with Insulfast* nails, providing maximum protection against wind uplift and lateral movement. Mechanical attachment with Insulfast nails is FM approved.

With less deadload factor, you not only have easier installation, you can reduce the size and gauge of roof supports, have greater flexibility in choosing heating and air-conditioning equipment, and can reduce the size of metal or wood fascia around roof perimeters.

Thermax Roof Insulation costs no more for comparable insulation values than other fire-rated materials, is easy to cut and handle, gives more footage per truckload, and uses less warehouse space. All of which means a better application per dollar for everyone.

*Product of Berryfast, Inc.



The Green Stuff is Tempchek[®] Roof Insulation. From Celotex. It's the most efficient on the market for every other application.

When you don't need fire-rated insulation, you still need Celotex for high R factor. In Tempchek Roof Insulation.

Same high R factor. With some differences.

Tempchek is a lightweight urethane foam, reinforced with glass fibers to make it just as strong and dimensionally stable as Thermax. Check the chart again and you'll see that it has the same top-rated insulating efficiency per thickness as Thermax.

With the same lightweight, easy cutting, easy handling, easy application characteristics as Thermax Roof Insulation. And the same compatibility with hot asphalt.

The differences? Tempchek has organic instead of inorganic facers, a different chemical composition, and a different color, all simply because it doesn't have to be fire-rated like Thermax.

And one more thing.

Lower costs.

It costs less per application than conventional, lower-efficiency materials. And not just because of the lighter weight. Tempchek boards measure 3' x 4', so more roof area can be covered in less time than with normal 2' x 4' cuts.

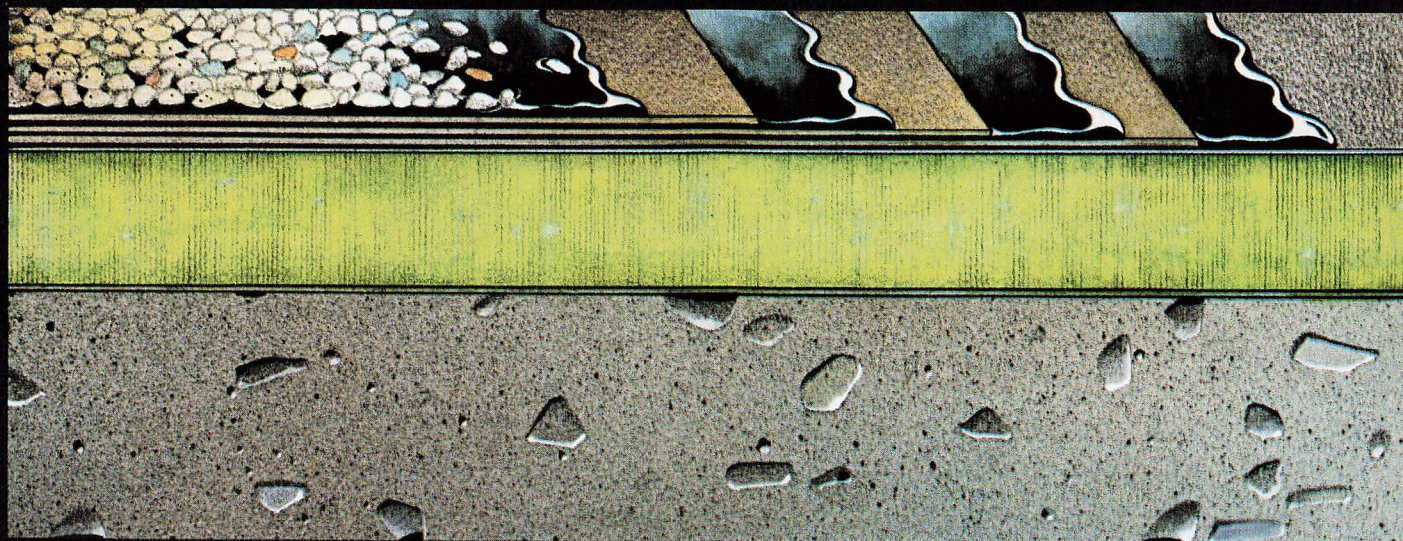
R FACTOR COMPARISON (Typical Thicknesses)

"R"	Thermax Roof Insulation†	Tempchek Roof Insulation†	Perlite & Urethane Composite Board	Fibrous Glass	Perlite & Fiberboard
8.3	1.2"	1.2"			3"*
10.0	1.4"	1.4"	1.9"	2-1/4"	4"*
11.1	1.6"	1.6"		2-7/16"	
12.5	1.8"		2.2"		
14.3	2.0"	2.0"	2.5"		
16.7	2.3"	2.3"	2.8"		
20.0		2.8"	3.2"		
25.0		3.0"			

*In two layers.

†NOTE: Under normal use, Thermax and Tempchek Roof Insulations will retain an average of 80% of their thermal resistance (R factor) values.

Another surprise on the next page. The most effective way to use the most efficient roofing insulation on the market. From Celotex.



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2. Top pouring of hot asphalt keeps gravel in place and provides first line of protection against moisture.
3. New Tempchek Roof Insulation is what makes the Celotex Inverted Roof Assembly work so well. It provides thermal protection, dimensional stability and resistance to moisture.
4. Flood coat of hot asphalt keeps Tempchek Roof Insulation in place and provides more protection against moisture. The asphalt is

beneath the insulation and will not alligator.

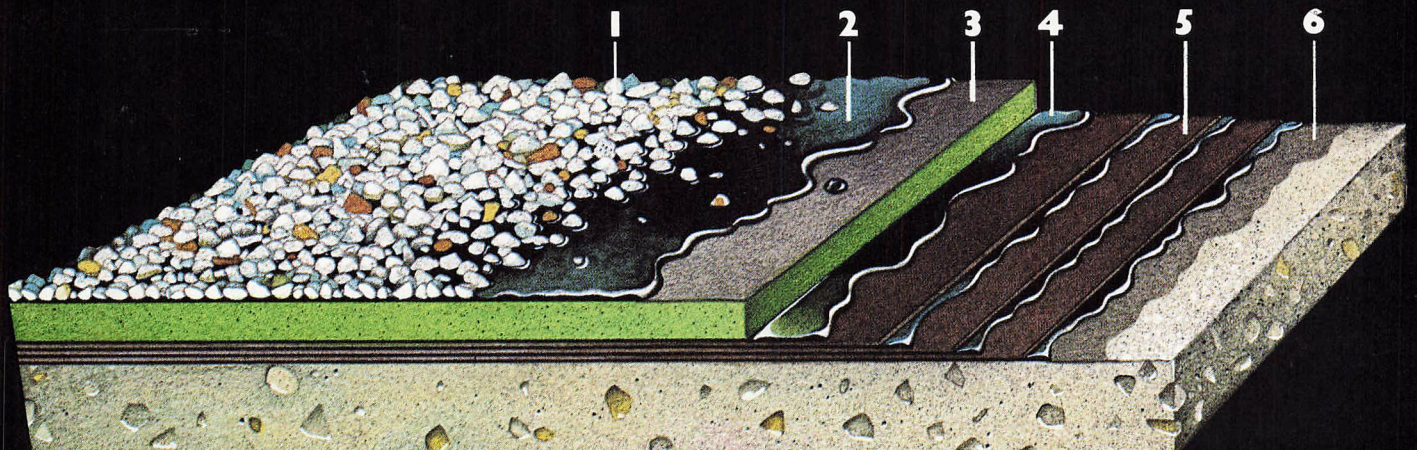
5. Built-up roofing membrane provides the third line of protection against moisture. Serves as a vapor barrier as well. Roof membrane is protected from thermal shock, punctures and blistering by the Tempchek insulation above.
6. The Celotex Inverted Roof Assembly systems are readily applied to most conventional nailable and non-nailable decks. Shown is a concrete deck, with asphalt primer.

Celotex provides a 10-year Inverted Roof Assembly guarantee. For a specimen, and complete details about Thermax and Tempchek Roof Insulations, and the Inverted Roof Assembly, contact your Celotex representative or write:

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SYMPOSIUM SUR LA TECHNOLOGIE DE TOITURE



Close to 700 roofing researchers, contractors and technologists from 22 countries gathered at the National Bureau of Standards (NBS) in Gaithersburg, Maryland recently for the Symposium on Roofing Technology. The conference, jointly sponsored by NRCA and NBS, was held at the NBS headquarters just outside Washington, D.C., from Sept. 21-23.

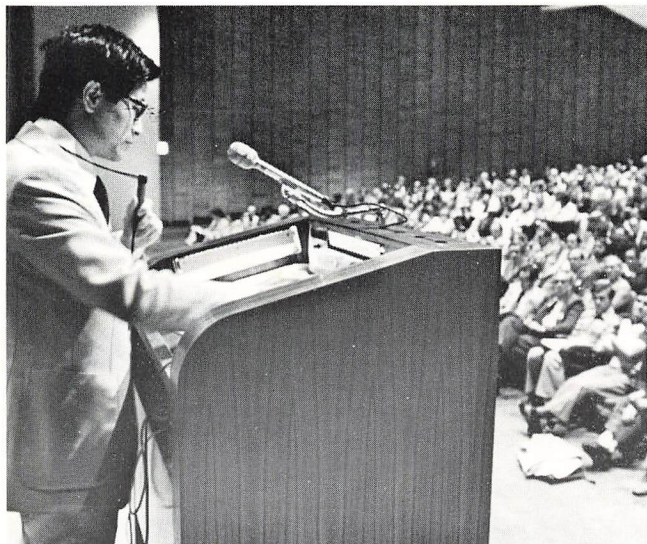
This year's symposium was an extension of four previous national roofing conferences, and was the first international meeting of its kind held in the United States. The meeting featured presentations by more than 30 international roofing experts from eleven countries.

Opening day welcome ceremonies were presided over

by Robert Walleigh, Deputy Director of NBS, and NRCA President J. Roy Martin, Jr. Presentations of comparative roofing practices began with Werner Andernach, a West German roofing contractor, and his description of roofing techniques there. Prof. Michio Koike, Tokyo Institute of Technology, followed with an examination of Japanese roofing practices.

Roofing techniques in Scandanavia was the topic of Lars E. Nevander's presentation. Nevander is a professor at the Lund Institute of Technology in Sweden.

Robert E. Linck, an American roofing contractor and past-president of NRCA, presented a discussion of roofing practices in the United States. In his presen-



J. W. Lee discusses his paper on thermal shock.

tation, Linck released some of the latest Project Pinpoint figures showing the types and techniques used throughout U.S. roofing operations.

The second session on Wednesday opened with Jack O. May's description of testing single- and multi-layered roofing membranes for performance characteristics. May is with England's Agreement Board, an organization similar to NBS. Robert G. Mathey from the Institute for Applied Technology at NBS presented research based upon studies of the performance of 21-year-old coal-tar pitch membranes. The results of the tests indicated that proper roof maintenance can significantly extend the life of such roofs.

J. W. Lee of a Madison, Wisconsin, research group, Engineering Research Consultants, gave the Symposium participants a description of the relative amount of "thermal shock" caused by differing insulation materials. K. A. Epstein of the Dow Chemical Company reviewed the performance of the upside-down roof. Epstein's paper dealt with the various performance characteristics and limitations of the protected membrane roof.

Prof. Sergio Croce of the Instituto Di Edilizia, Milan, Italy, spoke to the crowd, which packed the NBS Main Auditorium, on the systems approach to roofing.

Another paper from the Madison research group, this time presented by Mr. Lee's colleague, J. E. Johnson, dealt with the tensile strength of roofing felts when subjected to various testing procedures. According to their results, the strength of roofing felts is as great when subjected to lower stress over a long period of time.

The last presentation of the day was made by Roger Bonafont of the Ruberoid Company, England. Bonafont examined the use of the performance concept in the evaluation and selection of roofing materials, presenting a system to insure that required materials meet specifications with adequate safety requirements.

The third session began Thursday morning with a series of papers on new materials and systems used in Europe and the United States.

The first presentation by Lars Erik Larsson discussed the performance of Protected Membrane Roofs exposed on special test roofs. The tests which were performed at

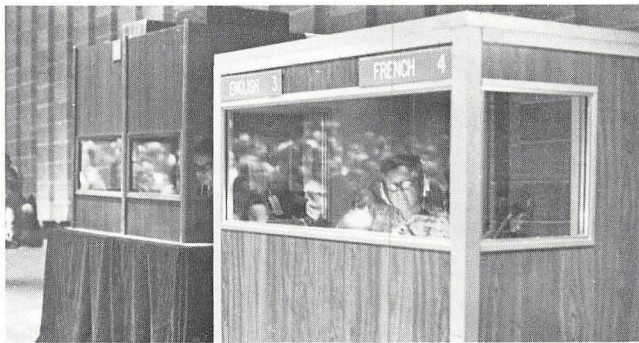
the Chalmers University of Technology in Sweden showed the thermal resistance of polystyrene board insulated PMR systems to be 10 per cent lower than for conventional roofs. Larsson, working with two other researchers from Chalmers, showed also that two-layer PMR installations tended to absorb six times the moisture of single-layer insulation.

Larsson was followed by Romolo Gorgati of Derbit SDA, Italy, who spoke on the modified bituminous-core sheeting being produced and applied in Europe. According to Gorgati, this prefabricated roofing provides many advantages in labor and inventory costs when compared with conventional systems.

A review of the performance of glassmat as a base for bituminous roofing membranes was presented by Martin J. Stam of Cindu-Key & Kramer, Holland, and was followed by a study of the perforation resistance of polymeric roofing sheets by Einar M. Paulsen. Paulsen is the senior research officer at the Norwegian Building Research Institute.

The last half of Thursday's morning session was devoted to the study of high wind effects on roofing assemblies. Design considerations were presented by R. J. Kind of the National Research Council of Canada. Kind found that wind effects differ depending on the size of the building and suggested designers take this into account when designing roofs for low- and high-rise buildings.

Joseph E. Minor of the Institute for Disaster Research, Texas Tech University, presented data on roof failure during wind storms. Minor stated that roofing failures can be classified into four different types: peeling failures, panel failures, supporting member failures, and system failures. Minor also presented examples of



Simultaneous translation was provided in French and Japanese.



Nearly 800 people attended the Symposium sessions.

damage to glass windows and spandrel units due to scoured roof gravel.

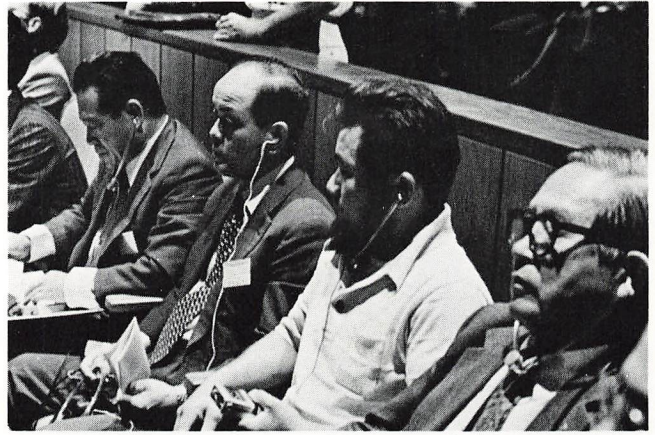
The fourth session of the Symposium featured papers and presentations on energy conservation and the effects of insulation on roofing system performance.

An American engineer, C. W. Griffin from New Jersey, presented the assembly with a method of determining life-cycle costs of varying insulation thicknesses. According to Griffin, the costs of fuel and insulation are such that it is much less expensive to specify too much insulation than it is to specify too little. Griffin said that the extra cost of the insulation is far smaller than the annual fuel waste of an underinsulated building.

Alan Chaize of the Center for Building Science and Technology, Paris, France, examined the behavior of thermal insulation used in roofing systems. Chaize stressed that the quality of the adhesion between the insulation panels can have a very significant effect upon the performance of the finished construction.

An English researcher, J. R. Carver, examined the behavior of built-up roofing membranes over expanded polystyrene. Carver found that there is no physical evidence linking expanded polystyrene to roof splitting or ridging. This conclusion is in direct contradiction with the general notion that the movement of polystyrene is responsible for roof splits and ridges. Carver is with John Laing Research & Development Ltd., England.

The fourth presentation of the afternoon examined the long-held notion that snow cover on roofs acts in some capacity as an insulating blanket. According to H. O. Laaly of the Building Materials Section, National



Portable headsets were used for translation.

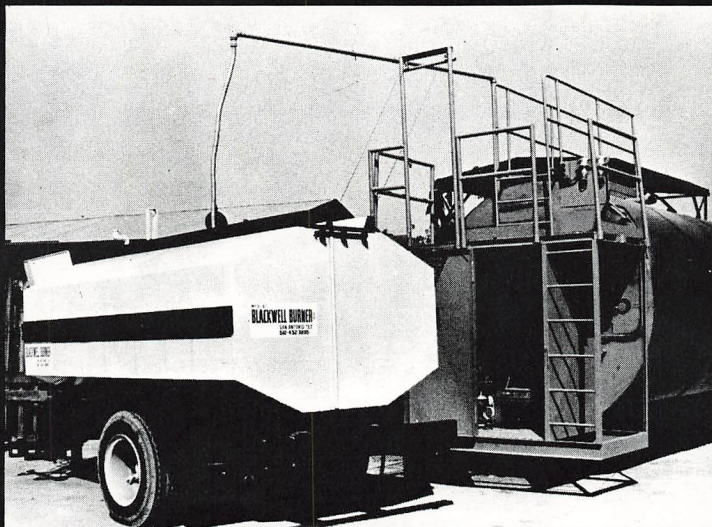
Research Council of Canada, snow cover is too un-dependable an insulator to expect it to give much protection to the roof assembly from freeze-thaw cycles. Laaly stated that a constant snow cover of at least one foot needed to be maintained to produce any type of insulating effect.

David Richards next presented evidence to contradict the belief that increased insulation could cause premature roof failure. Richards cited evidence gathered from test roofs that roof membranes as they presently constructed are adequate, and that the fears of some contractors are unfounded. Richards is Technical Services Manager for the Roofing Marketing Division of Owens-Corning Fiberglas.

(continued)

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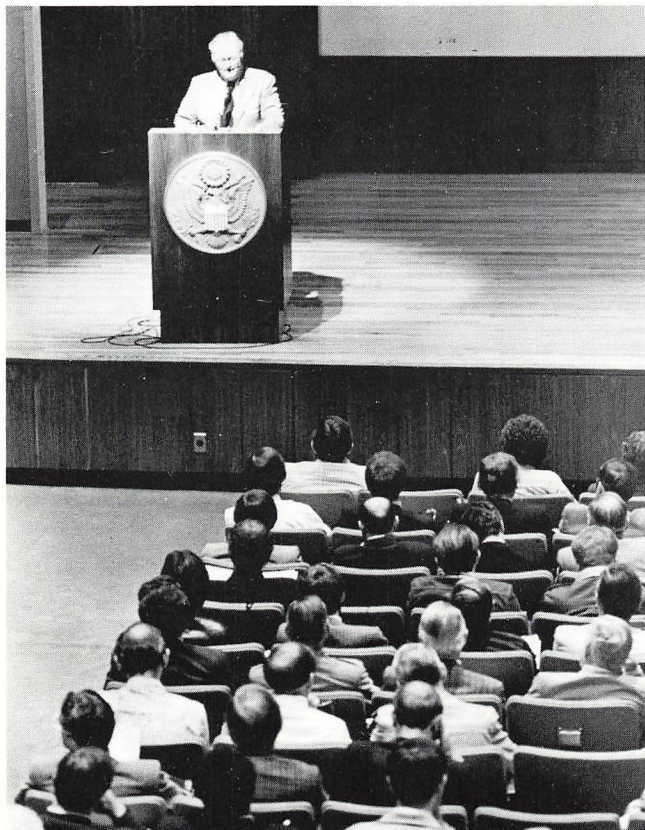


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Joe Klimas of GAF Corp. served as moderator of the second session.

Ghislain Croyere of Siplast, Paris, France, presented the Symposium audience with a history of the development of a new roofing product: aluminum coated asphalt built-up roof. Croyere outlined how his company had confronted severe contraction-expansion problems, and how proper design engineering had helped the product overcome that obstacle.

The last paper of the energy session gave attendees a simple, workable formula to determine the optimum insulation thickness for flat-roofed buildings. The presentation of Carl G. Cash, an associate at Simpson Gumpertz & Heger Inc., Massachusetts, re-emphasized that ASHRAE minimum standards should be used for roof insulation alone, since over-insulating has a higher economic penalty than under-insulating.

The fifth and final session of the three-day conference focused on the performance of cold-applied bituminous roofing materials, and the detection and effects of moisture in built-up roofing.

Duane Davis of GAF Corp. discussed the basics of the cold process roofing system, application details, and recommended procedures for adhesive application. Davis also presented field performance data on these systems.

Dr. Barry S. Jackson of Evode Waterproofing Systems, England, gave the last paper of the day on cold systems. Jackson discussed such coatings from their composition and manufacture, through their application and recommended maintenance. During his presentation, Jackson compared the problem of excluding moisture from door and window frames to roofing. Since, ac-

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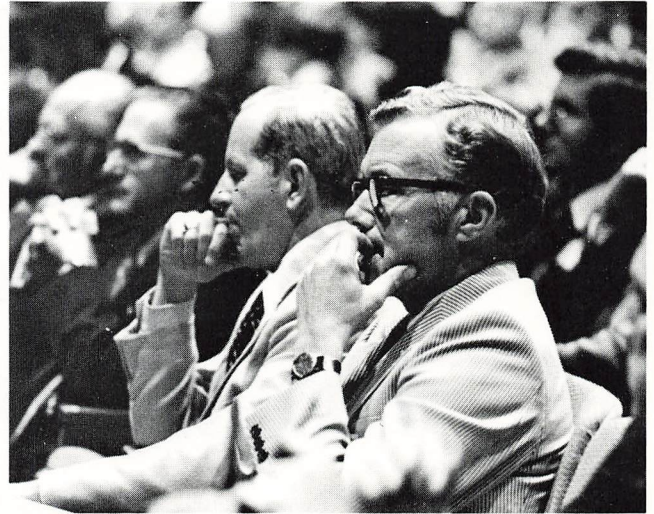
ording to Jackson, there was no need to nail or adhere strips of waterproof sheets along such frames, roofs could also be waterproofed using spray or brush-applied compounds.

The initial paper on moisture was delivered by T. A. Schwartz of Simpson Gumpertz and Heger Inc., Massachusetts. Schwartz discussed the equilibrium moisture content of roofing felts. His research indicated that the current ASTM standards for moisture content appear to be too high. Schwartz charged that current ASTM standards are arbitrary, irrational, and have no pertinence to the intended use of the felts in built-up roofing.

H. O. Laaly, in his second presentation before the Symposium audience, discussed the weakening effects of freezing temperatures on roofing membranes. According to Laaly, his research reaffirmed the need for positive drainage of conventional roofing systems. Laaly also added that each felt ply in a protected membrane roof should be thoroughly coated to prevent the penetration of water.

The final papers of the Symposium dealt with detection of moisture in built-up roofing assemblies. Two papers, one by Dr. R. E. Link, Jr., U.S. Army Engineer, Waterways Experiment Station, Vicksburg, Mississippi, and another delivered by Wayne Tobiasson of the U.S. Army's Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire, examined new methods of detecting moisture in roofs.


Dr. Link's presentation dealt with the Army's latest use of airborne infra-red detection devices. This method,



And always, a captive audience.

according to Link, may prove to be the most cost-effective method of roof survey presently in use.

Tobiasson surveyed the U.S. Army Corps of Engineers' study of hand-held infrared moisture detection systems. According to Tobiasson, the hand-held infrared system has proved to be more accurate and less expensive than nuclear moisture meters.

The presentations were simultaneously translated into French throughout the entire conference. A copy of the Symposium Proceedings is available for \$25 from NRCA, 1515 N. Harlem Ave., Oak Park, IL 60302. 

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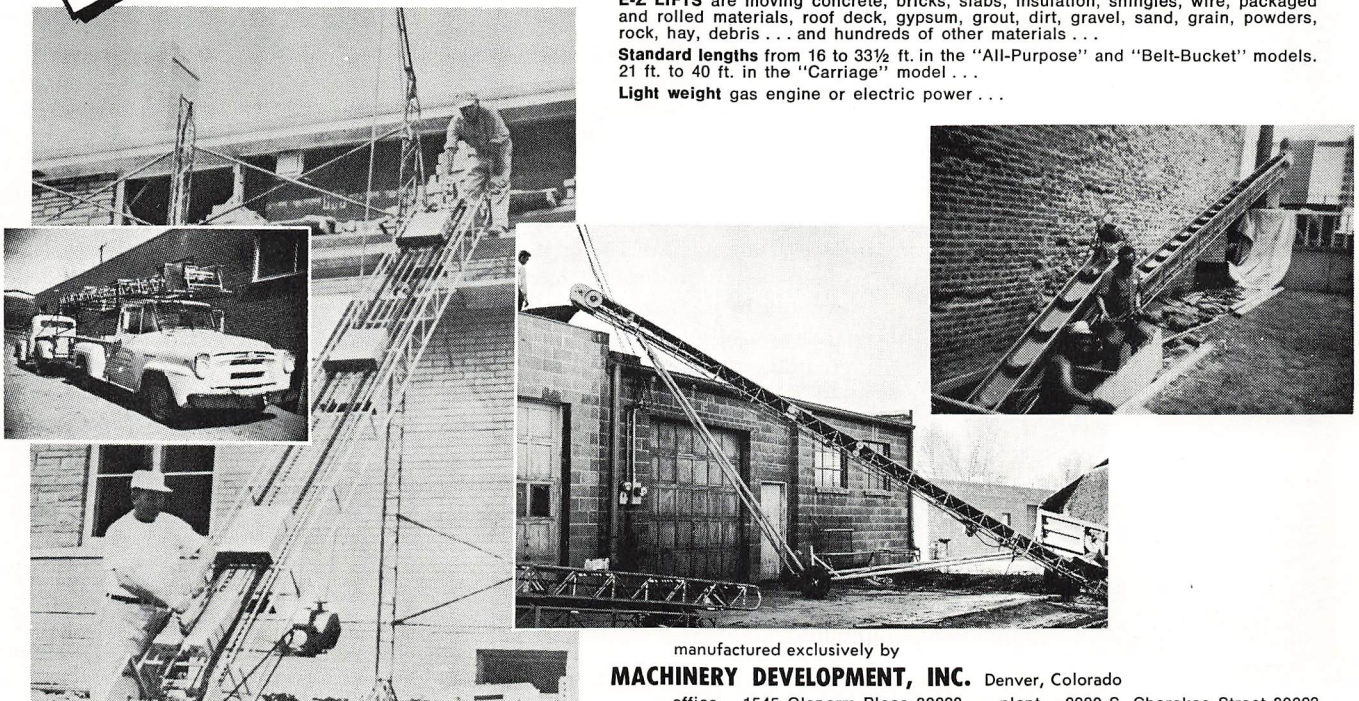
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Accident study shows need for improved training and material handling

by John Martin
Management Sciences Company

A recent study of roofing accidents prepared by Management Sciences Company for the National Bureau of Standards indicates that improved training procedures and improved material handling techniques can go a long way towards solving the industry's accident problems.

In the study, over 1000 accidents were investigated by loss control engineers and recorded in a format that allowed computer analysis of over 160 variables that were related to various accident types. Among the more significant findings were these:

- The two categories of injuries resulting in the most lost time were:

- 1) Strains, sprains, and hernias, and

- 2) Burns.

- Falls resulted in the most severe injuries, but less than 1% of the 1007 accidents examined might have been prevented by guardrails—though the installation of guardrails would have increased dramatically the time spent near the roof edge.

- Wind is a serious hazard to safe roofing operations.

- New workers are far more apt to have accidents than are experienced ones.

The need for the study (and for subsequent studies as well) is demonstrated by the relatively high lost-time accident rate in the roofing

industry. In fact, roofing lost-time accident rates have been among the highest of all industrial categories, and the industry was selected by OSHA as one of its five original target industries. In the insurance industry as well, roofers' worker's compensation rates are among the highest and still increasing.

Much of the effort for this study was provided by CNA Financial as a part of their involvement with the roofing industry. CNA participation was secured as a result of a request from NRCA. The thoroughness of CNA's efforts is evident in the results of the study.

The study covered 178 companies, nearly all of which are NRCA members. 85% of the companies surveyed had at least one accident during the year of the study, but this percentage is high because all accidents were examined, including those that did not result in lost time.

We hope that this project will ultimately help to encourage safe work practices, while discouraging those rules and regulations, promulgated in the name of "safety", that have proved only to be counterproductive.

The central point of the study was an examination of frequency and severity of different types of accidents. Our results were as follows:

TYPE OF ACCIDENT (Groupings)	ACCIDENT FREQUENCY		ACCIDENT SEVERITY	RATIO
	(1) % of 1007 Total Accidents **	(2) % of Lost Time Accidents **	(3) % of the 170 Cases With Lost Time Greater Than 10 Days **	% Severe to % Frequency (3 ÷ 1)
1. Falls, from, thru or off a roof, ladder or scaffold	8%	14%	23%	2.9x
2. Falls, off other than a roof, ladder or scaffold	2%	3%	6%	2.6x
3. Strains, Sprains and Hernias (SSH)	17%	22%	26%	1.5x
4. Burns From Hot Materials	16%	17%	17%	1.1x
5. Slips & Falls, same level. Includes some 3. (SSH type accidents caused by slip)	10%	10%	10%	1.0x
6. Struck By or Struck Against an Object	17%	9%	7%	0.4x
7. Hit By Falling Object	7%	6%	3%	0.4x
8. Wind "Related", includes some of the above accidents	10%	5%	2%	0.2x

**Percentages are rounded, and are not "additive".

Falls off the roof have historically received the greatest amount of attention, but there are two other categories that result in more lost-time accidents: burns; and strains, sprains, and hernias. Furthermore, our studies showed that less than 1% of the 1007 roofing accidents analyzed might have been prevented by guardrails on roofs with a 3" in 12" (22.5°) or less roof pitch. Half of the 28 total roof falls occurred while shingles or tiles were being installed. Less than 22% of the total falls off a roof edge (6 out of 1007 accidents) took place on a built-up roofing job with a pitch of less than 5 in 15. Mandatory guardrails for all roofing jobs, including low levels, could adversely affect this exposure by increasing the amount of time spent near the roof edge.

STRAINS, SPRAINS, AND HERNIAS

The largest single roofing accident category is strains, sprains, and hernias. Over 80% of these accidents were the result of lifting, carrying, pulling, or pushing roofing materials and equipment. The vast majority of these injuries were due, at least in part, to primitive methods of handling heavy loads.

The potential for improvement in this area is excellent. Mechanization of material handling, including the use of bulk asphalt, is probably the most promising opportunity for reducing both strains and burns. A weight reduction for all material packages is an untested but highly

promising possibility. Lighter packages would permit the use of lighter and cheaper conveyors and hoists in addition to easing whatever manual handling is necessary. It is quite possible that a small increase in productivity would more than make up for the increase in packaging cost.

Surprisingly, 23% of the strain, sprain and hernia injuries were attributable to slips and falls on the same level. Many of the slips and falls were traced directly to the poor gripping quality of the victims' footwear, which was especially hazardous on wet or icy surfaces. The standard construction boot does not appear to satisfy the special footwear requirements of roofers. It is possible that new and unique designs are necessary to meet the needs generated by various roofing exposures.

BURNS

Because the study dealt primarily with the hazards of hot roofing, the burn category was prominent. From this study, and from numerous personal interviews, we suspect that there are very few hot roofers who have never experienced a burn from hot materials.

The variety of circumstances surrounding the burns reported in the data base make grouping difficult, but it appears that small human errors are a major contribution. The use of a work glove with a small hole in it cost one man 65 days of lost labor. The standard procedure for cleaning buckets in a

kettle cost another man 43 days, when a bucket slipped from a piece of wood. From a safety viewpoint, we conclude that cold process bitumens should be developed to provide the equivalent quality of hot bitumens.

Still, more immediate solutions can mitigate the penalty for small mistakes. The universal use of personal protective equipment would eliminate many burn injuries and lessen the severity of many others. Simply following the recognized guidelines for long sleeves, pants, gloves, and face protection would provide the largest single improvement in this injury category.

In more than half of the burn cases, "poor judgement" on the part of the injured was cited, but it is impossible to assess the true percentage of "poor" versus "average" judgement in most cases. Undoubtedly, improved training programs and proper work practices could dramatically lower the accident frequency due to burns.

An examination of the more serious burn injuries (those with 10 or more lost work days) reveals that slips and falls accounted for about 25% of the total. The remaining serious injuries fell about equally into three categories: 1) lifting, carrying, and dropping pails, 2) pumping-related accidents, including fill pipes, and 3) a host of miscellaneous incidents such as feeding a kettle and knocking over pails.

Burn injuries are undergoing
(continued)

WILLIAM V. KEATING

We regret to report the passing of William V. Keating, Executive Director of the Chicago Roofing Contractors Association and the Downstate Illinois Roofing Contractors Association. Bill had been active in the roofing industry for more than 25 years.

We extend our deepest sympathies to his wife Pat and the entire family.

ACCIDENT STUDY

constant analysis by different segments of the industry. From this study, it would appear that the use of bulk asphalt or coal tar pitch would reduce the total number of these accidents, as well as a significant number of accidents in other categories. A more sophisticated system of delivering hot bitumen to the roof would probably eliminate many accidents caused by the use of standard (or substandard) pipes and fittings. A fully integrated hot bitumen delivery system might eventually include an insulated, electrically heated flexible hose that would allow direct, low pressure application to the roof. Such a system would have prevented the majority of burn injuries we investigated, and many of the lifting injuries in the study as well.

WIND

The existence of other hazards already known to the industry, such as those related to ladders, were confirmed by the data. However, one surprising discovery was the frequency and importance of the wind as a factor in accidents that

were investigated. The most frequent wind-related injury was foreign objects being blown into the eye. Also, moderate to strong winds were reported as a contributing cause to roofers falling from roofs and ladders. Communication of the need for special work procedures on windy days should aid in reducing the effect of wind on safe work practices.

CONCLUSIONS

The single most obvious conclusion to be drawn from this study is that the roofing industry does not have good training for its new employees and does not consistently utilize good work procedures. About 6% of the total reported accidents involved workers with less than 30 days roofing experience. Over 18% of the total accidents involved workers during their first six months of work. Fortunately, the accident frequency drops rapidly during the first and second years, and men with two to three years of experience only accounted for about as many accidents (48) in a year as the new worker did in his first month (44).

We can only conclude that the

novice worker is being allowed to injure himself due to a lack of training prior to getting on a roof. He is placed in a new and possibly hostile environment, and is taught how to work safely at his own expense physically, and at the direct expense of the contractor through high compensation insurance rates. Roofing accident rates have attracted the attention of regulatory bodies while alienating insurance carriers, and much of the cause falls squarely on poor work procedures and training.

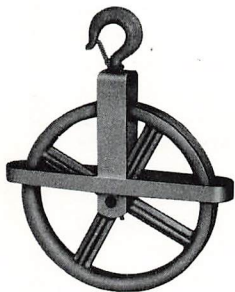
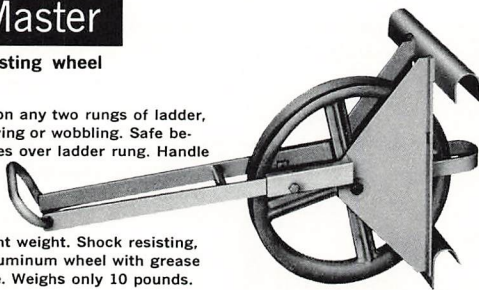
On a more positive note, we have observed a strong industry interest in improved procedures and equipment. The industry may not be large or profitable enough to devote adequate resources to the solution of its problems, so a strong and continuing effort must be sustained to secure support from responsible safety research organizations, including government agencies. The industry must move forward simultaneously on human factors, technical improvements and productivity in order to provide an attractive opportunity for all its members.



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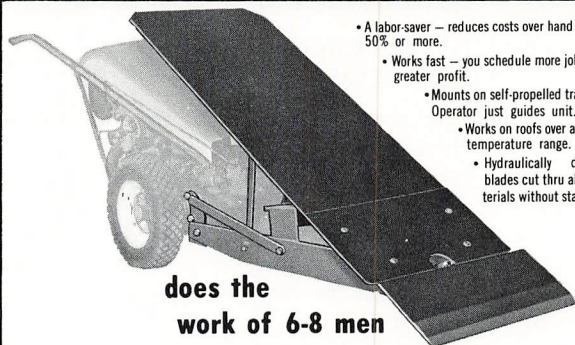


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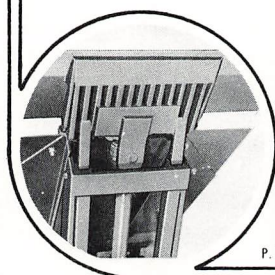
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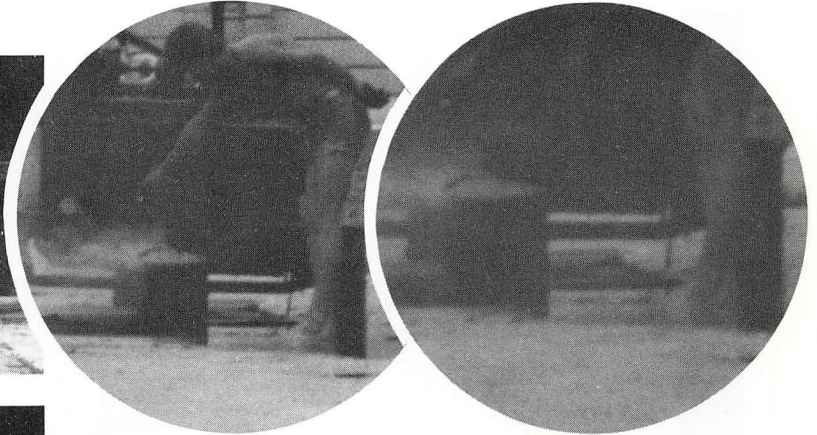
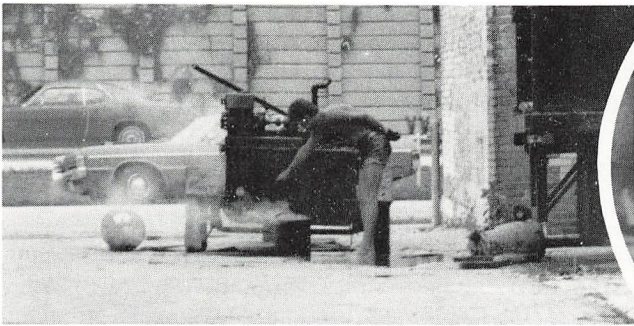
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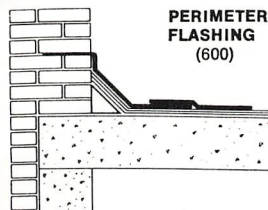
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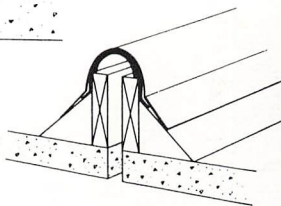


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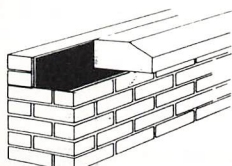
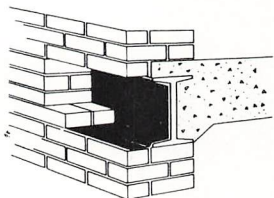


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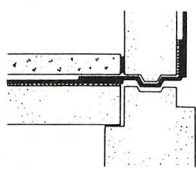
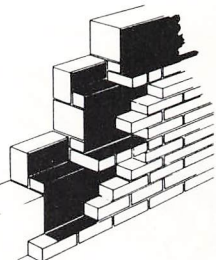


**SPANDREL
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(H-D, 300)**

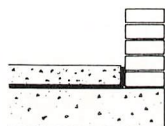


**SILL FLASHING
(H-D, 300)**

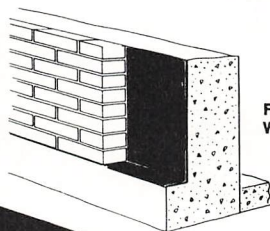
**THRU-WALL
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(H-D, 300)**



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News from affiliates

Florida

Pinellas Park sheet metal contractor G. E. "Eddie" Daniel, CPSC, became the 1977-78 President of the Florida Roofing, Sheet Metal and Air Conditioning Contractors Association, Inc. (FRSA) during the state association's 55th Annual Convention recently concluded in Hollywood, Fla. Daniel is owner and president of Daniel & Jones Sheet Metal, Inc.

Outgoing FRSA President John C. Carruth, Jr., Carruth Roofing Company, Miami, was installed as chairman of the board. Winter Park roofing contractor Thomas O. Drake, CPRC, E. C. Goldman Roofing Company, is the new president-elect and G. W. "Bill" Tucker, CPRC, was elected vice president. Tucker is an officer of Marion Heating and Roofing Company, Ocala. Bruce Martin, CAE, is FRSA's Executive President.

Highlighting the Convention was the presentation of the Bob Campanella Award to Jacksonville sheet metal contractor and state legislator Lewis B. Brantley. Brantley was cited for his years of work within the 600-member association. As president and owner of Brantley Sheet Metal Company, Inc., he has served in many different association capacities including director, officer and committee member. He was the 1974-75 President of FRSA.

The democratic senator from Florida's 8th district (Duval County), Brantley is currently the president of the Florida Senate. In that position, he has been a leading advocate of cutting bureaucratic red tape and streamlining state government.

The Campanella Award is the highest honor bestowed by FRSA. It is presented each year to the one FRSA member deemed most worthy of recognition for work on behalf of the association and the industry.

Seattle

The Roofing Contractors Association in Seattle, Washington has named Jack Morell as Executive Secretary. The Association has a new Industry Fund and anticipates expanding their programs in many areas.

Morell, who served as Executive Secretary of the Association in 1974-5, has been in association management work for over four years. Prior to that, he was involved in sales, sales management, and administrative management, including five years in the construction industry.

Morell holds a B.S. Degree in Engineering from California State Polytechnic University, and has done graduate study in Business Administration at San Jose State University, the University of Tennessee, and the University of Washington.

Tennessee

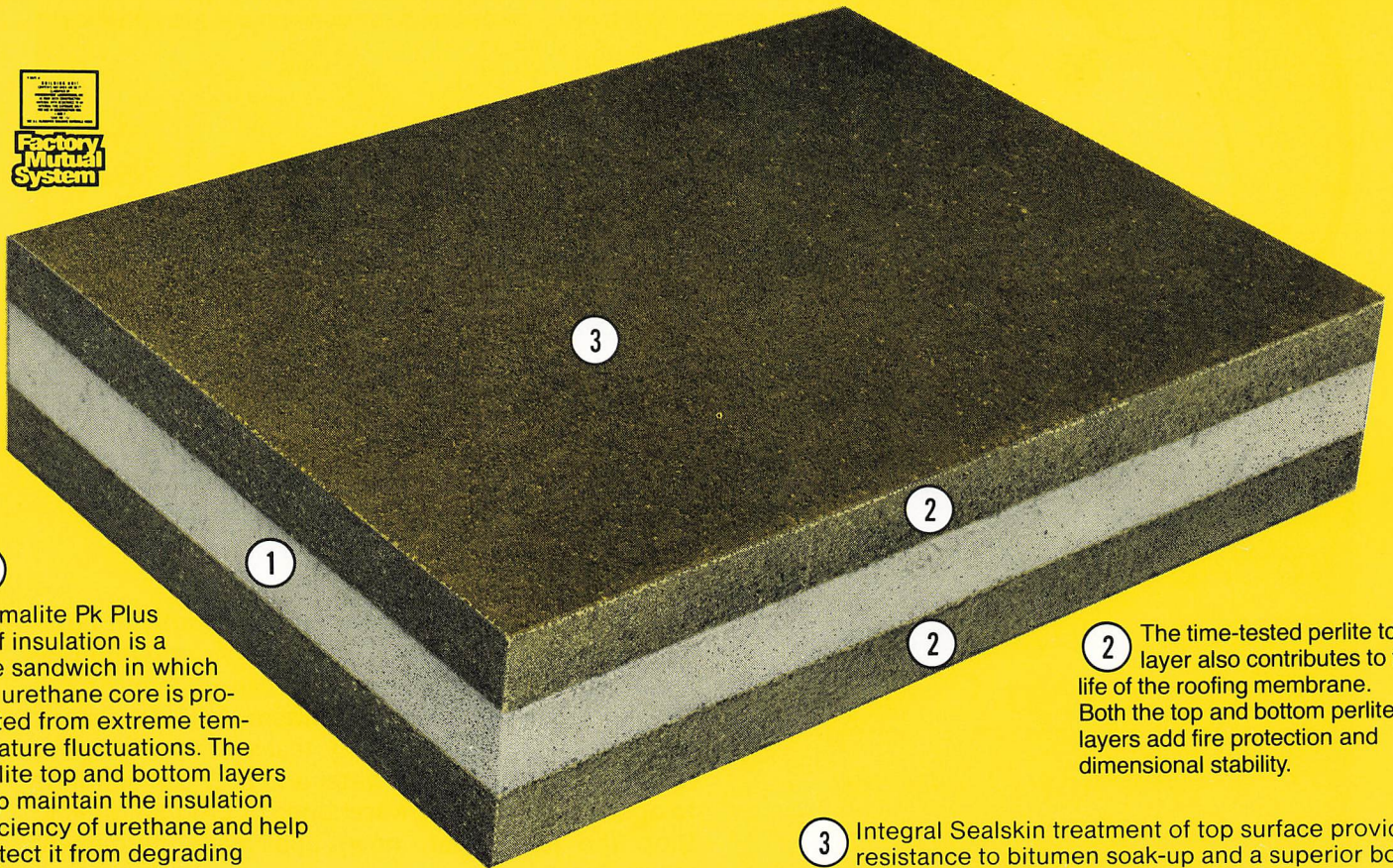
The Tennessee Association of Roofing Contractors (TARC) announces plans for its Tri-State Mid-Winter Trade Show and Roofer's Workshop in Nashville on January 12-14, 1978.

More information is available from the TARC office, 6300 Building, Suite 7605, Eastgate Center, Chattanooga, TN 37411.



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square-edged and dimensionally stable. Asphalt can be applied at normal application temperature.

Permalite Pk Plus comes in four nominal thicknesses with "C" values ranging from .10 to .06. It's easy to cut, fit, lay and adapt to rooftop mechanical services. It contains *no asbestos*.

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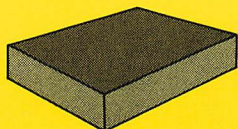
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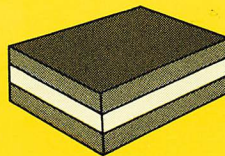
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This specially formulated, non-polluting granular product swells into a gel when contacted by water, forming a temporary, leak proof seal. SEAL X t.r.p is available in easy to handle 25 lb. waterproof bags. Fill out the reply form below for complete information, or use it as a quick order form. For extra fast service phone Mary at (312)-966-5720.

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Please send me complete information on quick acting, SEAL X t.r.p temporary roof patch for built-up/flat roofs.

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New Members

The following have been approved for membership in NRCA between August 18 and October 3, 1977.

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LaVale, MD

Z. Ellis Roofing Co., Inc.
New Orleans, LA

Florida Roofing Co.
Hollywood, FL

H & R Roofing & S/M, Inc.
Sioux Falls, SD

Hertless Bros., Inc.
Richmond, VA

A/S Hesselbergtak
Oslo, Norway

Missouri Builders Service
of Jefferson City, Inc.
Jefferson City, MO

Neidig Roofing Co.
Harrisburg, PA

N. M. Scheumack
Roofing Contractors
Austin, TX

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Industry Developments

RSTC GROUP SAYS PERFORMANCE CRITERIA FOR BUR MUST BE BASED ON ACCEPTABLE TEST METHODS

The Roofing Systems Technical Committee (RSTC), a joint technical committee of the Asphalt Roofing Manufacturers Association and the National Roofing Contractors Association, has issued a statement on the National Bureau of Standards' "Preliminary Performance Criteria for Bituminous Membrane Roofing."

The statement issued by the RSTC group covers performance attributes proposed by the NBS and evaluates the test procedures and the approaches to setting these preliminary performance criteria.

"Certain performance criteria can be useful," RSTC states. "However, it was agreed that to be of value to the industry, performance criteria must be based on test methods that can be performed by any reasonably well-equipped testing laboratory at a reasonable cost. Initial emphasis must therefore be placed on the development of test methods and not on the establishment of criteria."

The RSTC says it recognizes the "outstanding contributions" of the NBS in initiating efforts to develop a performance concept. At the same time, it refers to the proposed standards as "very tentative and preliminary" in nature.

Performance attributes proposed by the NBS were considered by the RSTC in the light of work done in member laboratories of the ARMA Ad Hoc Committee on Performance Testing. The consensus of the group is as follows:

Tensile Strength is recognized as an important engineering property of a roofing membrane and existing test methods (ASTM D-2523) are

considered adequate. Tensile strength is one of the properties considered in the evaluation of thermal shock resistance.

Impact Resistance is a performance attribute of the total roofing system, but the hail gun test was not considered a practical method of test. Roofs are subjected to impacts other than hail, and less expensive and less sophisticated methods of test can be developed. Such a method is presently undergoing round-robin testing among Asphalt Roofing Manufacturers Association member laboratories and the test method has been submitted to ASTM for approval.

Ply Adhesion is considered one of the more important attributes of a roofing system. Although not reported on by the NBS, one of the manufacturers has been investigating the effects of such variables as:

1. type of felt
2. type and amount of surfacing
3. porosity of the ply sheets
4. moisture content of ply sheets
5. temperature of felt
6. type and temperature of mopping bitumen.

In initial tests no significant differences were found between various ply sheets in regard to bonding capability providing there was adequate asphalt at proper temperature to get good wetting. Additional testing is underway.

Weather Resistance—Field experience is still the most reliable practical method yet devised to determine weather resistance. The RSTC group has enlisted the support of a number of roofing contractors who will apply sample roof systems so that sample cuts can be taken on initial application and after specified periods for analysis and evaluation. A complete data file is being maintained on these test roofs, a number of which have already been installed.

Uplift Resistance—Although it is well known that Factory Mutual and Underwriters Laboratories have had laboratory uplift resistance tests available for a number of years, the need for a practical field uplift resistance test has been recognized. Two such tests are currently being evaluated: the FM two-foot square tripod test, and a non-destructive vacuum test. The latter is generally preferred.

Fire Resistance—The group's consensus is that the FM and U.L. tests currently in use provide adequate ratings and data.

Tensile and Flexural Fatigue—It is not yet known whether these two attributes need to be considered individually or together. Very little data is available and it is doubtful that other laboratories could justify the cost of equipment utilized in the NBS tests. One of the ARMA member laboratories is presently working to develop another test method.

Moisture Effects on Strength and Dimensional Change—One of the areas not reported on by NBS is the effect of moisture on the strength of roofing felts and membranes. Considerable work has been done within the ARMA Ad Hoc Committee on Performance Testing and data for several felts and membranes has been obtained. A method of test for the effect of moisture on the dimensions of saturated felts was also described.

Thermal Shock Factor is considered a performance indicator, but an acceptable test method has not been established for the expansion/contraction co-efficient.

Thermal Shock Resistance—An alternative method of testing is being considered for thermal shock resistance in which the load developed within a membrane as a result of a rapid drop in temperature from 75°F to -25°F is subtracted

from the ultimate strength at -25°F to determine the amount of residual strength available to resist other stresses imposed on the membrane and is undergoing round-robin testing within the ARMA group and ASTM.

FAILS TO BE INTERMEDIARY

The Fails Management Institute announces that it will act as intermediary between buyers and sellers in the conduct of merger and acquisition activities among construction companies.

Informally negotiating the sale or purchase of contracting companies for the past eight years, the management services firm will concentrate more heavily on merger and acquisition activity due to the increasing demand for an intermediary in the dynamic market of mergers and acquisitions.

The trend to buy and sell indicates a growing demand for companies whose assets, philosophies, organizational structures, capabilities, and management complement acquirors' own companies, providing them fast, practical, and reasonable growth.

The Fails Management Institute has noted other reasons for the spurt in the merger and acquisition market.

One of the most common is a contractor's need to move out of a declining market or to offset a cyclical business. Currently, the management services firm is searching for five contracting companies which five mechanical contractors in the northeast can acquire. Through acquisition, these companies plan to relocate to the sunbelt.

Buying a supplier or a customer to assure a producer or purchaser of a product or service is another cause of the drive to acquisition.

Still another reason for acquisition is the movement toward open shop. Acquiring a nonunion firm is a swift, legal way to go double-breasted.

More traditional motives behind the buying wave include purchasing rather than competing with a like specialty, acquiring or using a tax loss carry-forward, gaining needed technology or personnel, and capitalizing on an abundance of existing management and super-

visory talent.

Thus, the market for healthy, active U.S. construction companies is a good one, and one that the owner of a closely-held company should note. Particularly for the contractor who wants to transfer ownership to someone else, whether he remains president or bows out entirely, selling the company to a third party may be an excellent means to get his equity out of the corporation.

For contractors who are over or undercapitalized, a sale to companies whose conditions are the opposite is a boon to both.

Finally, the contractor who wants to grow solidly may be able to do it best through merger, providing him growth opportunities that otherwise might take ten years to accomplish.

CONSTRUCTION CONTRACTING COMPANIES PAY HIGHEST BONUSES TO EXECUTIVES, SURVEY SHOWS

NEW YORK—Construction and contracting companies rank at the low end of the executive compensation scale—17th of 22 industry groups surveyed—with average total compensation to top management in 1976 of \$81,000, according to a new survey conducted by Arthur Young & Company for Financial Executives Institute. The survey of executive compensation shows that the industry's 8.7% increase in total average executive cash compensation ranks 20th among the 22 industries.

The survey also notes that over 76 percent of the construction and contracting companies surveyed paid bonuses at an average rate of 63.8 percent of base salary, the highest rate of all industry groups studied.

Nationwide, top executive pay increased a record 14 percent in 1976 following a relatively flat rate of less than one percent in 1975, according to the survey. Strong demand for experienced executives, improvements in corporate profitability and more emphasis on financial management are three of the chief factors contributing to the dramatic increase.

These highlights are among the results of the comprehensive survey of salary and bonus compensation for positions in the executive and financial departments of more than

1,200 companies. The seventh biennial survey of "Executive Compensation" was conducted by Edwin S. Mruk and James A. Giardina, of Arthur Young & Company. The full survey report, which is scheduled for publication in late September, includes data for chief executive officers and senior and middle financial management positions in 22 industries and seven regions of the U.S.

DODGE SEES NO SLOWDOWN IN CONSTRUCTION

Contracting for new construction of all types continued at a "blistering pace" in August with \$14.2 billion of new projects initiated during the month, according to the F. W. Dodge Division of McGraw-Hill Information Systems Company.

The latest month's total of \$14.2 billion in new construction value was 46 percent higher than the year-ago August amount, bringing the Dodge Index to 267, (seasonally adjusted; 1967=100). July's Index was 218.

"If there's a slowdown taking place in the economy, it's certainly not happening in construction," said George A. Christie, vice president and chief economist for F. W. Dodge. "Instead of slowing down, construction activity has taken a substantial turn for the better since last spring. That's when the Dodge Index broke through last year's 200 level in a big way, reaching 250 or higher in four out of the last five months," he explained.

August contracts for non-residential buildings at \$3.8 billion, showed a 52 percent improvement over the depressed year-ago value. "Gains were evident all up and down the line of nonresidential building types, with commercial and industrial projects up 75 percent, and schools, hospitals, and other institutional building ahead by 31 percent," the Dodge economist remarked. "Not very long ago you had to strain to see the cyclical upswing in nonresidential building, but it's clearly visible now that commercial and industrial projects are moving up."

At the end of August, the total value of contracts for all construction initiated in 1977 was \$93.7 billion, up 26 percent from the same period last year.



SUMMARY ANNUAL REPORT

National Roofing Industry Pension Plan

C/O Trust Consultants, Inc.
7300 No. Kendall Drive
Miami (Kendall Branch) Florida 33156
Telephone 305-595-4040

Dear Participant/Beneficiary:

Please find enclosed a summary annual report which sets forth the financial status of the Pension Plan for the year which ended December 31, 1976. You will note that included with this report are financial statements which show the Fund's income, expenses and overall assets. The sole concern of your Board of Trustees is to operate this Fund for the purpose it was established—to provide Pensions for eligible participants and beneficiaries. With your cooperation we look forward to continued progress and service to you and your family.

NOTICE TO PARTICIPANTS

Plan participants and beneficiaries may obtain copies of the following more detailed annual report information for a reasonable charge, or inspect it without charge. The latest full annual report, or any of parts of the report including a list of any assets held for investment; a list of certain party-in-interest transactions; a list of any loans or obligations in default; a list of any leases in default; and a list of transactions involving more than 3 percent of Plan assets. To obtain a copy of any documents listed, write to the Administrator asking for what you want. The Administrator will state the charge for specific documents on request, so that you can find out the cost before ordering. All the documents listed can be examined during normal business hours at the following locations:

Trust Consultants, Inc.
7300 No. Kendall Drive
Miami, Florida 33156

United Slate, Tile & Composition Roofers,
Damp & Waterproof Workers Association
1125 - 17th Street N.W.
Washington, D.C. 20036

Asher, Greenfield, Goodstein, Pavalon &
Segall, Ltd.
228 North La Salle St.
Chicago, Illinois 60601

Donaldson & Kiel, P.S.
Vanderveer Building
2819 First Avenue
Seattle, Washington 98121

Sincerely yours,
BOARD OF TRUSTEES

STATEMENT OF ASSETS AND LIABILITIES AS AT DECEMBER 31, 1976

Cash	\$	55,738
Cash held by investment advisor for purchase of investments		54,334
Employer contributions receivable (Note A (4))		306,310
Accrued interest		169,472
Unexpired insurance premiums		2,798
Investments:		
Aetna Life Insurance Company— management group annuity contract (Note F)	\$5,095,916	
Marketable securities (Note A (2)):		
Common stock (cost \$7,334,612 in 1976 and \$4,952,879 in 1975)	7,814,003	
Preferred stock (cost \$286,088 in 1976 and \$222,188 in 1975)	332,500	
Corporate obligations (cost \$5,833,624 in 1976 and \$5,490,282 in 1975)	6,033,188	
Government obligations (cost \$1,750,828 in 1976 and \$1,050,828 in 1975)	1,840,280	
Collective Employee Benefit Trust Short-Term Investment Fund of Northern Trust Company (at redemption value)	594,000	21,709,887
Total		22,298,539
Less accrued expenses		34,213
NET ASSETS AVAILABLE FOR PLAN BENEFITS (STATEMENT ATTACHED)		\$22,264,326

Attention is directed to the notes to financial statements.

STATEMENT OF INCOME AND EXPENSES AND OTHER CHANGES IN NET ASSETS AVAILABLE FOR PLAN BENEFITS AS AT DECEMBER 31, 1976

Employer contributions (Note C)	\$	3,553,598
Income from:		
Dividends	\$189,488	
Interest	972,102	
Total	1,161,590	
Less investment administrative expenses	35,527	1,126,063
Realized (loss) on sale of investments		(59,097)
Unrealized gain on investments		1,134,954
Total		5,755,518

Less:			
Pension, disability and death benefits . . .		305,915	
Other expenses:			
Administrative fees . . .	\$93,792		
Administrative charge—			
International Union . . .	4,000		
Actuarial fees	2,237		
Professional fees	24,074		
Pension benefit guaranty insurance . . .	11,495		
Conferences and seminars	10,018		
Dues	7,500		
Other expenses	13,129	166,245	472,160
NET INCREASE IN NET ASSETS AVAILABLE FOR PLAN BENEFITS			5,283,358
Net assets available for plan benefits—			
January 1		16,980,968	
NET ASSETS AVAILABLE FOR PLAN BENEFITS—DECEMBER 31 (TO STATEMENT OF ASSETS AND LIABILITIES)			\$22,264,326

Attention is directed to the notes to financial statements.

**NOTES TO FINANCIAL STATEMENTS
AS OF DECEMBER 31, 1976**

(Note A) — Summary of Significant Accounting Policies:

(1) Basis of Financial Statements—The financial statements are prepared on the accrual basis of accounting and investments in marketable securities are stated at market value (Note A(2)). Prior to the year ended December 31, 1975 the financial statements were prepared on the cash basis and investments were stated at cost.

(2) Investments—Investments in marketable equity securities and investments in marketable debt securities are stated at market value. Net unrealized appreciation or depreciation in the market value of securities for the year are included as unrealized gains or losses in the determination of changes in net assets available for plan benefits. Realized gains or losses on the sale of marketable securities represent the excess of proceeds from the sale over their cost based upon the average cost method.

(3) Investment Income—Income from investments is recorded as earned on an accrual basis.

(4) Contributions Receivable—Any delinquent contributions for periods prior to December 31, of the applicable plan year, not received by the end of the following February, are recorded when received.

(5) The Fund does not record the present value of future pension, death or disability benefits; benefits are recorded when paid.

(Note B) — Organization, Purpose and Plan Description:

The Fund was formed January 1, 1966 pursuant to collective bargaining agreements between employers engaged in the roofing industry and certain local unions affiliated with the United Slate, Tile and Composition Roofers, Damp and Waterproof Worker's Association, AFL-CIO, an international union.

The Fund's declaration of trust provides for the administration of the Pension Plan by a joint board of trustees comprised of an equal number of employer and union representatives.

The purpose of the Fund is to provide through a basic and supplemental plan, retirement, disability and death benefits to eligible participants.

(Note C) — Actuarial Valuations:

Contributions to the Fund by employers are based on hourly rates as specified in their applicable collective bargaining agreements. The first five cents per hour contribution is utilized for the funding of past and future benefits under a base plan. Contributions in excess of five cents per hour are being applied to the funding of future benefits under a supplemental plan.

Based on an actuarial valuation as at January 1, 1975, (the most recent one available) and after giving effect to certain changes pursuant to the Employee Retirement Income Security Act of 1974 (ERISA), the present value of retirement income benefits less the present value of normal cost contributions ("Gross Actuarial Deficiency") was \$6,422,041 under the base plan. The calculations were made using the "entry-age-normal" cost method. The present value of accrued benefits under the supplemental plan was \$5,273,330. The "single premium" cost method was used in making the actuarial valuation of the supplemental plan.

Significant assumptions underlying the actuarial computation of the "Gross Actuarial Deficiency" under the base plan and the present value of accrued benefits under the supplemental plan are as follows:

Assumed rate of return on investments	5% a year
Mortality basis after normal retirement age	1965 projected annuity mortality table
Normal retirement age	65

Based on the actuary's report, the estimated annual contribution under the base plan would be sufficient to pay normal costs and interest on the unfunded past service liability and to amortize the "Gross Actuarial Deficiency" over a thirty-year period; in addition, the estimated annual contribution under the supplemental plan would be sufficient to amortize the present value of accrued benefits.

(Note D) — Priorities Upon Termination of the Plan:

The right to wholly or partially discontinue the plan rests with the Board of Trustees. In the event such discontinuance results in the termination of the plan, the plan provides that the then accumulated benefits become fully vested and the net assets of the Fund be allocated among the participants and beneficiaries of the plan as provided for in ERISA. To the extent unfunded vested benefits exist, such benefits are payable by the Pension Benefit Guaranty Corporation to eligible participants.

(Note E) — Tax Status:

The United States Treasury Department advised on September 7, 1967 that the Trust constitutes a qualified trust under Section 401(a) of the Internal Revenue Code and is therefore exempt from federal income taxes under provisions of Section 501(a).

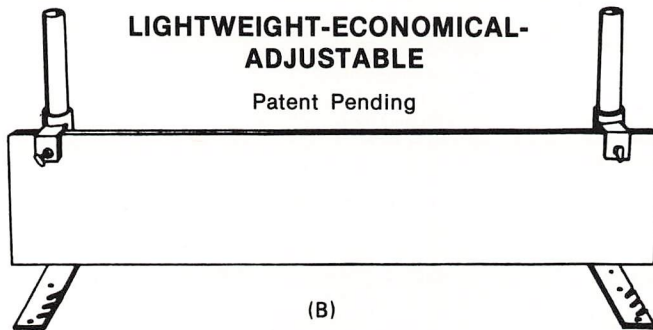
(Note F) — Management Group Annuity Contract:

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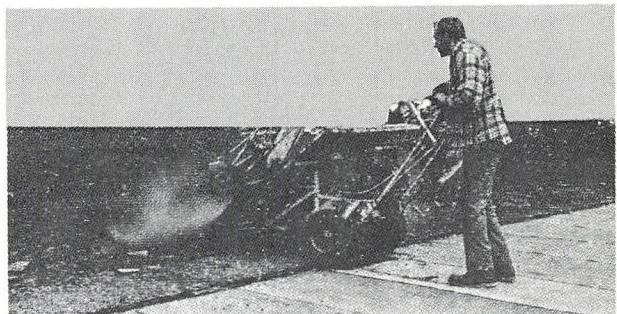
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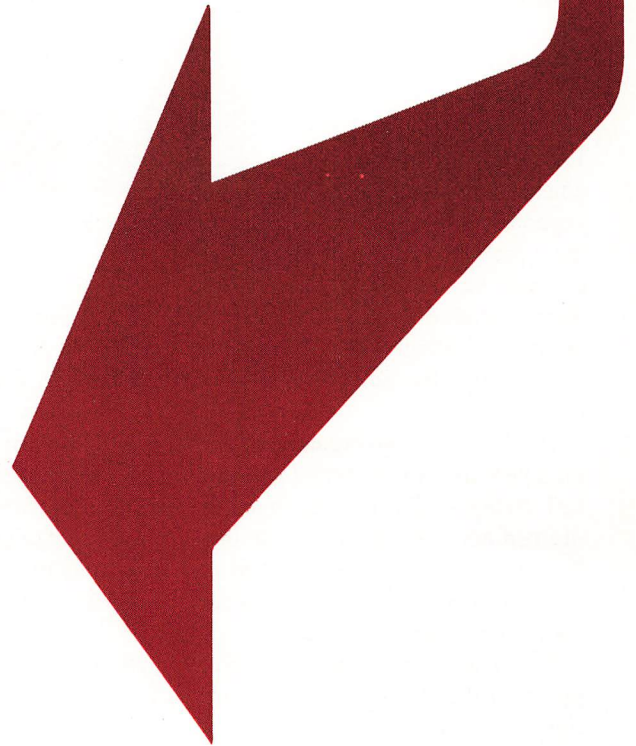
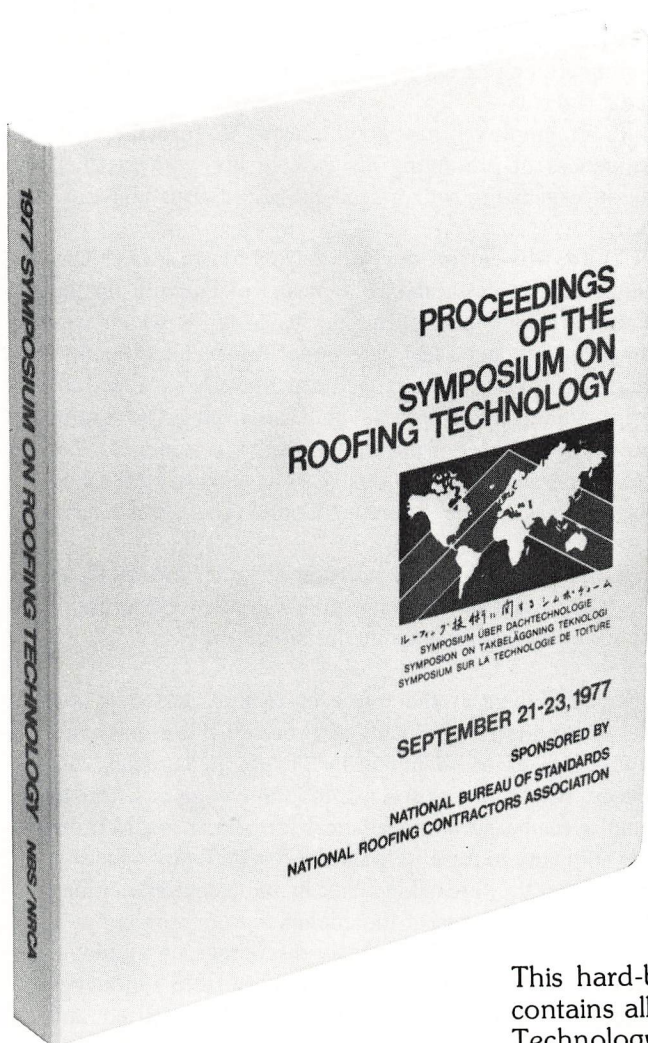
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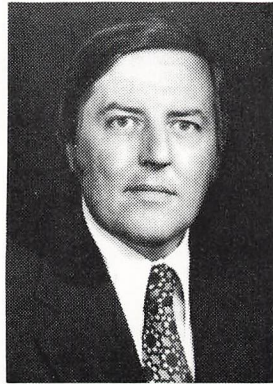
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ENDANGERING THE RIGHT NOT TO ORGANIZE

by

Richard L. Leshner
President
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On July 18, President Carter endorsed a package of amendments to the National Labor Relations Act. These amendments won the prompt support of the AFL-CIO. This is not surprising, because they are the ones who drafted them. The proposed changes have since been introduced as legislation by Representative Frank Thompson (D-N.J.) and Senators Harrison Williams (D-N.J.) and Jacob Javits (R-N.Y.)

Basically, the amendments are designed to do four things:

(1) Make union organizing easier, through shorter time periods for representation elections, and other technical changes; (2) Provide harsher penalties for firms deemed not in compliance with the Act; (3) Enlarge the National Labor Relations Board (NLRB) from five to seven members; (4) Authorize federal intervention in the collective bargaining process.

If all that sounds to you like an attempt to increase the power of the already powerful unions, you're reading it right.

Labor Secretary Marshall says the changes are designed to eliminate excessive procedural delays in NLRB operations. If this were the real motive — and the likely consequence — I might applaud the idea. Procedural delays are a problem throughout the Federal Government, for business as well as labor. But unfortunately, President Carter and Secretary Marshall have made it quite clear that the delays they object to are primarily those which inconvenience the unions.

Take those four points one at a time:

First, why is it necessary to make union organizing easier? The real explanation for this change is political. Ten years ago, the unions were winning 60% of their representation elections. Today, they are winning fewer than 50%. So, they hope to gain from the government what they have been unable to win from the workers. Shortening the time for representation elections makes it easier for workers to be stamped into joining.

Second, what is the real reason for proposing harsher penalties? It's hard to quarrel with stiff penalties for willful wrongdoing. But labor law is extremely complex and subject to differing interpretation by honest and

conscientious people. Given that fact, it's necessary to raise these questions: Are these tough penalties really designed to deter wrongdoing? Or are they designed to intimidate employers in the legitimate exercise of their legal rights?

If an employer has good reason to fear the consequences of presenting his case to his workers, then union organizing will indeed be *easier*. But not more *just*.

Third, why enlarge the NLRB from five to seven? This suggestion is presented as a means of clearing up the Board's case backlog. But the backlog — which was drastically reduced last year under the excellent leadership of former chairperson Betty Murphy — does not originate at the Board level. The trouble is farther down, at the level of the administrative law judges. The Board members — individually — have more clerks than the Justices of the Supreme Court. They don't need more help.

Expanding the Board will not clear up the backlog. Expanding the Board *would* give President Carter more opportunity to influence its decisions.

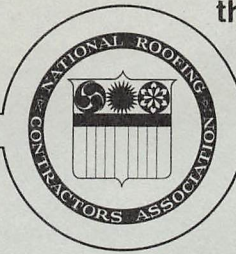
Finally, there is the threat of federal intrusion into the collective bargaining process. If an employer refused to agree to unreasonable union demands, the Board would be authorized to grant compensation to employees based on a statistical formula. It could order the company to raise its wages and benefits by whatever percentage they are being raised in union contracts among the major industries of the country.

This threat would obviously discourage an employer from refusing to cave in to unreasonable union demands — even if the refusal is fully justified and in good faith. Employers would fear that the Board's contract provisions would be even worse than those that might be "negotiated" with the union.

Consumers have no reason to cheer such employer capitulation: Higher wage costs usually require price increases to cover them. Nor do the workers have reason to cheer. None of these changes is for the benefit of the individual worker. Rather, they are designed to enhance the power of the unions as organizations and thus, the power of the people who run them.

The AFL-CIO has presented the Carter Administration with a bill for services rendered in the last national election. This "Union Organizer's Act" is really a check written as partial payment on that debt.





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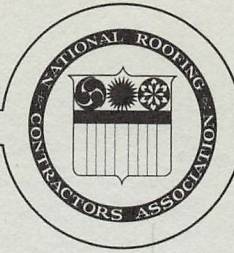
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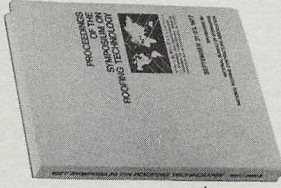
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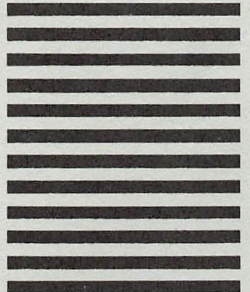
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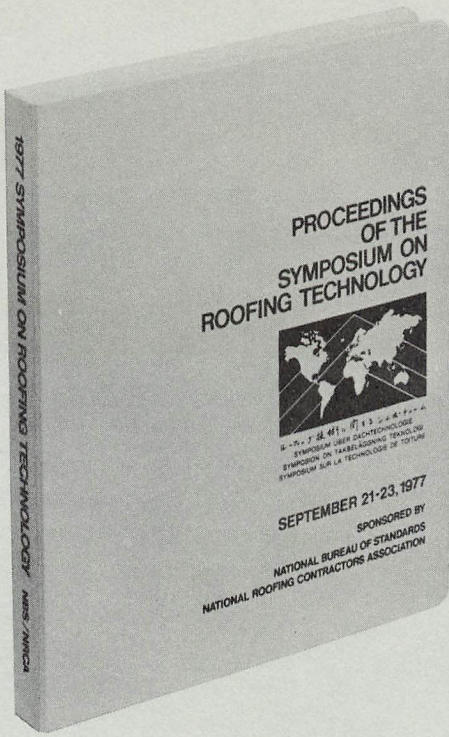
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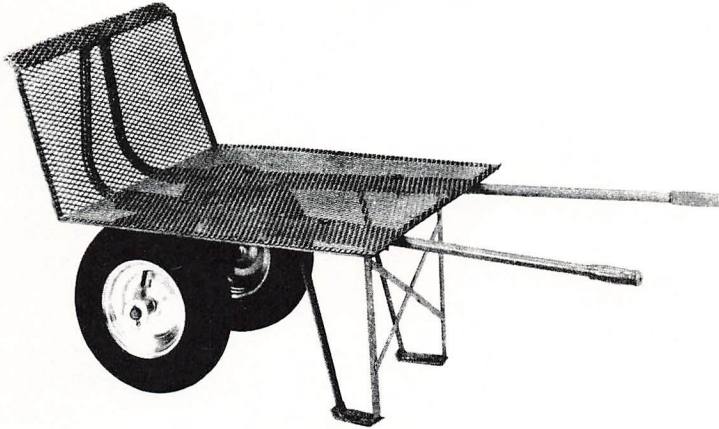
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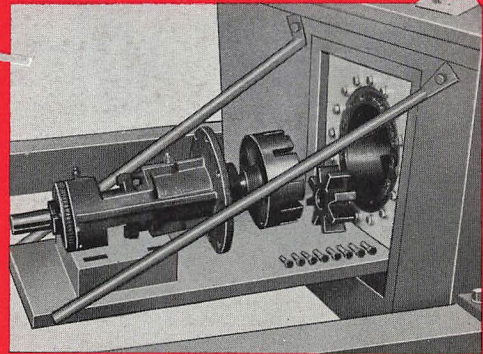
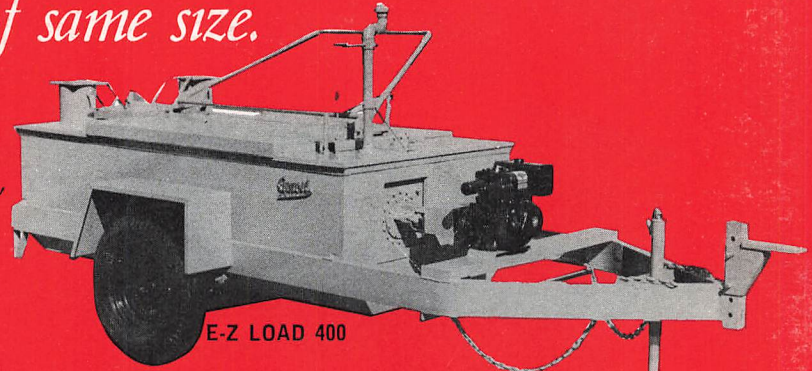
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